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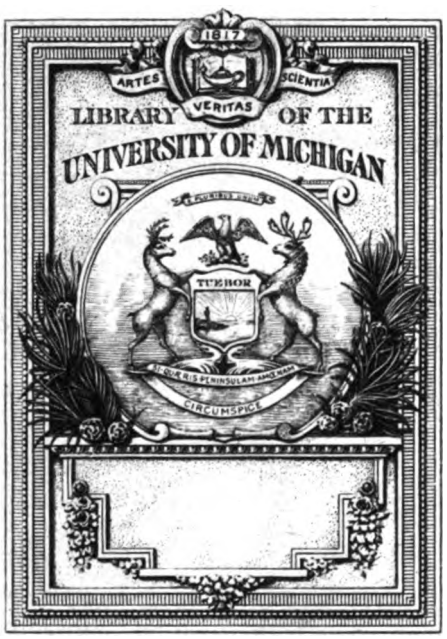

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Anthracite Company Saves Coal By Electrifying—Page 951

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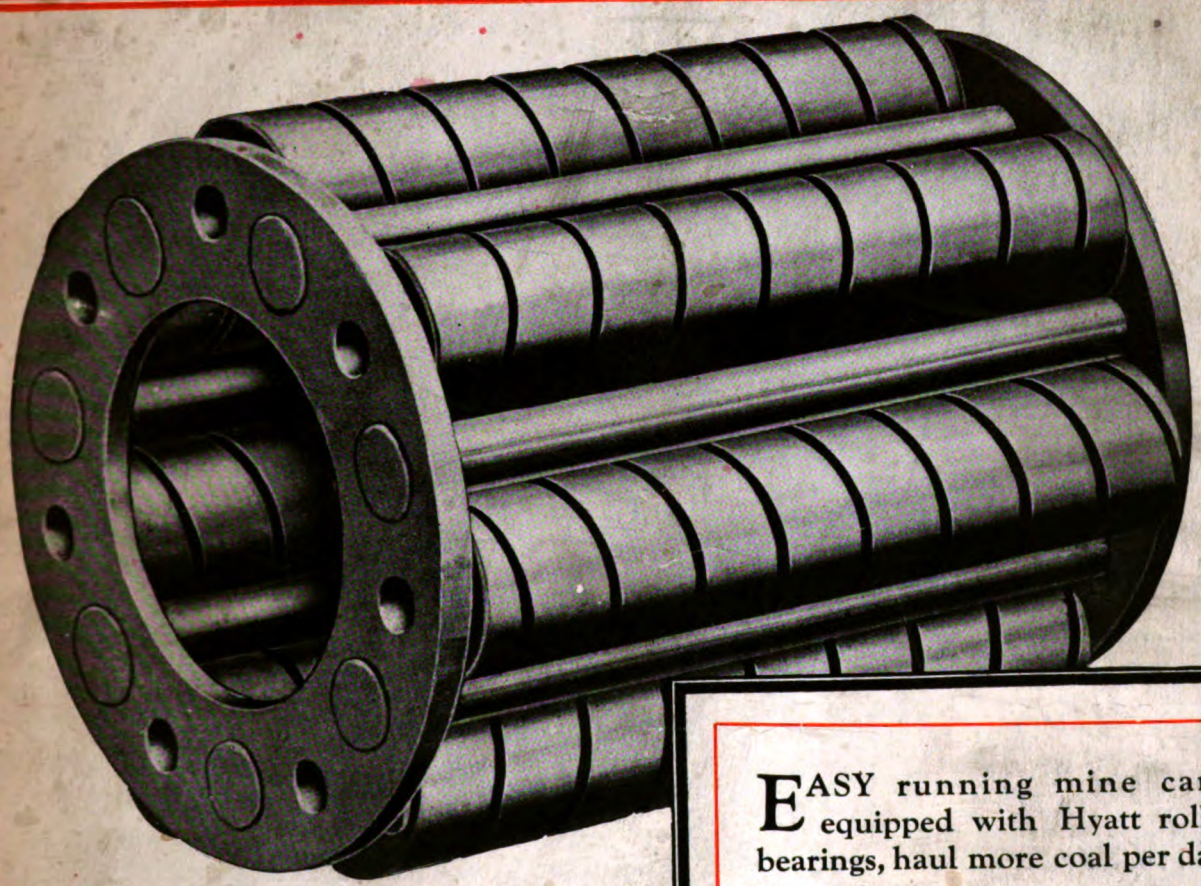
COAL AGE

The World's Accepted Authority on Coal Mining

McGraw-Hill Co., Inc. **January 7, 1926** 20 Cents per Copy



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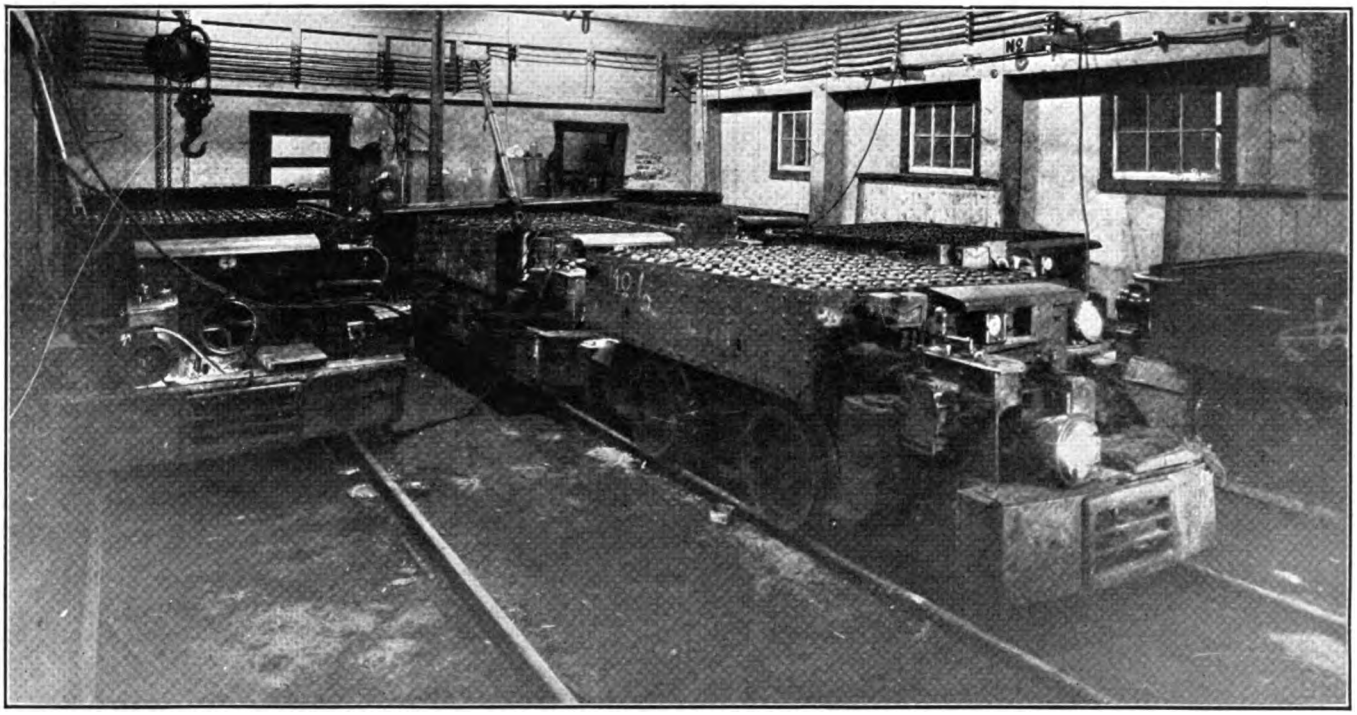

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 29 — New York, January 7, 1926 — Number 1

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Anthracite Company Takes Another Big Step Toward True Modernization 3
BY C. R. SEEM.

Poor Drainage Ruins Concrete Shaft Linings 7
BY NEWELL G. ALFORD.

New Tipple Prepares Friable West Virginia Coal 10

Union Pacific Coal Co.'s Code of Standards—IV 12

Tennessee Mine Saves $1.75 per Ton on Sand 14

Anthracite Operators and Miners Resume Efforts to Reach an Agreement 15

Adoption of Arbitration in Hard-Coal Peace Is Hope of Federal Officials 17
Trade Commission Segregates Trial Examiners 17
162 Die in November in Mine Accidents 18
Mexican Mine Blast Kills 42 18
West Virginia Coal Output 101,943,765 Tons in 1925 18
Government Wins Case on Commandeered Coal 19
Locomotive Fuel Cost Drops Slightly in October 19
Mistrial in Coronado Case 19
Pattison & Brown in Deal 19
Coal River Company Forms Sales Organization 19
Miners Indorse Pinchot Call for Special Session 19
C. C. & B. Sale Is Completed 19
McGraw-Hill Company Buys Keystone Catalogs 34

Editorials 1
Practical Pointers 20
Problems in Underground Management 22
Book Reviews 24
Weekly Review and the Market 25
Foreign Market and Export News 30
News Items from Field and Trade 31
Traffic 34
New Equipment 35

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"Cooling with Coal"

THE CONSTANT search for new consuming outlets for coal turns up the entirely workable idea of cooling theaters, business offices, factories and even homes in hot weather by refrigerating plants run by electricity that is generated by coal. Most people will be surprised at the rapid advance in this line made recently. R. Dawson Hall, engineering editor of *Coal Age*, tells an interesting story about it in next week's issue.

MOVING PICTURE HOUSES are leading the movement at the present moment. Few such theaters of consequence are built these days without a refrigeration plant run in connection with the ventilation system. The initial cost of installation for a theater seating 4,000 or 5,000 people may run from $60,000 to $100,000 but operating charges usually are low—the daily average is estimated at 1.5c. per seat—and both are absorbed usually within two years by increased summer patronage. One theater in Chicago has the operating cost down to less than one cent per seat.

THE MOVEMENT is not particularly new. The offices of a New York banking house were "cooled with coal" as long ago as 1907 and various restaurants and one or two hotels in the country followed suit. Today more projects are under way. The thing is just beginning to prove its worth. What the future will bring forth of course remains to be seen, but engineers of vision look forward to a day when we will no more think of enduring the indoor stifling heat of summer than we now would tolerate unheated houses in winter. As this movement advances, coal consumption increases. The mining man, therefore, is deeply interested.

Advertising Index—Alphabetical, 54; Classified, 51; Consulting Engineers, 46; Searchlight Section, 47-49

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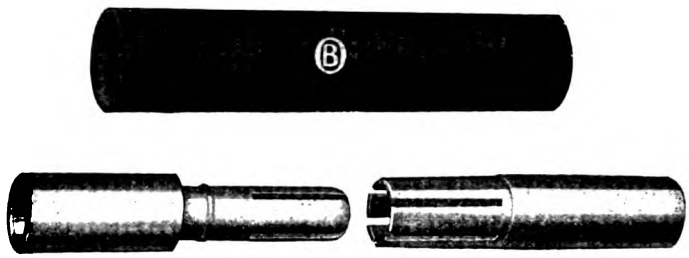

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 29 | NEW YORK, JANUARY 7, 1926 | Number 1

Three Sides to the Coal Labor Dispute

THE NEWSPAPERS in describing the strike agreement negotiations in New York, referred to "the miners' most insistent demand, the check-off." This illustrates an inexactness of thought and consequent phraseology which should be noted. The check-off is not the insistent demand of the miners: it is the insistent demand of the organized miners' union—that is to say, of the leaders thereof. No miner ever desired to make a national issue to force his employer to abstract his union dues from his pay envelope before handing it over to him, on the plea that he was too indifferent or weak or too unfavorable to the union, to pay his dues, once he got the money in his jeans. The demand for the check-off is not the demand of the miner against the operator, but the demand of the union officials against the miner. It is an indictment of the miner as unintelligent and incapable of handling his own funds; and is a survival of the importation of cheap foreign labor in the coal industry, of a type that needed to be brow beaten by union leaders and employers alike, and forcibly aligned into a union they did not understand, and which they did not have the intelligence and independence to support, or to disapprove.

Indeed, there has been three parties, not two, to the whole anthracite strike—the operators, the union, and the miners. The strike organizers can have had no illusions that they were to bring about a net financial gain to the miners any more than to the operators; they must have known that the money lost to both sides would never be recovered in any readjustment. What they hoped for was a gain to the union as the price paid by the irretrievable economic loss to the industry, sustained by both the real laboring factors in the strategy—the operating miner and the working miner.

Leisure More Fatal Than Labor

IN THE January issue of the *Employees' Magazine*, of the Union Pacific Coal Co., it is stated that in the year just past there were four fatal accidents in the company's Wyoming mines and one in its mine at Tono, Wash. In contrast with this record six employees of the Wyoming mines of the company were killed in automobile accidents, one employee was murdered and one committed suicide. Twice as many met their deaths by accident, therefore, in their non-working time as lost their lives in the mine. Furthermore, in the "wide open spaces" of southern Wyoming, where, by the way, the roads, though mostly of dirt, are excellent, there is less excuse for accident than in crowded cities. Apparently bootleg liquor was a cause of some, at least, of these fatalities.

There were thirteen fatalities in the company's mines in 1921, eight in 1922, sixteen in 1923, nine in 1924, and only five in 1925. Thus the automobile did its part to compensate for the increased safety of the Union Pacific Coal Co.'s mines.

But the company desires a further measure of safety. "Candor," says E. C. McAuliffe, the president of the company, "compels the statement that the death of at least two men could have been foreseen and avoided. They both died because of our failure as managers to see that the 30-in. track clearance recently adopted in our Book of Standards was maintained."

Speaking about responsibility for accidents, he says that he "has a deep and abiding belief that less than ten per cent of the mine fatalities which occur can be charged wholly to the victim." There is much to be said in regard to this contributory negligence of the employer. The employee is sometimes only partly to blame, though that part may be 90 per cent of the whole. The rest of the fault is that of the employer who has not made it sufficiently difficult for the employee to injure himself by carelessness.

The accidents due to lack of clearance seem to be of that character. The two from falls of roof, according to Mr. McAuliffe, were not, and the one from failure to wait twenty minutes on a shot can only be placed on the management by holding that the men were insufficiently instructed.

In the intermingling causes that result in an accident the operator does well to beware lest he find he has a part, however small. It often takes a half dozen contributing causes to make an accident.

We Extend Our Service

THE WIDER AND CLOSER a publishing house can make its contacts with the industries it serves, the more valuable that service becomes. This was an actuating influence moving the McGraw-Hill Co., Inc. to purchase the Keystone annual catalogs which have been standard reference and data books in the coal and metal mining industries for years. Full announcement of this purchase is made in the news pages at the end of this issue.

Coal mining men on the one hand and equipment manufacturers on the other who read *Coal Age* are well aware of their own community of interest. Each one profits most who makes best use of the opportunities the other offers. Educational work correlating the efforts of both has always been considered by this magazine to be an important part of its educational task. Therefore it is eminently fitting that the publishers of *Coal Age* should extend these correlating activities, issuing not only the magazine but also the most complete reference books of the industry.

CONTROL OF RAILROADS SUGGESTS and, in a sense, demands control of motor trucks, buses and similar carriers. The regulation of coal makes reasonable the control of oil, coke and other substitutes. Thus from one stepping stone to another we advance to socialism.

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The Markle Plan

IF THE TEST of an acceptable solution of the anthracite labor deadlock is to be the public interest, the program proposed by Alvan Markle, chairman of the joint wage conference, at New York last week merits earnest and sympathetic consideration. In brief, that program would encompass: (1) A truce providing for an immediate resumption of mining at the 1923-25 scale while the machinery for permanent peace was being geared for action; (2) a long-term agreement, with flexible wages, and a bar against strikes or lockouts; and, (3) impartial determination of the economic facts upon which wages should be based. It would preserve to both employer and employee the fullest opportunity for self-determination of all issues and invoke outside aid only after the resources of conciliation and direct negotiation had been exhausted.

An early resumption of mining—if it carries with it the assurance of permanent peace—is clearly in the public interest. A long-term agreement meets the expressed desires of both operators and miners. Where they differ is on the question of rigid wage scales. With neither side disposed to respect the factual statements of the other, impartial determination of the basic data seems the proper course. Indeed, if such determination did nothing more than dissipate the mutual suspicion entertained by miners and operators and the public distrust of both sides, it would be well worth the cost. That an agreement reached without the intervention of an outside agency is preferable to the parties directly concerned and promotes harmonious labor relationships is too obvious for comment.

But four months of inactivity have demonstrated that such an agreement within reasonable time limits is not always possible. The Markle program and every other plan suggested since the first break in negotiations last summer recognize this. In meeting this contingency, however, we fear that a laudable spirit of compromise has led the author of the Markle plan to concede too much to the sensitiveness of the union spokesmen. Mr. Markle would create a fact-finding commission of nine with membership equally divided between the miners, the operators and the public. Upon the representatives of the last-named group would devolve the task of initiating a report and recommendations, but this group would vote only in the event that the representatives of the operators and the miners failed to agree. In that event, the public representatives would vote on disputed points with the other six and a majority vote of the nine would decide the issues.

Mr. Markle has said to the miners that this is not arbitration, but an extension of the plan of operation of the Anthracite Board of Conciliation, with three umpires instead of one. It is easy to understand the chairman's reluctance to damn his project with a description so hateful to the miners. Nevertheless, we think that Mr. Lewis and his associates are correct when they describe it as arbitration under another name. The plan loses none of its force by boldly stating what it is. Sooner or later the union will have to revert to its earlier position when it was a staunch advocate of arbitration. We might just as well face the facts now as later. Sugar-coating the pill will deceive no one: neither will it speed acceptance.

There is, however, a real objection to the plan as proposed. The *modus operandi* outlined promises to be more provocative of dissension than of harmony. In the first instance, the public representatives submit a report to their fellow-commissioners. If it could be assumed that this report would be approved by both operators and miners, all would be well. The reasonable assumption, alas, points to a contrary conclusion. In the end, the deciding vote rests with the public group, but that vote is cast only after opinion of the contending parties has become frozen. Bitterness, doubt and suspicion are encouraged and the defeated side is more convinced of the justice of its cause than if it had never gone on formal record.

Fortunately this defect is not irremediable. Since the public group must control, why not divorce it entirely from the preliminary negotiations? Why commit it in advance to views or conclusions it may wish to modify in the light of further discussion or argument? Let it appoint the investigating corps if miners and operators cannot agree upon the agency or agencies, and then retire from the scene until such time as operators' and miners' representatives admit their inability to reach an agreement. Then let the operators and miners submit statements showing the facts and the recommendations upon which they agree, with supporting documents, and the points in dispute. This done, exclude the representatives of both sides from participation in the deliberations of the public group and let the public group alone sit in judgment and decide the questions by a majority vote of its own membership.

In this way, the public group would have the benefit of all the technical knowledge and advice of both operators and miners. But, acting independently in reaching its decision, its conclusions would be more readily accepted by both sides and would carry more weight with the public at large. After all, when we reach the arbitration stage, we are approaching something so akin to a judicial determination that in certain fields resort to arbitration precludes an appeal to the courts. Representatives of the miners and the operators have as much right to be members of the arbitration board as plaintiff and defendant would have to mount the bench and vote with the judge in a court of law.

Coal Mines Help to Build Highways

LARGE COAL LAND holdings increase the expenses of the holders and the cost of coal, but they help to pay the taxes for maintaining roads and schools. Without such help the public roads would exhibit slow improvement. The public should remember that such expenses, figured either as liquid charges or as a fixed value in the land held, while adding first or last to the cost of coal, bring the motorist speedy transportation. But here, again, the mine owner is sometimes condemned for charging back what he has been obliged to pay. But surely the public would not have him assessed for the building of roads in parts distant from his towns and tipples and yet prevent him from recovering the expenditure, as a charge on coal, in land sales or in royalties.

PITILESS PUBLICITY—The Mine Workers are asking that inquiries be made into the financial affairs of the coal companies. As W. W. Inglis has pointed out, we already have the Coal Commission's thick report. Company books were ransacked to obtain this data. The important omission is facts about the check-off. Will the union furnish this interesting information?

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Anthracite Company Takes Another Big Step Toward True Modernization

Much Less Fuel Is Needed to Supply Electrical Energy to Motors than Steam for Direct Users—Additions to Nanticoke Plant Make Glen Alden Capacity 50,000 Kva.

By C. R. Seem
Electrical Engineer, Glen Alden Coal Co., Scranton, Pa.

ALTHOUGH the Glen Alden Coal Co., generates all its own power, it burned under its boilers in 1924 for all steam raising purposes only 776,548 tons of anthracite, or a quantity equal to but 7.8 per cent of its tonnage shipped to market.

The company is highly electrified because records comparing the relative efficiency of steam and electric drives have impelled the use of electricity. The quantity of steam required to generate electrical energy for motors is, in most instances, less than one third that necessary to drive steam-operated equipment.

The fuel used in the company's electric power plants and auxiliary plants at several collieries was of the lowest grade. The total tonnage consumed by the company, besides generating electrical energy, raised steam to supply direct power applications not yet electrified and heated the collieries.

About 31 per cent of the coal was barley No. 1 and 69 per cent was barley No. 2. Of this tonnage 318,873 tons, or 3.2 per cent of the quantity sold was used to generate electrical energy and 457,675 tons to raise steam for all other purposes. Only barley No. 2 was used in the electric plants.

From this fuel energy was obtained for a connected electric motor load of 140,000 hp., a steam power load of 38,500 i.hp. for steam engines, steam pumps, etc., and an additional load for heating purposes.

Estimated from steam-flow meter records obtained on certain machines, indicator card tests made on others and computed foot-pounds of work done by still others, such as hoisting and pumping units, 185,000,000 hp.-hr. of work was done at the shafts of the drivers. The collection of these data revealed a startling fact regarding the comparative efficiency of steam and electric drives. It was found that for every horsepower-hour of work done at the shaft of a steam engine an average of 76 lb. of steam was required at the boiler house; whereas, for the same work done by an electric motor only a 29-lb. average was necessary.

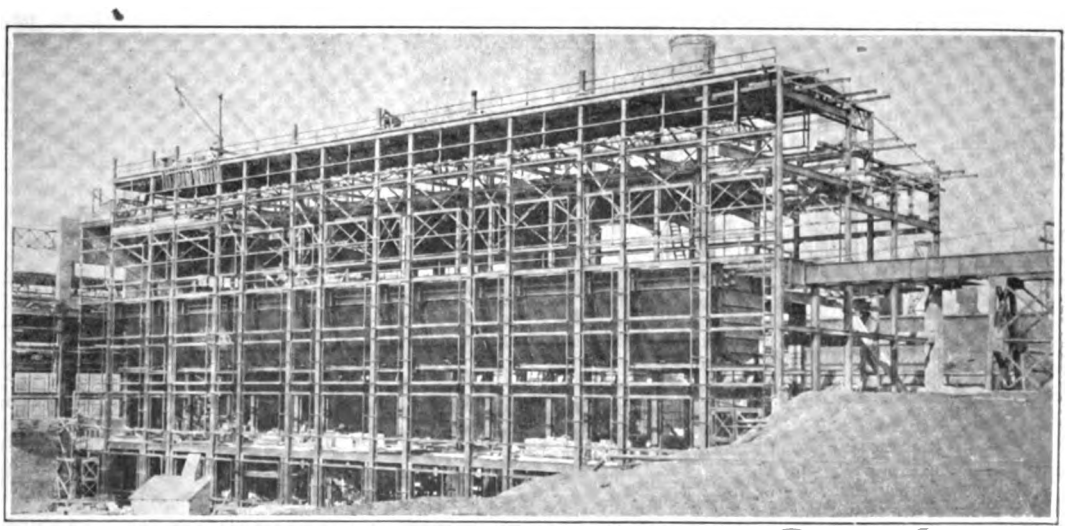
Examination of the flow charts on many large steam engines shows quite clearly a reason for this important difference in steam requirements. These records revealed the fact that stationary mine steam engines even though operated only 8 hr. a day, use as much steam in the other 16 hr. as in the eight while running. The reason for this is that high line losses due to condensation and leaks in joints, traps, throttles, etc., go on continuously and hardly can be avoided even on well kept steam systems. It is difficult to keep every engine and steam line leakless. Also, it is often necessary to leave the throttle of a steam engine slightly open to keep the engine warm and free from condensate. Fortunately, such leaks cannot exist on electric power lines and motors.

Furthermore, the average steam hoisting engine, when in operation, uses about 50 lb. of steam per horsepower-hour, and most pumps use more than 75 lb. These figures are based upon records taken at the machine and disregard the line losses which are always considerable. As compared with this, a modern turbo-electric plant, such as is reasonably possible for a mining operation, produces a horsepower-hour of energy for each 10 to 15 lb. of steam consumed. These data alone show a difference in steam consumption well worth considering. Obviously, when the line losses of a steam-operated mine are compared with the distribution losses of an electrified plant this difference in steam consumption becomes much greater.

To get a more accurate idea of the savings effected by electrification, other factors also must be considered.

Big Plant Under Construction

This addition to the Nanticoke power plant, which is already the largest coal company-owned electric generating station, will accommodate fourteen boilers for about 50,000 kva. in generator capacity. Five boilers are now being installed for a new 15,000-kva. turbo-generator.



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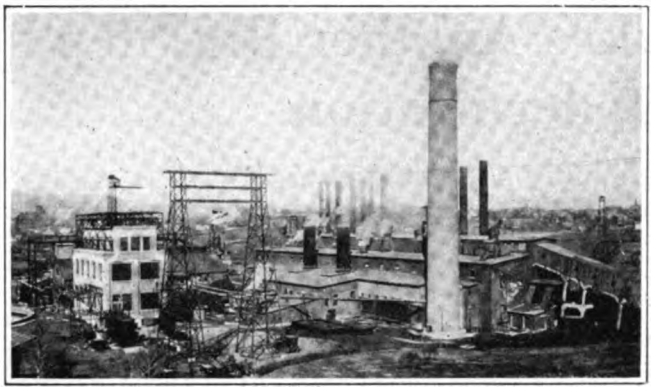


A Pioneer Electric Plant in the Upper Anthracite Field

The problem of supplying cooling water at the Hampton plant was solved by using mine water. Now the plant and operations of the company have grown to the point where additional generating capacity can be more advantageously placed at Nanticoke.

The ordinary mine boiler plant is not handled by skilled operators or provided with modern steam-raising equipment. Furthermore, it is merely another detail in the many duties incumbent upon a mine superintendent or foreman and he cannot be expected to give it expert attention. Isolated mine boiler plants are rarely, if ever, equipped to burn the small-size fuel which can be used in modernized plants, therefore it will be found that they use large quantities of fuel which could be sold. Often they use coal which is much larger than is generally believed. In emergencies—occasions which arise and persist for long periods in winter—it is the general practice to take fuel that would otherwise go to market and use it at the mines.

Power plant improvements which are continually going on have already made it possible for the economic utilization of fuel which is too fine to be shipped to market by the ordinary methods now used. In fact, it has been proved both practical and successful to generate steam from pulverized anthracite.

Therefore, for the double purpose of releasing for market all possible saleable coal and to eliminate the large power losses incident to isolated boiler plants, the Glen Alden Coal Co. for years has carried on a plan of electrification which is still unfinished.

At present the company has four turbine plants, briefly described as follows:

The oldest plant is a 11,000-kw. station located at Hampton. This plant has reached its economic limit. Mine water is used for cooling purposes. The total available flow is barely enough. Physically the plant cannot be redesigned or enlarged without expense that is now unwarranted.

At the Woodward mine near Wilkes-Barre a 1,000-kw. low-pressure turbine is operated. This machine uses exhaust steam from the various hoists and fans at this colliery.

At Storrs, in the Providence section of Scranton, a 2,500-kva. machine was installed a few years ago to use the surplus steam available from a good boiler plant which had formerly supplied the breaker and mine pumps with steam before the colliery was electrified.

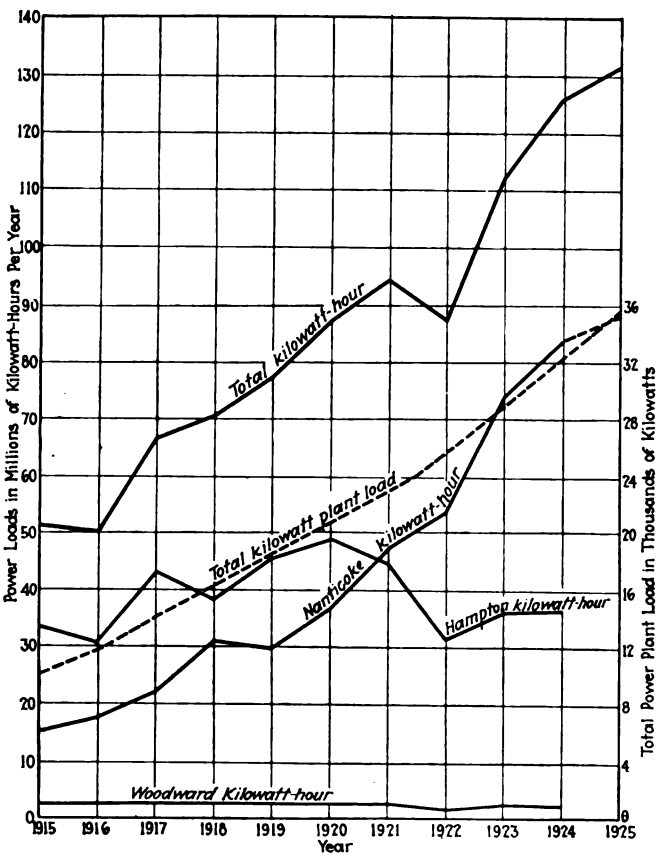
The fourth electric plant is near Nanticoke, Pa. This station is probably the largest and most modern industrial plant wholly devoted to supplying an industrial load. The first machines installed there and put in service in 1902, were three 500-kw. vertical turbines supplied by three 303-hp., hand-fired boilers. The steam pressure was 150 lb. gage, 150 to 200 deg. superheat. Barley No. 1 coal was burned. The water rate of these machines was 27 lb. per kilowatt-hour.

By 1905 five of these machines had been installed. In 1911 it was decided to install two 5,000-kva. turbo-alternators, an up-to-date turbine room including switching compartments and a new boiler plant of twenty 303-hp. boilers. The last of these boilers was installed in 1918. In 1916 all the hand-fired boilers then in service were changed to stoker-fired units, the stack height was increased from 100 ft. to 125 ft. and the plant redesigned to accommodate these changes.

In 1918 a 10,000-kva., 13,000-volt, 150-lb. gage, 150-deg. superheat machine was installed in addition to the two 5,000-kva. units. No additional boilers were put in then because it was impracticable to enlarge the boiler plant.

In 1921 the five 500-kw. vertical turbo-generators were scrapped. At that time sufficient information was available to estimate the continued demand for electrical energy. By studying the growth curve reproduced with this article it could be seen that by 1926 the company would be in urgent need of another large generator.

After the 10,000-kva. turbine was installed in 1918 it was felt that any future additions would have to be made with a view toward taking advantage of everything that well established practices dictated. However, inasmuch as the company did not care to do any pioneering work in this direction, it decided to use 275 lb. steam pressure at 150 deg. superheat with the next unit. Consequently, about a year ago, a 15,000-kva. turbo-generator with two points of stage bleeding was purchased to operate under these conditions. To sup-



Load Curves Show Rapid Progress of Electrification

Year by year the load curve of the Nanticoke plant has shown a steady increase; so also has the total load curve of the company. During the past decade the yearly load has increased 80,000,000 kw.-hr., at an average rate of 8,000,000 kw.-hr. per year. In this same period the total kilowatt demand has nearly reached 36,000 kw.

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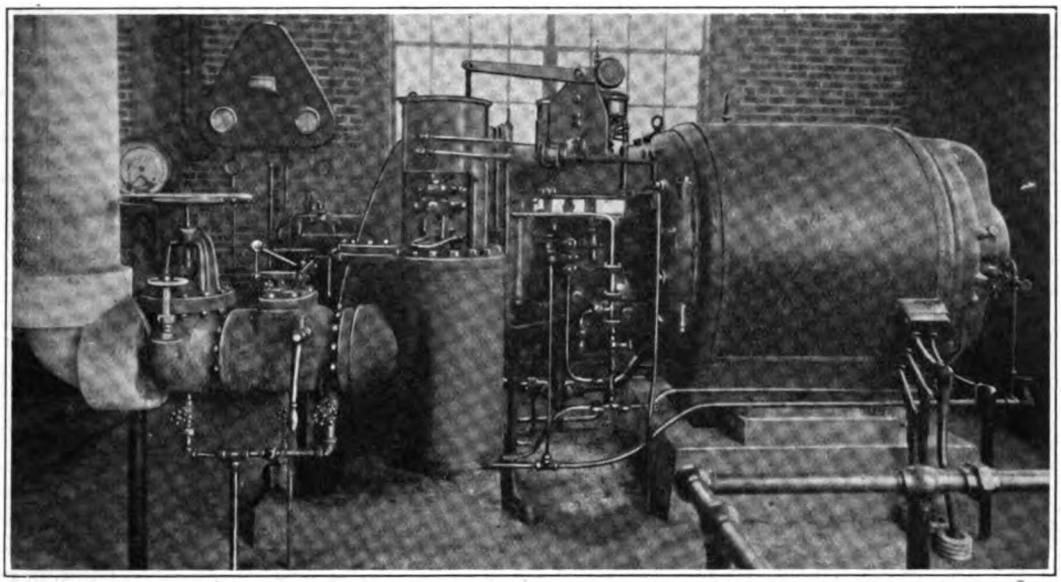
Balances Feed Water Temperature

The governor of this 500-kva. house turbine is influenced by the load on the large turbines in such a manner that sufficient exhaust is always available to maintain the boiler-feed water at 210 deg.



ply steam for this turbine five 6,675 sq ft., Stirling boilers equipped with 3,237 sq.ft. of economizer surface were purchased.

To house this equipment an addition is being built to the power house suitable for fourteen boilers although only five will be installed now for the new turbine. A new tunnel 44 ft. below ground level has been built to the river to carry intake and discharge pipes to insure full water supply at minimum river elevations. The intake water enters through a screen house in which are located three motor-driven traveling chain screens of the vertical type. Trash is removed by high-pressure nozzles squirting warm water through the screen, thus in cold weather but little difficulty will be experienced. This refuse material is then carried away in troughs. The condensing water flows into a sump and provision is made for pumping into the old section of the plant in emergencies as well as to the new 15,000-kva. machine and for two other turbines which may be installed later.

For the present equipment in the plant the feed water is heated in an open-type heater, sufficient exhaust being taken from various auxiliaries to raise the temperature of the water to 200 deg. To make up the difference between 200 and 210 deg. and to take care of variations in demand, a non-condensing, 500-kw. house turbine is floated on the house bus. Its governor is connected to a relay, which in turn is connected to a thermocouple in the stack exhaust of the heater. In this manner the house turbine supplies just enough steam to raise the feed water to 210 deg.

Coal handling at this plant is quite simple. All fuel is shipped from the various collieries over the D., L. & W. R.R. The boiler house is so situated that the supply track enters the plant over the bunkers on a grade of 1½ per cent. In warm weather cars are run directly over the bunkers and emptied into the hoppers through cast-iron gratings which prevent not only foreign material entering the hoppers but serve as a safeguard for the men.

In winter the coal is frozen when it arrives and the cars must stand over the hoppers awhile before they are unloaded. As the cars are in an upper section of the boiler plant this makes an ideal thawing house. The heat of the boilers combined with live steam, which is used under ordinary winter conditions, is sufficient to loosen the coal. In severe weather it is necessary to use auxiliary thawing lines on the cars before they are placed over the hoppers. Some of the cars are often so badly frozen that 3 to 4 hr. of heating are necessary to loosen the coal.

The new plant will accommodate five cars at one time as does the old plant. The bunkers will hold five tons per foot of length or a total of 1,000 tons. The company expects to burn 340 tons in 24 hr., but the ultimate consumption in the new plant alone will be between 800 and 1,000 tons per day. All cars are moved by means of a locomotive, but in emergencies a motor-driven winch can pull the cars in or out of the plant.

There will be two somewhat similar methods of ash disposal at this plant. In the old plant the boilers are set at ground level and the ash pockets are of sufficient capacity to hold the ash produced in about 6 hr. of normal run. This, however, is not a serious factor for the gates on the ash hoppers open directly into a flushing trough, which empties into a deep concrete tank outside the plant.

Water Aids in Moving Ashes

In these hoppers spray water continuously cools the ash so as to keep down the dust and quench all hot material that may come over the ends of the stokers. One man empties the hoppers for the twenty boilers. During the process of emptying the hoppers, high-pressure water is used to assist the movement of ashes into the trough. This is necessary as there is very little pitch to the bottom of the hoppers. After leaving the hoppers the ashes travel to the center of the plant through the flushing trough and, turning at right angles, flow outside into the main ash tank. This tank has sufficient storage for 24 hr. The water level is held constant by means of an overflow pipe.

The ash itself is taken out of the tank with a 1½-yd. grab bucket by means of a revolving, stiff-leg derrick. It is dumped into 3-yd., side-dumping, 36-in. gage cars and hauled to the ash bank by means of a 7-ton electric locomotive.

In the new plant the boilers will be set 15 ft. from the ground. Underneath each boiler double-gate, oil-operated hoppers are already installed. The locomotive and ash cars will be run directly beneath the ash gates and the cooled ashes will be dumped into the cars and

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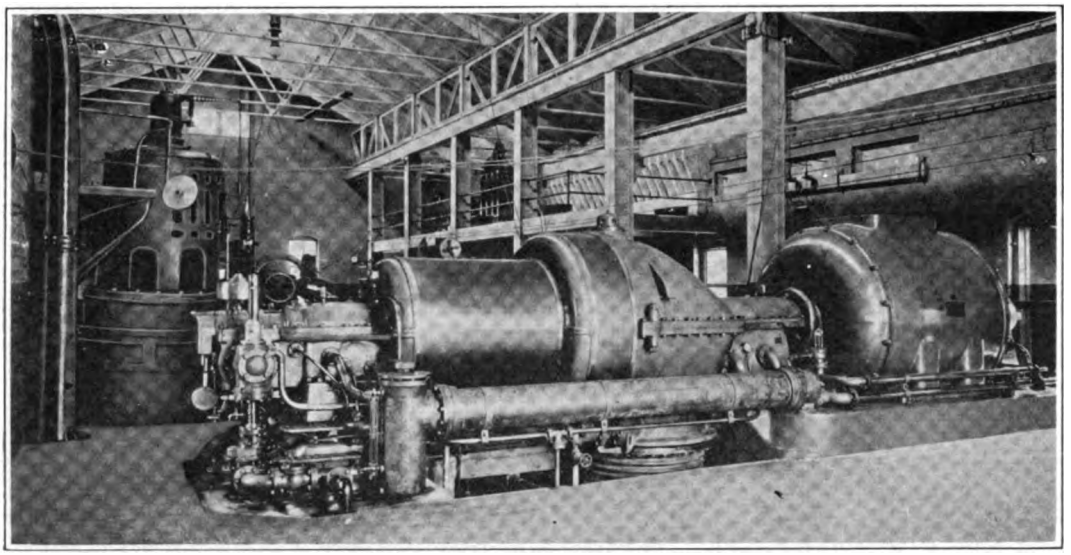


Old Types Are Replaced

The Glen Alden Coal Co. generated its own power when vertical turbines were the most modern units of the day. On the left-hand side of the picture stands one of the old vertical turbo-generators originally installed at the Hampton power house. Always keeping pace with new developments, the company is now installing a 15,000-kva. unit which has two stages of bleeding.

removed to the bank. Under the tracks and leading to the main ashpit of the old plant, is a cast-iron lined, concrete, flushing trough. Over this and under the tracks is a cast-iron grating. All of the spillage and splash from the cars falls into the trough and is washed to the main pit. Likewise, if for any reason the ash cannot be dumped into the cars it will be possible to drop it directly on the grating from which it will fall into the sloping sides of the trough and then be washed to the main pit.

The gates on these hoppers are water-tight, measure 5x4 ft. and are operated by oil cylinders. Oil pressures are maintained by a special pump and a duplicate unit is provided for emergencies. The use of oil under high pressure insures a positive movement of the gate and while the gates move quickly there is no slamming or rebound. With the use of oil there is no fear of winter freezing and higher pressures can be used more successfully than with water systems. This is important as the doors to the ash tunnel must be open to permit the locomotive to place the cars.

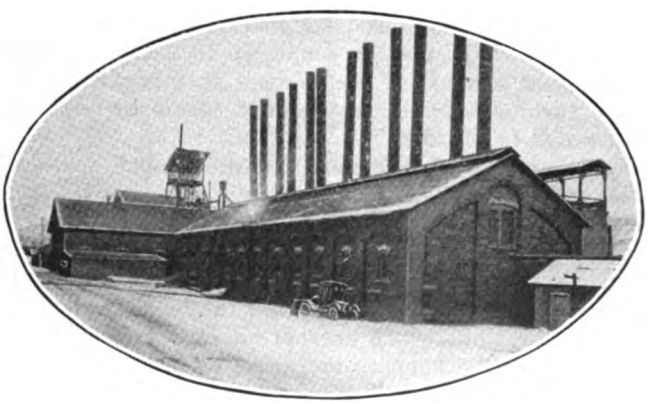
The company expects this system to work cheaply and efficiently. One man is employed for dumping the hoppers in both plants. One man handles the ash bucket derrick and one man the locomotive and ash cars. On the ash bank two men are required to dump cars; they also move track and keep things in operation there. One extra man will be employed on the eleven o'clock shift to empty the pockets and to render any necessary help. This makes a total of six ash men for the whole boiler plant which will have a total capacity of about 11,000 hp. All ash will be handled during the day shift.

Electricity is generated at four different voltages. The larger and newer turbines, the 15,000 and 10,000-kva. units, generate energy at 13,200-volt pressure; the two old 5,000-kva. machines generate at 4,150 volts. The longer and heavier feeders go directly from the 13,200-volt bus to their various transformers or directly to the collieries. For some of the collieries, particularly those which are situated near the generating plant, the distribution lines lead directly from the 4,150-volt machine bus. The plant originally generated all energy at 4,150 volts pressure. The 500-kva. house turbine generates 440-volt energy. This goes directly into the 440-volt house buses. Direct current for excitation, also for charging storage batteries and emergency lighting service is made at 125 volts.

The 4,150-volt bus and the 13,200-volt bus are connected together through three 2,500-kva. transformers separated by means of disconnecting switches and an oil circuit breaker.

To supply current for the power house system there are two 440-volt buses, one being supplied through a transformer bank connected to the 13,200-volt bus and the other by a similar bank connected to the 4,150-volt bus. The house turbine can feed directly into either of these 440-volt buses, which may also be tied together by operation of interconnecting switches. This gives a flexible and reliable means of supplying current to the plant auxiliaries.

The circuit breakers for the 13,200-volt machines are being located close to the machines just below the main floor. Leads are run from these switches to the buses in the switch gallery; feeder switches are also located nearby. Plans are being made to rearrange the buses so that in case of accident or inspection a regular service switch can be disconnected and worked upon. Power for the operation of these switches and the main board will be supplied by a storage battery. In case of failure of the battery circuit, emergency service can be obtained from the excitation system. The control board is located on the main turbine room floor and is handled by the engineer in charge of this section of the plant.



Power for Two Mines Generated Here

This plant supplies the larger part of the energy consumed by Jerome Mines Nos. 1 and 2 operated by the Hillman Coal & Coke Co. at Jerome, Pa. The capacity of the plant, which burns crushed picking-table refuse from the C-Prime seam, is 800 kw. In addition, a normal load of 600 kw. of purchased power at 2,200 volts is conducted to underground substations where it is converted into direct current. When this plant was built in 1904 a plentiful supply of stone was available for its construction.

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Poor Drainage Ruins Concrete Shaft Linings*

Survey in Pennsylvania Shows 30 of 106 Failed Though Cement Was Good—Freezing and Thawing of Leakage Destroy Walls—Remedies Are Suggested

By Newell G. Alford
Pittsburgh, Pa.

THE NEED for adequate drainage behind concrete linings of coal mine shafts seems apparent from a survey of installations in western and central Pennsylvania. Thirty of the 106 concrete shaft linings studied were distinct failures and in every case insufficient drainage was the outstanding difficulty. The results of the survey suggest improvements in concrete lining practice.

Twenty-two years have now elapsed since the first mine shaft in America to be lined throughout with concrete was completed at Gary, W. Va., in 1903. The practice of thus lining shafts rapidly spread until by 1915 it had become practically universal not only for coal mines but iron mines as well.

In 1921 failure of two concrete linings at western Pennsylvania mines led to the survey covered in this paper. This study was confined to the central and western districts with no organized effort to extend it beyond the state boundary. No decided lining failures have yet been reported outside of this region.

In all but six cases of the 30 failures studied these linings gave trouble within two years after installation. No fault can be found with the cement because good grades were used in all instances. In 17 of the failures the aggregates were approved sand and gravel; in the remainder they were either gravel and crushed sandstone, gravel and crushed limestone and sandrock, slag and sand, or simply crushed sandstone.

In nine cases the workmanship was reported as being either "fair" or "bad." These terms, however, are so relative in their significance that they mean little. If the work was not of the best the blame should, doubtless, be shared by the coal company and should not be borne entirely by the contractor. Lining a shaft involves the chuting of the wet concrete into the forms through conveyor pipes of either rigid or flexible design with a consequent doubt as to whether the cement is thoroughly mixed with the other ingredients when the material finally comes to rest. Not infrequently disproportionate quantities of the cement are floated to the surface of the batch. This uncertainty with numerous others can easily result in controversy that should be anticipated by properly drawn specifications.

In all of the failures, lack of sufficient drainage was a principal cause. Leakage was estimated at anywhere from a mere seepage to 50 gal. per minute. Severe temperature changes with alternate freezing and thawing of the water that penetrated the concrete destroyed the surface of the lining. After the face had scaled off, a disintegrated mass was invariably found beneath.

Undoubtedly the greatest problem involved in successfully lining a shaft is the determination of the drainage required. One or two holes were drilled outside a few of the linings that failed without carrying away the water. These linings, however, were not supplied either with bleeder pipes or water rings, which experience shows are essential to the successful handling of water where its pressure is great enough to effect penetration of the lining. Where grout was used to permanently seal off water it was nowhere reported as successful. This indicates that it should only be used as an aid to sinking.

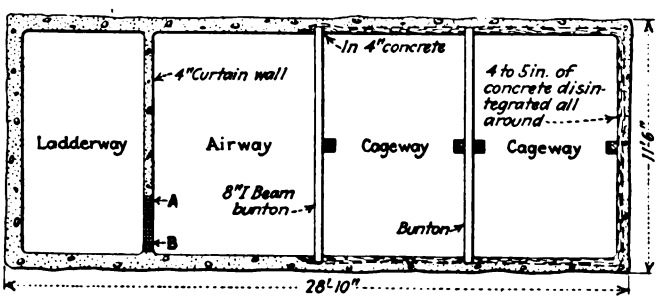
In many of the successful linings no drainage of any kind was supplied and the success of these linings to date can only be attributed to the dryness of the strata which they penetrate.

One company with 18 concrete linings has, within the past year, drilled from one to three holes outside the shafts to carry water to the bottom and to stop penetration of the concrete. After these linings had thus been rendered dry, their faulty sections were repaired. So far the result has been satisfactory but the work has yet to pass through the season of greatest temperature variation, which, at the same time, furnishes the largest quantities of water. This company has one shaft in which three such linings were built within nine years.

Good concreting practice demands that the mixture should be as dense as possible. Uniform density can best be maintained by checking the mix volume with actual weights at sufficient intervals to avoid erroneous volume measurement caused by the swelling of damp sand.

During at least the first 48 hr. of setting, the concrete should be protected entirely from contact with shaft water. The cost of this protection in some cases will be high, depending chiefly on the quantity of water in the strata penetrated and to a much lesser degree on the ingenuity of both the designing engineer and the contractor.

A typical failure, designated as Shaft No. 9 in the accompanying table, is an intake airway that was sunk and lined in 1915. The drawing shown with this article



Shaft Section Showing Disintegration of Curtain Wall

This rectangular shaft contains four compartments, yet it is crossed by only one curtain wall, of reinforced concrete 4-in. thick. Unquestionably disintegration of the lining resulted from alternate freezing and thawing of ground water penetrating the shaft walls. Strangely enough, the curtain wall, not subject to direct contact with this water, in places suffered complete disintegration from *A* to *B*, only the reinforcing being left.

*Abstract of paper entitled "Failure of Concrete Shaft Linings at Pennsylvania Bituminous Coal Mines," presented before a meeting of the Engineers Society of Western Pennsylvania, Nov. 24, 1925.

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is a section of this shaft. It represents an especially difficult condition in that the shaft sinking was practically dry with water pressure developing later on.

In the lining mixture a standard grade of Portland cement was combined with Allegheny River sand and gravel in the proportions of 1:2½:5. Aggregates from the Allegheny River were chosen because they are freer from foreign matter than are those dredged from the Monongahela River. No water-proofing was used. No grouting was done, and no water rings installed. The concrete was rammed tight in a workmanlike manner.

The curtain wall, which was 4 in. thick and reinforced with vertical wires on about 15-in. centers, was composed of a mixture of 1:2:3 with the same cement and aggregates as the lining.

The shaft, which is about 215 ft. deep, penetrates rock only, and while it was being sunk practically no water was encountered. Soon after the shaft was completed, the lining became wet near the surface and a drill hole was put down behind the shaft to relieve water pressure.

In the spring of 1922, after the last thaw, the surface of the lining began to scale off in small sections about an eighth of an inch thick. Little additional disintegration took place until the winter of 1922-1923. Alternate freezing and thawing during that season continued the process of scaling and when spring came the disintegration had taken off as much as 4 to 5 in. from the face of the lining opposite the cage ways, as shown on the drawing. The curtain wall from *A* to *B* was destroyed entirely, nothing being left of it except the bare reinforcing.

Disintegration of the concrete began about 45 ft. below the surface and continued to the bottom of the shaft. In many places the lining had completely fallen away from the ends of the steel buntons that held the guides and in several instances the buntons were loose at the ends and supported altogether by the guides. In places the shaft lining had entirely fallen out, showing the rock. In many places also the concrete had a soft, rotten appearance and was easily dug out with a pick. In one or two cases where an exceedingly small stream of water percolated through the concrete, there were deposits of white, mushy material that looked very much like lime.

In cold weather the ice around the lining frequently required trimming with picks so that the cages could have clearance. At the ends of the airway section the lining was intact and the surface of the concrete was apparently perfect. Fifty thousand cubic feet of air per minute, about one-fourth of the total intake for the mine, enters this shaft. The concrete lining was recently replaced with one built of brick.

Data covering the 30 linings that failed are set forth in the accompanying table.

A study of the conditions in both the successful linings and those that failed prompts the conclusion that concrete lining practice may be improved by careful attention to the following details:

(1) By providing sufficient drainage behind the lining to relieve natural water pressure from

Pertinent Data Relative to Shafts in Which Linings Failed

No. of Installation	Year Shaft Was Sunk	Year Lining Was Installed	Is Shaft Downcast or Upcast?	Estimated Leakage Gal. per Minute	How Long After Installation Before Disintegration Began?	Proportions of Concrete Used	Kind of Aggregates Used	Were Water Rings Installed?	Was Any Grouting Done?	Was Back Drainage Supplied?
1	1917	1917	Downcast	50	2 yr.	1:2:4	River sand and gravel	No	No	
2	1917	1917	Downcast	30	2 yr.	1:2:4	River sand and gravel	Yes	No	
3	1918	1918	Upcast	20	2 yr.	1:2:4	River sand and gravel	Yes	No	
4	1917	1917	Both	5	At once	1:2:5	Gravel and crushed sandstone.....	No	Yes	
5	1918	1918	Both	10	At once	1:2:5	Gravel and crushed lime and sandstone	No	No	
6	1917	1917	Downcast	20	3 mo.	1:2:4	Crushed sandstone	No	No	
7	1917	1917	Both	20	3 mo.	1:2:4	Crushed sandstone	No	No	
8	1920	1920	Downcast	30	1 yr.	1:2½:5	Broken stone and gravel	No	Yes	
9	1915	1915	Downcast	10	7 yr.	1:2½:5	River sand and gravel	No	No	
10	1917	1917	Upcast	10	2 yr.	1:2:4	River sand and gravel	No	Yes, not successful	
11	1917	1917	Downcast	10	At once	1:2:4	Sand, gravel and crushed rock.....	No	No	
12	1914	1914	Downcast	30	1917	1:3:4	River sand and gravel	No	Yes	Drain tile
13	1914	1914	Downcast	30	1915	1:3:4	River sand and gravel	No	Yes	Drain tile
14	1914	1914	Downcast	20	1915	1:3:4	River sand and gravel	No	Yes	Drain tile
15	1914	1914	Downcast	20	1916	1:3:4	River sand and gravel	No	No	Drain tile
16	1916	1916	Downcast	30	1917	1:3:4	River sand and gravel	No	No	Vertical pipes
17	1918	1918	Downcast	20	1920	1:3:4	River sand and gravel	No	No	Vertical pipes
18	1906	1919	Neutral	..	1922	1:2:4	Slag and sand	No	No	Bleeder pipes
19	1907	1919	Neutral	..	1922	1:2:4	Slag and sand	No	No	Bleeder pipes
20	1914	1914	Downcast	Seepage	Uncertain	1:2½:4	Sandrock, gravel and sand.....	No	Yes	No
21	1919	1919	Downcast	30	1922	1:2:4	Sand and gravel	Yes	No	No
22	1909	1910	Downcast	30	1915	1:2:4	Sand and gravel	Yes	No	No
23	1914	1914	Downcast	30	1918	1:2:4	Sand and gravel	Yes	No	No
24	1919	1919	Downcast	20	1922	1:2:4	Sand and gravel	Yes	No	No
25	1918	1918	Downcast	30	1920	1:2:4	Sand and gravel	Yes	No	No
26	1911	1911	Downcast	50	1920	1:2:5	Sand and gravel	Yes	Yes	No
27	1917	1917	Downcast	10	1920	1:2½:5	Sand, gravel and crushed stone	No	No	Yes
28	1916	1916	Neutral	30	1920	1:3:5	Stone, sand and gravel	No	Yes	Yes
29	1917	1917	Downcast	Seepage	1918	1-2-5	Crushed sandstone	No	Yes	No
30	1918	1918	Upcast	Seepage	1918	1:2:5	Crushed sandstone	No	Yes	No

NOTES:—Shaft No. 9 described in text. Concrete replaced with brick lining in November, 1925. Shaft No. 12, concrete replaced with brick lining in October, 1925. Shaft No. 14 relined with concrete in 1924. Shafts Nos. 18 and 19, concrete mixed thin on surface and poured through 6-in. pipe to the forms. Cement scaled off surface with honey-combed condition found in body of the concrete. Water pressure doubtless separated cement from slag aggregate despite bleeder pipes inserted to relieve pressure. Shaft No. 20, an excess of water was used but mix was well spaded. Shaft No. 23 was relined in 1921 and 2-in. drain lines employed. In 1923 drain lines became choked and shaft became wet. Two boreholes were then sunk outside of lining, thus draining water to the bottom. Shaft is now dry. Shaft No. 25, drill holes were sunk outside of lining in 1924. Shaft No. 26, water worked through concrete followed by freezing and disintegration. Lining was replaced in 1923 with 1:2:4 concrete mixed with Medusa water-proofing powder. Rings were cut in old concrete and strata where water flowed; 2-in. pipe conducts water to bottom. Shaft is now practically dry. Shaft No. 28, piers at shaft bottom were replaced and part of lining resurfaced in 1921.

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the rock strata and prevent water from penetrating the concrete.

(2) By using a mixture that is uniform, and as dense as possible, with complete protection from contact with both shaft and surface water until setting is complete.

(3) By pouring the mixture into the forms with equipment that does not require the use of water beyond what is needed for proper mixing.

(4) By making closure joints homogeneous with the rest of the lining.

(5) By using grout only as an aid to sinking and not for permanently keeping ground water from contact with the lining.

(6) By more rigid inspection.

It is proposed to continue this study of concrete shaft linings in Pennsylvania and other states as well.

Storage Rack Reduces Rot in Mine Timber Piles

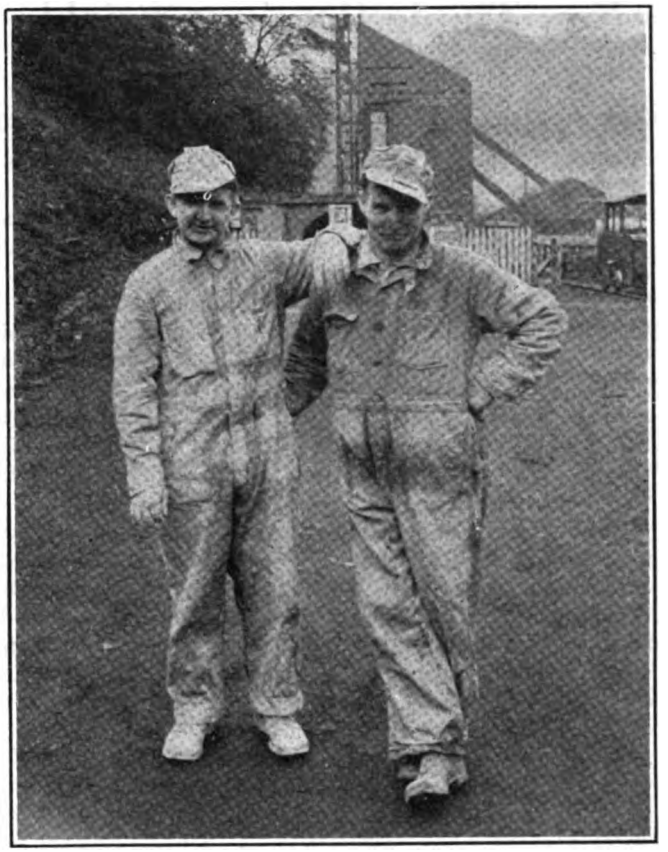
Untreated ties, posts, and capboards have, at best, a short life in the average mine. Proper timber storage such as is provided at the New Castle Coal Co. mine, New Castle, Ala., help to increase it. When the usual method of storing this material is followed, it is not uncommon for posts near the bottom of the pile to lay undisturbed until they rot completely or until they have deteriorated to a point where, after hauling into the mine and perhaps setting, it is discovered that they are unfit for use. In the latter case there is a double loss; the post itself, and the labor expended in taking it into the mine and setting.

The concrete-and-steel timber rack at New Castle eliminates this loss of timbers lying at the bottom of the pile. The rack resembles the self feeders now used in some sections of the country for fattening hogs. As can be see in the illustrations, old boiler flues are used to form the front and back ends of the bins so that the whole pile of contained posts moves progressively toward the opening near the bottom at the front where the timbers are taken out.

Eight Bins for Ties and Posts

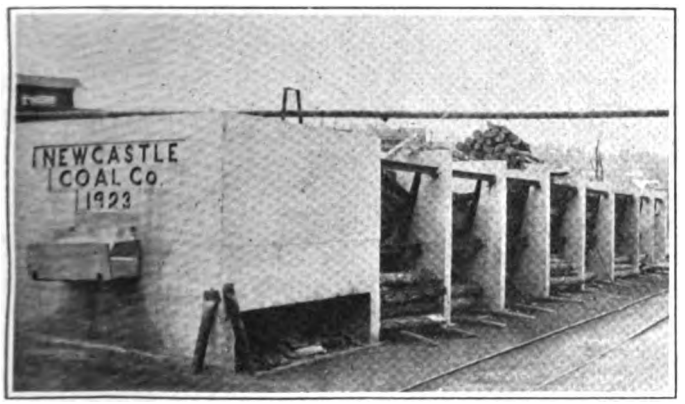
In addition to a bin for capboards, eight other compartments are provided; one for room ties, one for entry ties, and six for posts. The stock of posts consists of the following lengths: 4 ft. 8 in., 5 ft., 5½ ft., 6 ft., 6½ ft., and 7 ft. The respective compartments are of lengths corresponding to those of the posts.

The rack is located close to the mouth of the slope, and a track has been built alongside so that the timbers can be loaded directly into the mine cars. Having the various lengths of posts in separate bins lessens the mistakes in filling orders for timbers of any specified length. The rack adds neatness to the appearance of the timber yard.



Shades of T. R.! More Nature Fakers!

These clownish lads are not really "white coal" miners, though they are right out of a mine after a full shift. Instead they are Harry Camp (left) and Fireboss Jimmy Simpson, the rock dust twins at the Harmar mine of the Consumers Coal Co., Harmarville, Pa. When this picture was taken they had just finished distributing 116 80-lb. sacks of pulverized stone in their 6-hr. turn below.





Front and Back Views of Rack That Adds to Life of Mine Timber

At the left is the front of the New Castle storage plant. In the foreground is the bin containing the supply of capboards. The eight other compartments are of lengths corresponding to the ties and posts which are standard for the New Castle mine. Taking posts from the bottom of the pile insures against deterioration that might be caused by long storage close to the ground.

The rear of the racks is to be seen in the picture at the right. Wagons delivering the timber are driven along this side of the rack. Each length of post is put into the bin of corresponding length. Old boiler flues were used to shape the end of the bins so as to make the posts feed progressively toward the opening.

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New Tipple Prepares Friable West Virginia Coal

Larger Sizes Picked Separately—All Grades May Be Reunited or Shipped Alone—Bradford Breaker Salvages Coal

A 3,000-TON PLANT for the preparation of bituminous coal at Elkhorn, W. Va., on the main line on the Norfolk & Western Ry. was recently completed for the Crozer Coal & Coke Co. This installation is particularly interesting in that it is intended to treat with as little degradation as possible the friable Pocahontas coal produced in this region. It is by no means an experiment, however. About five years ago the engineers responsible for its construction designed and built the preparation equipment serving the Pageton mine of the same company.

When it was decided that a new plant should be built at Elkhorn, it was deemed advisable to embody in its construction the type of equipment that had proved its utility at Pageton. Certain details have been added, however, so that the new tipple can prepare five different sizes of coal loading them on four tracks. This was accomplished by providing a pea coal bin of 220 tons capacity spanning the nut-coal track. Thus both pea and nut sizes are loaded upon the one track.

The quick-return, oscillating picking table installed in this plant is of large capacity and so arranged as to segregate the lump and nut coals, delivering each to separate picking spaces thus affording ample opportunity for removing the impurities. This is accomplished by using a "wing" type of screen which permits not only separate picking of the various sizes but their recombination after screening and cleaning. Thus either picked nut and egg coal can be made or these sizes can be combined with the others when picked run-of-mine is to be shipped to satisfy a fastidious market.

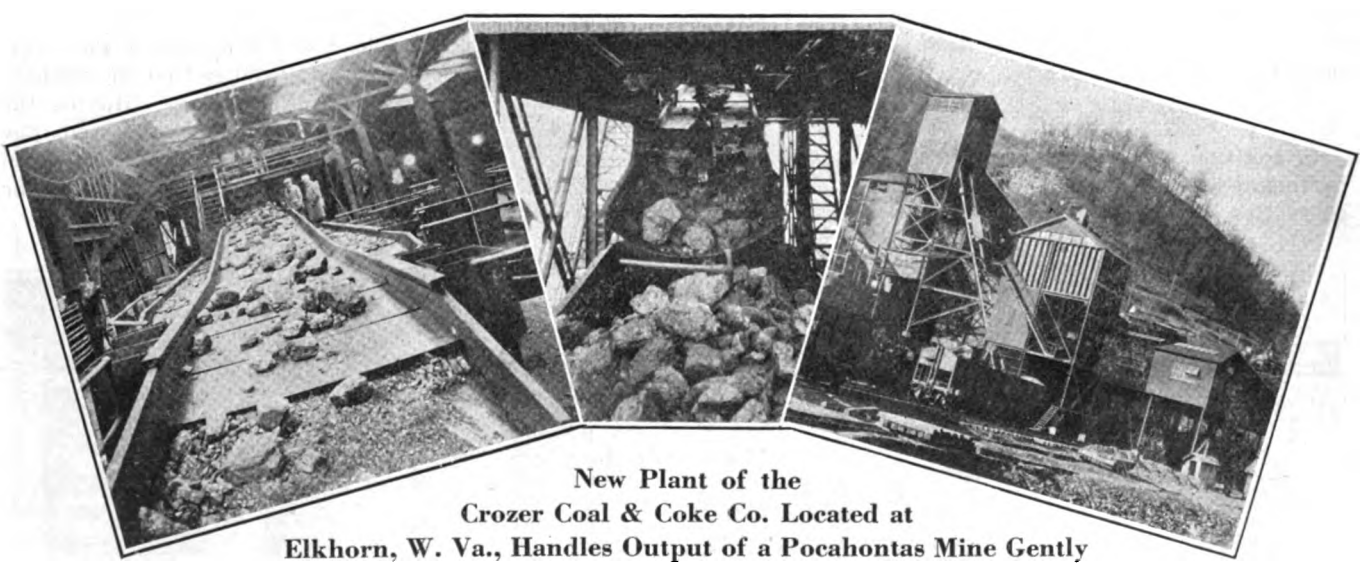
In the accompanying illustrations, one photograph shows this feature, how the lump coal proceeds in the middle compartment by itself and is separately picked, while on the side wings the nut and egg coals receive separate treatment by the pickers, after which these various sizes are recombined to form a picked run-of-mine. In this view the coal is moving toward the camera.

Bone with good coal adhering to it, and slate or rock are picked out and disposed of separately through chutes leading to a two-compartment conveyor which delivers these materials into a large, duplex hopper, automatically feeding to a double compartment skip. This in turn elevates these products to a Bradford breaker and a rock disposal bin, respectively. The breaker salvages the good coal from the bone and rock and returns it to the screens for sizing into nut, pea and slack. This relieves the pickers of considerable labor, enables the plant to handle a larger daily tonnage and saves good coal that otherwise would go to the rock and slate disposal dump. These economies justify its cost.

USE SHAKING LOADING BOOMS

For carefully loading the lump, egg and nut coals after screening, picking and rescreening, shaking loading booms are employed. These consist of two reciprocating sections balanced against each other. The upper sections are provided with liberal rescreen areas so that any degradation made in the process of picking on the table is finally removed just before going to the railroad car.

The central illustration shows the lump coal boom loading down close to the coal in the car. The booms in this tipple deposit their loads in the cars with a minimum of drop and breakage. The mechanical simplicity of these devices also renders them highly efficient and popular. Screenings from them are delivered to the conveyor handling bone pickings and eventually



New Plant of the Crozer Coal & Coke Co. Located at Elkhorn, W. Va., Handles Output of a Pocahontas Mine Gently

At the left is shown the combined screen and picking table. First the coal passes over screens where the various sizes are separated. The smaller coals then travel along the wings where they are separately picked. Near the discharge end of the table the smaller sizes may be either reunited with the lump for shipment as picked run-of-mine or each size may be loaded separately.

The lump loading boom is illustrated in action in the center photograph. This inclined chute shakes back and forth longitudinally. Its inclination is below the critical angle so that the coal refuses to slide except when the trough is oscillated. Chutes of this kind place the coal in the cars gently and with small breakage. In this installation the upper end of the chute carries degradation screens so that the product is placed on the car in excellent condition.

The Elkhorn tipple is at the right. At first sight this installation does not appear appreciably different from others—it is in its details, however, that that differentiation becomes apparent. Five sizes of coal may here be loaded on four tracks. This is made possible by a pea-coal bin of 220 tons capacity to which this size is delivered and from which it may be loaded either direct to car or passed to it by way of a shaking loading chute. Note the two-compartment skip which is here shown approaching the dumping point. This elevates the slate and rock to the refuse bin and the intergrown coal and rock to a breaker that salvages the coal.

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find their way to the screenings car on the slack track.

For removing pea coal from the 1-in. and smaller size an electrically vibrated screen is placed beneath the picking table between the nut and slack tracks. The fine material from this unit is delivered to a belt conveyor which elevates it to proper height for loading into the slack car. The pea coal or oversize from this electrically vibrated screen is elevated to the pea bin from which it can be loaded into railroad cars by either of two methods. The first is intended for emergencies only and is by means of a gravity loading chute on which this material is rescreened to remove any fines that may have been made during its passage through the pea coal bin. The second is by way of the boom ordinarily used for the nut coal. To send this material by this route a special gate and chute delivers it from the pea bin to the rear end of the upper section of the shaking nut boom. By this means the pea coal is mechanically rescreened over this device and is "boom loaded" so that it satisfies the most particular markets.

An up-track view of the plant accompanying this article shows the pea bin as well as the two-compartment skip for elevating the rock pickings to the refuse bin and bone pickings and rescreenings to the breaker. As previously explained, the salvaged coal from the bone pickings together with the rescreenings from all the sizes is returned to the main screen and eventually finds its way to the nut, pea and slack coal cars.

The operation of this skip equipment is automatic in every respect. It is automatically loaded, started, stopped, emptied, and reversed, and requires no attention from the plant attendant. The electric controller employed for this service is provided with an oil dash pot and is fully inclosed within a steel cabinet. It is unfailing in operation and permits the continuous ascent and descent of the skip. The illustration shows it approaching the dumping position.

Plant Well Lighted and Fireproof

This plant is of heavy construction throughout, is lighted with a generous number of windows and skylights and is covered with corrugated asbestos-protected metal. All units of the equipment are separately motor driven with remote control for starting and stopping.

All drives are protected by guards for the safety of the workmen. The layout of the machinery and the size of the tipple provides ample room for the pickers and other workers while the equipment is running, and the arrangement is such that all machinery is accessible for its proper care and operation.

The results obtained at this preparator so far as the loading of clean, carefully sized coal containing a minimum of degradation is concerned as well as its economy in operation and maintenance, warranted this company in recently contracting with the Roberts & Schaefer Co. designer and builder of this plant for a similar but larger capacity installation for its Upland (W. Va.) mine.

International Explosion Tests Prove U. S. and British Coals Alike

There is but slight difference in the behavior of standard American and British coals when subjected to identical tests to determine the quantity of stone dust which must be mixed with coal dust in order that the mixture shall be incapable of propagating flame when raised as a cloud in the air. This was determined by co-operative tests conducted at Pittsburgh, Pa., by the U. S. Bureau of Mines and by the Safety in Mines Research Board at the British Experimental Station at Eskmeals, Cumberland, England. The importance of this finding is that it should render available for direct application to each nation's problem of mine danger the results of the other's experiments.

Mining engineers have no doubt been puzzled heretofore by the apparently different conclusions arrived at by the explosions in mines committee of the British Home Office and the Bureau of Mines of the United States regarding the quantity of rock dust which must be mixed with coal dust in order that the mixture shall be incapable of propagating flame when raised as a cloud in the air.

The British experiments have been confined almost entirely to dust from the Altofts Silkstone coal. The American experiments have dealt with a wide diversity of coals. But recently each government has tested imported samples of the other's coal dust. The results obtained form the basis of a report just issued by the Mines Department of Great Britain under the terms of the arrangement for co-operative research made between the Safety in Mines Research Board and the U. S. Bureau of Mines. Copies of this report, known as Safety in Mines Research Board Paper No. 13, "Stone dust as a preventive of coal dust explosions. Comparative tests," by G. S. Rice and R. V. Wheeler, may be obtained from H. M. Stationery Office at Adastral House, Kingsway, London, W. C., 2, at a price of 3d. net, plus the cost of foreign postage.

Explosibility of Ammonium Compounds—An investigation of the properties of ammonium nitrate that influence its safety in storage, handling, and use, is being conducted by the U. S. Bureau of Mines, in co-operation with the National Research Council. The investigation during the previous fiscal year had shown that ammonium nitrate was not combustible; supports the combustion of oxidizable materials; is not readily detonated by fire or heat, but can be detonated by a No. 8 detonator alone and by boosters of various explosives. The detonation is aided by increased confinement and greater density of the ammonium nitrate. During the past fiscal year the effect of temperature on the sensitiveness of ammonium nitrate and the rate of detonation of ammonium nitrate at different temperatures was determined. It was shown that ammonium nitrate is more sensitive to detonation at the higher temperatures, and that its rate of detonation was greater at the high temperatures.

As part of the program in the study of the explosibility of ammonium compounds, an investigation has been conducted on the explosibility of urea nitrate at the request of the Fixed Nitrogen Research Laboratory. The Bureau's interest in this material is in its possible use as an explosive or a component of explosives. An investigation, therefore, was made to determine whether it was in fact an explosive. The preliminary tests showing that urea nitrate is readily detonated by a No. 8 electric detonator, the investigation was then extended to determine the physical properties of urea nitrate as an explosive.

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Union Pacific Coal Co.'s Code of Standards—IV*

Safety Standards (Continued)

7. Working panels shall be sectionalized by dusting and dust barriers as shown in Fig. 18.

8. In any place where complete protection is not afforded by the foregoing, additional districts shall be established which shall be sectionalized by dust barriers in a manner similar to the foregoing and subject to the approval of the safety engineer.

9. Areas worked by the room-and-pillar method off entries shall be sectionalized in the manner shown in Fig. 19.

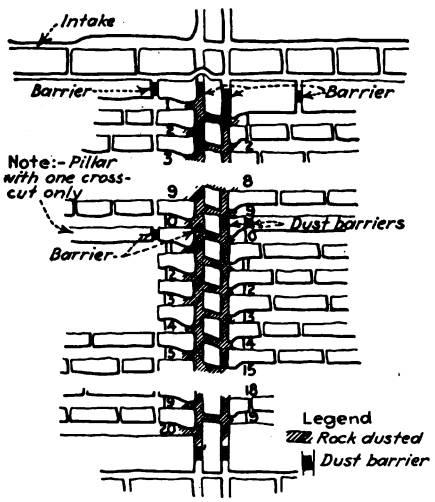

Fig. 18—Protection of a Panel Slope

Rock-dusted travelways supplemented with barriers separate the workings so that not more than twenty rooms are included in one section.

10. Slopes, panels, entries, haulageways and traveling ways shall be rock dusted in a manner prescribed by and subject to the approval of the safety engineer, which, however, shall be in a manner now or hereafter approved by the U. S. Bureau of Mines and the state mining inspector.

11. All bugdust (machine cuttings) must be loaded out before the place is shot. Bugdust shall be thoroughly wetted down before loading.

12. Cutterbars of all mining machines must be equipped with hose and water.

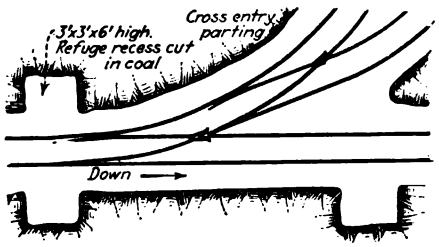

Fig. 20—Refuge Holes Along Haulageway

Recesses are cut in the ribs of the gangway at switch points on main slopes to provide a refuge place for rope riders and others.

13. Water lines shall be extended to all working faces.

14. Working places will be thoroughly sprinkled by the miner for a distance of 50 ft. from face before shooting, otherwise the place will not be shot.

15. No persons except those duly authorized by the mine foreman shall be permitted to ride on any empty or loaded trips.

16. Rope runners shall see that on trips devoted to the hoisting or lowering of men that no one is permitted to ride unless he is seated. Over-crowding of man trips or riding the "hitchings" of man trips is absolutely prohibited. Persons boarding or getting off man trips while in motion subject themselves to discharge.

17. Sec. 4,454, Wyoming Compiled Statutes.—" . . . And such train of cars known as a man trip shall not be run at a greater speed than 5 m.p.h. When tools are carried on man trips they shall be carried in a separate car provided for that purpose and it shall be a violation of the law for any miner or other person to carry his tools except as herein provided."

18. Safety manholes shall be located every 50 ft. on all main haulageways and slopes.

19. Man or refuge holes at entry switches on main haulage slopes will be arranged as shown in Fig. 20. Manholes shall also be provided at all heading switch positions upon which haulage is mechanically operated.

20. At crossings of all regular traveling ways and locomotive haulage roads, and on partings, the trolley wire shall be protected by a guard which shall be supported in the manner shown in Fig. 21.

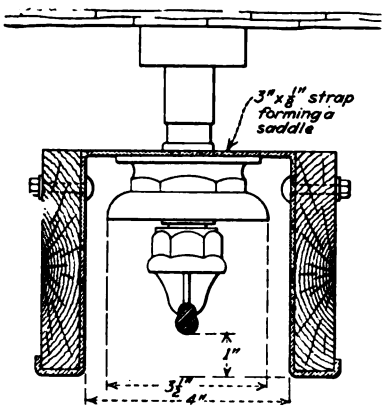

Fig. 21—Trolley Wires Are Guarded

This method of protecting trolley wires is used where a travelway crosses under a trolley and also at partings.

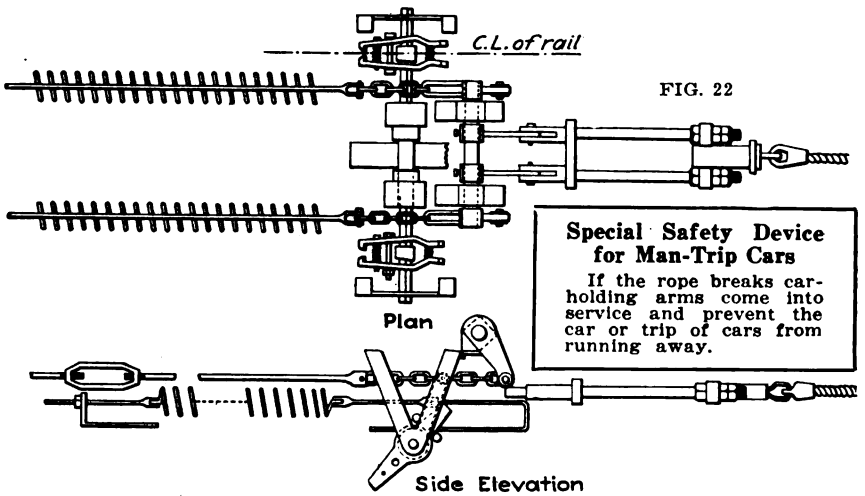

FIG. 22

Special Safety Device for Man-Trip Cars

If the rope breaks car-holding arms come into service and prevent the car or trip of cars from running away.

21. At all mines where man trips are handled by hoists on slopes, the man trip shall be provided with a safety device which will prevent the trip from running away in the event of breakage of the hoisting cable, or the trip becoming uncoupled. These devices shall conform to Fig. 22, details of which may be obtained from Drawing P-126, on file in the chief engineer's office.

22. All slopes including panel slopes being driven to the dip in development shall be protected by a safety switch which shall conform to Fig. 23.

23. At the slope entrance to each mine there shall be installed a safety

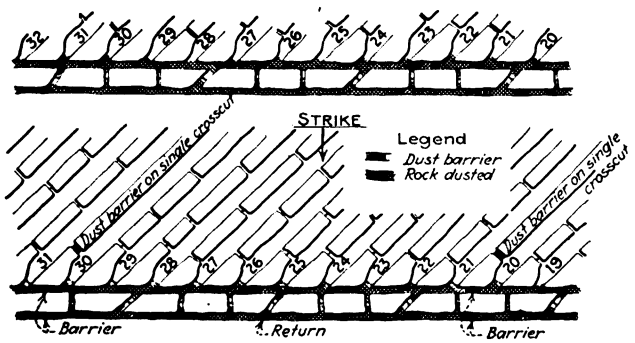

FIG. 19

A Protecting System

In mines where operations are carried on by the room-and-pillar method, dust barriers are placed every ten rooms apart. Room pillars at these points are cut by one crosscut only and a barrier is placed therein.

*This is the fourth of a series of articles giving the Code of Standards put into effect by the Union Pacific Coal Co., at its operations in Wyoming. The first three articles appeared in the issues of Dec. 10, 17 and 24, and the remainder of the code will be published in future issues in this form that permits of easy filing.

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block that shall conform in plan to Fig. 24.

24. The stop block for empty cars at the knuckle shall be according to Fig. 25.

25. First aid material shall be kept at all panel hoists. In headings worked by the room and pillar method, there shall be at least one complete first aid outfit, located at some central point.

26. The locations of all first aid outfits shall be designated by the presence of a blue light.

27. It shall be the duty of the mine foreman to see that first aid outfits are kept supplied with all necessary material and that this shall be in good condition at all times.

28. In addition to first aid supplies at the indicated stations in the mine, all foremen, assistant foremen, fire bosses, motormen, rope runners and trained first-aid men shall carry approved pocket first aid packets at all times while in and about the mines.

29. Provision for the care of injured persons shall be made in accordance with the wage agreement as follows:

"There shall be at each mine sufficient blankets, oil, bandages, cots, etc., readily available to properly care for and convey injured persons to their homes or the hospital after an accident; said equipment to be kept in a dry place. Rooms suitable for the care of injured persons shall be provided at each mine by the company. Suitable ambulance service shall be furnished for all mining districts . . ."

30. All mechanical haulage shall be provided with efficient head and tail lights.

Wyoming Compiled Statutes.—"Each locomotive employed in underground haulage in a coal mine shall be equipped with an efficient gong and with an efficient headlight, both of which shall be maintained in good operating condition. Motormen must use the headlight and gong in a way to effectively warn persons of danger. When mine cars are lowered on slopes, or when pushed by a locomotive underground, an efficient trip light, maintained in working order and kept lighted, shall be carried on the front end of the forward car in a position where it may be plainly seen by persons ahead of same. When loaded or empty mine car trips are being pulled by locomotives or animal power through entries or haulageways an efficient trip light, maintained in working order and kept lighted, shall be carried on the rear end of the last car at all times. A marker board, with an area of not less than one foot square, painted white and kept clean for visibility, may be substituted for the trip light on trips which are being pulled by locomotive or animal power; provided, however, that this section shall not apply to the gathering of cars or to any hauling of cars in a mine except on slopes and main entries."

(NOTE: No trip marker other than a red electric light will be permitted or used in the mines of the Union Pacific Coal Co. The same to be carried on the inby end of all slope trips.)

Sec. 2—"Any person or corporation violating any of the provisions of this act shall be deemed guilty of a misdemeanor and be subject to a fine of not more than $200."

31. Wherever a traveling way crosses a main haulageway, there shall be installed gates that will swing inward and away from the haulageway. These gates shall be provided with springs or weights, which will make them positive in closing. (See Fig. 26.) Gate locations shall be designated by the safety engineer.

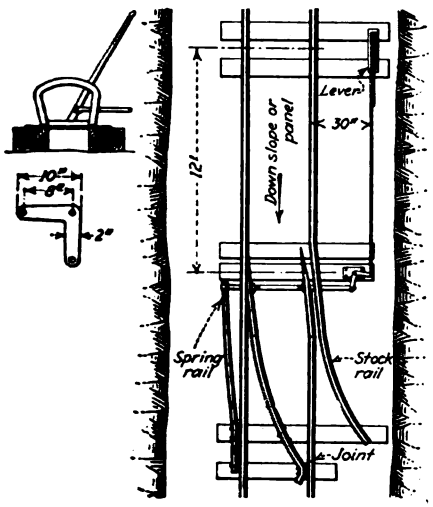


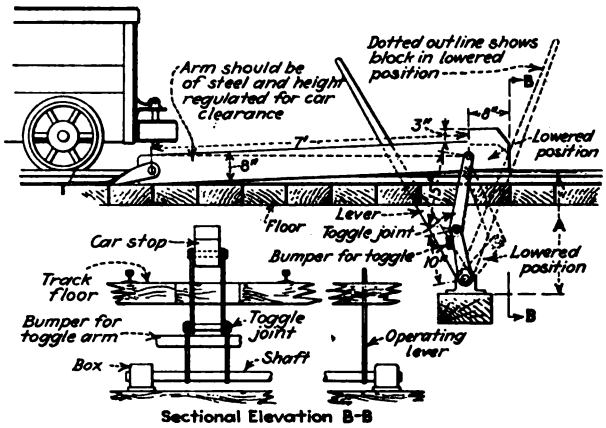
Fig. 23—Derail Switches for Slopes

Normally this derail device stands in such a position that a car coming down the grade is prevented from passing this point. Whenever a car or trip of cars is to descend the grade, the switch lever must be held so that the straight track can be used.

FIG. 25

Stop Block for Empty Cars

A lever-operated bumper block arranged so that a car may either be stopped or permitted to pass through is constructed as shown in the above illustration. The movement of the stopping block may be increased by shortening the distance *A*.



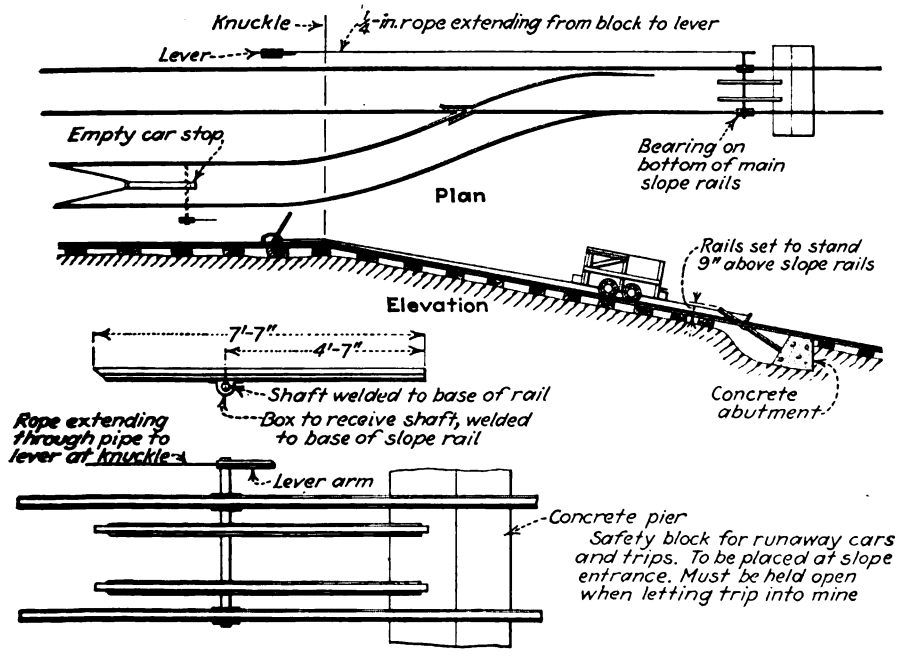


Fig. 24—Safety Block Checks Runaway Slope Trips

Slope entrances are protected so that runaway cars or trips cannot enter the mine. A control lever at the knuckle operates a safety stop located between the rails on the graded section leading to the inside workings.

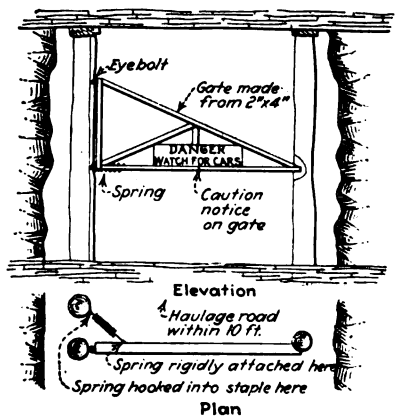


Fig. 26—Danger Warnings

When travelways enter upon or cross main haulage roads, gates which swing away from the main road are provided. These gates are hung either so that they close of their own weight or are assisted by a spring.

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Tennessee Mine Saves $1.75 Per Ton on Sand

For Locomotives, Crushed Sandstone Proves a Substitute for River Sand — Suitable Stone Quarried Near Drift Mouth

An ideal abrasive material for applying on mine rails to prevent slipping of electric locomotives would be one which is an electrical conductor, one in which the particles would not be crushed by the weight, and one which would have a low cost delivered to the locomotive.

When the material is applied sparingly, which it should be for the best effect against slipping, the conductivity is an unimportant factor. For that reason, and because of the abundant and widely distributed supply of Nature's ready-made material; plain sand as found in the rivers is the abrasive used on a large per cent of the mine locomotives. However, even washed river sand may have a camparatively high cost when delivered to the sand house at the mine.

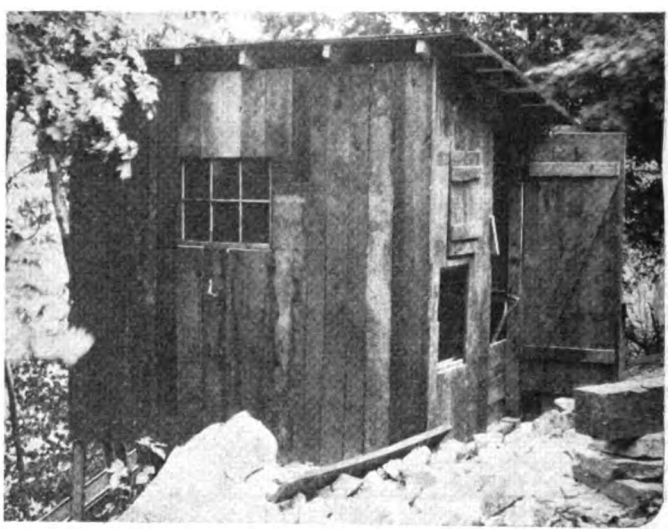
At the New Caryville Coal Co., Caryville, Tenn., river sand cost $2 per ton f.o.b. mine, and $3 per ton by the time it was put into the sand house. Labor of unloading from the railroad car, hauling up a 6,000-ft. monitor plane, and shoveling into the sand house near the drift mouth made up the extra dollar. Aside from the high cost of the river sand, the trouble and inconvenience of handling it were, in themselves, reason enough for turning to a substitute made from a seam of sandstone which outcrops about 40 ft. above the main drift mouth. It was found that this served the purpose practically as well as the river product, so it is now used exclusively.

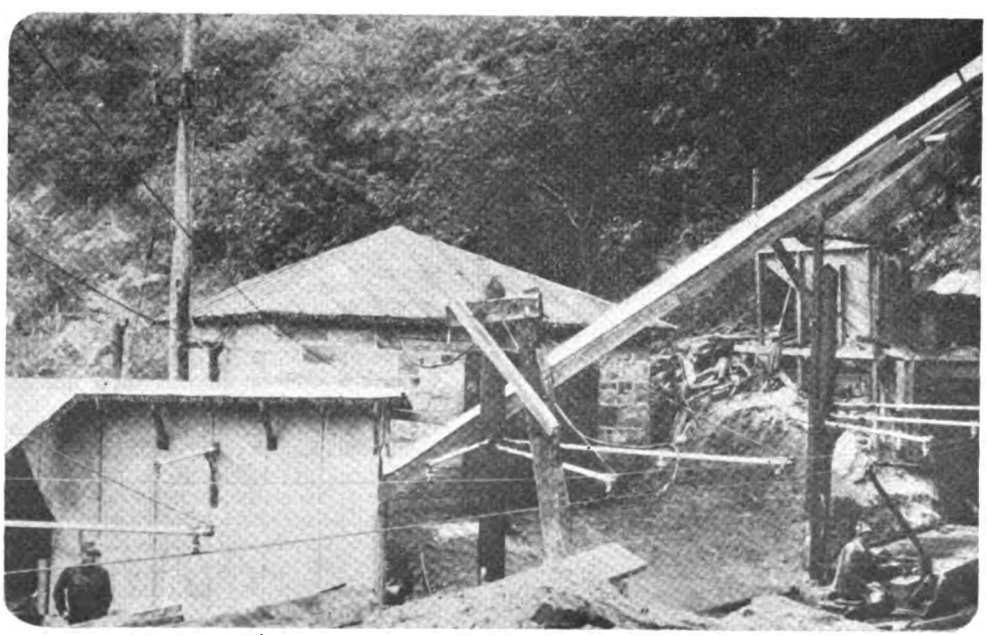
The rock is easy to quarry, requiring little shooting. It is hauled by wheelbarrow about 75 ft. to the crusher house which is a small building, about 6x10 ft., located at the head of a chute leading down to the sand house.

The crusher is driven by a 20-hp. motor. The product from the crusher decends by gravity through the chute to the sand house where it is screened, dried if necessary, and delivered to the locomotives. G. W. Pickle, superintendent of the New Caryville mine, states that the sand costs about $1.25 per ton as compared to the three-dollar cost of the sand formerly used.

The use of crushed, local sandstone on locomotives has been tried at a number of mines, but in many of these instances has been given up because of the sand being too fine or mixed with too much binder. No doubt. however, many mines of this country are using crushed sandstone, instead of purchased sand.







Obtaining Locomotive Sand Cheaply at Home

The illustration at the top shows a part of the sandstone seam from which the new Caryville Coal Co. obtains rock for making sand for locomotives. The 2-ft. stratum at the bottom of this quarry which outcrops about 40 ft. above the main drift mouth of the company's mine, is far superior to the rock above for this purpose. The building shown immediately below, houses the crusher, a "Tarvin Pulverizer" driven by a 20-hp. motor. The stone is broken with a sledge into 6- to 8-in. lumps before it is fed to the pulverizer. From the crusher, a chute conveys the sand to the sand house, shown in the illustration at the left. The sand obtained in this manner costs $1.25 per ton delivered in the sand house as compared with a cost of $3 per ton for river sand.

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News Of the Industry



Hard-Coal Miners and Operators Resume Joint Wage Conferences; New York Labor Makes Peace Plea

The anthracite joint wage conferences were resumed at the Union League Club, New York City, on Tuesday of this week, with both sides professing to be in a receptive mood, but with neither operators nor miners giving any indication that they had receded from the positions held when the conference recessed over the holidays on Dec. 31. In the interval between the two sessions, however, outside pressure to reach an agreement has been increasing. This, the optimists believe, may be effective enough to hold the conference together until a new contract is signed. The nearest approach to a confirmation of this view was the fact that the joint sessions were still continuing at the time this issue of *Coal Age* went to press. That—and nothing more.

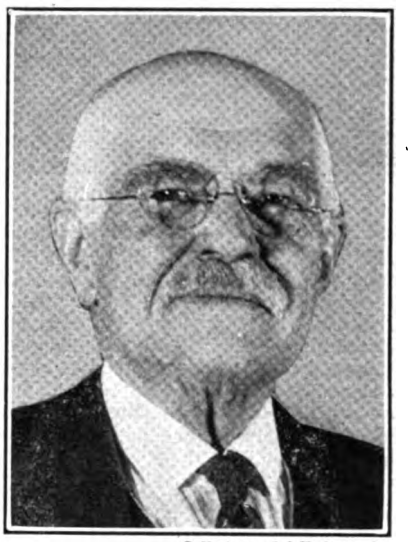
Outside pressure to end the strike has been coming from several forces. On the eve of the conference this week business interests of the Scranton region telegraphed representatives of both the miners and operators that "public patience has reached the breaking point" and that the public "would impose its penalty upon those who contribute to a continuation of the situation with its deplorable inhumanities." Members of the Scranton Ministerial Association met with John L. Lewis, president of the United Mine Workers, in New York on Jan. 5 to present anew "the moral and humane aspects" of the situation. The Rev. J. J. Curran of Wilkes-Barre also appeared upon the scene. Metropolitan editorial criticism of the refusal of the union to accept arbitration has been growing more severe.

A plea for a settlement from an unexpected source was made public Monday when John Sullivan, president of the Central Trades and Labor Council of New York, appealed to Governor Smith and Mayor Walker to use their good offices in promoting a speedy and amicable adjustment of the controversy which was endangering the comfort and the health of "750,000 organized workers" in the city.

The negotiations reopened at the Union League Club on Dec. 29 started out with all the ear-marks of an endurance contest. The two subcommittees, which had not met since Aug. 4 at Atlantic City, entered into joint conference early in the afternoon and continued the session until nearly midnight. That program was repeated the next two days. By New Year's Eve the contestants were ready to call the struggle a draw and adjourned over the holiday and the week-end although both sides had expressed a determination to sit through earlier in the week.

Notwithstanding the optimistic statement made at the end of the second day's meeting that "a contract can and should be negotiated at this conference," it was the general opinion of those following the parleys that a break was imminent and that only the New Year's recess forestalled an open rupture. Fundamentally both operators and miners had held to their original positions. If there was any concession on the part of either side from the stand taken at the opening of the joint conferences last summer, the public was not let in on the secret.

The Markle plan, submitted by the chairman of the conference, served to emphasize this point. The miners attacked it as arbitration in a new guise. Chairman Markle voiced the opinion that his proposal merely called for an enlargement of existing machinery for settling disputes and that in lieu of the one umpire provided for in the Board of Conciliation setup, he was



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Alvan Markle

Chairman of the joint conference of anthracite operators and miners in session at the Union League Club, New York City. Mr. Markle's peace plan, printed in *Coal Age*, Dec. 31, has been the subject of much discussion since both sides resumed negotiations to settle the strike.

Real Earnings of Contract Miners In Anthracite Fields—IV

(SHIPMAN COAL CO.)

Are contract miners in the anthracite fields underpaid?

John L. Lewis, international president of the United Mine Workers, insists that they are. He has repeatedly drawn upon the reports of the Coal Commission, with their misleading figures basing earnings upon the number of starts made, to support his assertion. In a statement published in the Sept. 15 issue of the *United Mine Workers' Journal*, Mr. Lewis declared that the average was $1,700 per year, from which "there must be deducted over $200" for supplies.

Check of actual payrolls, however, tells a far different story.

For example, the Glenbrook colliery of the Shipman Coal Co. worked 282 days in 1924 and employed an average of 145 contract miners. Of this number, less than one-third worked regularly enough to appear on each of the 24 semi-monthly payrolls. Of the number so working eight men averaged $4,836.75 *net*. The lowest paid man received $1,603.58.

The average earnings by $100 groups for the 46 contract miners covered by the statistics were as follows:

Miners	Average Annual Earnings	Miners	Average Annual Earnings
8.....	$4,836.75	5.....	$2,248.42
2.....	3,273.94	4.....	2,149.81
1.....	2,942.27	2.....	2,071.69
1.....	2,867.97	2.....	1,935.16
4.....	2,651.71	1.....	1,896.78
5.....	2,553.76	1.....	1,797.76
4.....	2,419.73	1.....	1,603.58
5.....	2,365.13		

The average earnings for the entire group of 46 men were $2,806.20. Only five men, it will be noted, earned less than $2,000 and nearly 20 per cent of the group earned over $3,000.

At this colliery the unskilled labor rate is 58c. per hour. This, it is asserted, is practically double the prevailing rate in other industries.

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Union Representatives at Hard-Coal Parley

Mine worker members of joint conference about to leave hotel in New York for Union League Club, where negotiation sessions are being held. Left to right: Ellis Searles, editor *United Mine Workers' Journal*; C. J. Golden, president, District 9; Andrew Mattey, president, District 7; Thomas Kennedy, secretary-treasurer of the international union; John L. Lewis, international president; Philip Murray, international vice-president.

suggesting three. This explanation, however, failed to move Mr. Lewis and his associates, who reiterated that they were willing to have a third party interpret a contract once negotiated, but were adamant in their opposition to any plan which permitted a third party to write the original contract.

Union spokesmen, however, showed enough interest in the Markle program to seek further light on how it would work. Reviving one of the arguments urged at Atlantic City, they inquired whether freight rates would come within the scope of the inquiry of the Markle plan commission. The chairman said "no." Then they wanted to know whether the commission could fix selling prices. To this the answer was made that such action would be clearly illegal and was not contemplated in the plan.

Both operators and miners agreed upon the desirability of a long-term agreement. Where they split was on the question of wage revisions. The miners demanded that any wage rates written into a new contract continue throughout the life of the agreement. The operators, with the effects of the Jacksonville agreement known, insisted that any long-term contract incorporate within itself provisions for periodic revisions of the wage rates should economic conditions justify such readjustments.

The last word on the situation up to the New Year's adjournment was contained in the following official statement issued late Dec. 31:

At today's session of the conference the operators presented further arguments for a long-term contract, assuring continuity of production with some form of arbitration to prevent possible deadlocks. The operators stated that they do not seek wage reductions but believe it necessary to provide for adjustment that economic conditions may require in the future. They said their purpose is to avoid suspension of production and that they are willing to adopt any means that will secure this result.

The miners asserted that the provision of the Pinchot plan for a board of investigation and award would afford the operators the protection which they say they need.

The operators suggested a modification of the Markle plan so that after investigation the board, in case of disagreement, would make recommendations to the joint conference within 30 days. If, following these recommendations, no agreement was reached within the succeeding 30 days, the board would decide the matters in dispute. The operators claim that this would probably make arbitration unnecessary, believing that the recommendations would dispose of the matter.

The miners claim that in the final analysis this proposition provides for arbitration, as does the Markle plan. On this ground they object to both proposals. The miners offer to write two-and-a-half or five-year contract upon definite terms for either period, and no arbitration.

Representatives of the operators and miners have since Tuesday tried diligently to find a basis of adjustment of their differences. Both sides have sincerely applied themselves to this task.

Questions have arisen which require more analysis than is possible in the conference. For this reason the conference has agreed to recess until Tuesday, Jan. 5.

No Distribution Census Yet

No appropriation for a census of distribution will be asked at this time, Secretary Hoover has announced. Until there is abundant proof that such figures are desired there is no chance of obtaining a vote of funds, he feels.

It took five years of sustained effort to get the census of manufacturers. A census of distribution, however, is just as important as a census of production, Mr. Hoover believes.

Pittsburgh Coal Co. Opens Worden Mine

Operations have been resumed at the Worden Mine of the Pittsburgh Coal Co., located near McKeesport, Pa. Work recommenced Jan. 4 under the provisions of the 1917 wage scale. This is the sixth operation in the Pittsburgh district that the company has reopened in recent months, all under the terms of the 1917 agreement. Preparations have been under way for several weeks to start work at this mine.

Renew Attack on Lake Rates

Reopening of the question of the competitive adjustment of rates from mines in the Appalachian region to the Great Lakes for transshipment to the Northwest has been asked in petitions filed with the Interstate Commerce Commission a few days ago. This action was taken by the Pittsburgh Coal Producers' Association and the Pittsburgh Vein Operators' Association of Ohio, complainants in the Lake Cargo Coal cases dismissed by the Commission last summer.

In that proceeding complainants attacked the relative adjustment to the lakes, contending that the rates from the Pennsylvania and Ohio fields were unreasonable *per se* and unjustly discriminatory against that traffic when compared with rates in effect from southern West Virginia and eastern Kentucky mines to the lakes. The examiners who heard the testimony in the case filed a tentative opinion recommending reductions in the rates from the Ohio and Pennsylvania fields complaining and a number of other readjustments in competitive differentials. The Commission, however, disregarded these recommendations and dismissed the case.

This decision was recently referred to in unfavorable terms by Senator Reed of Pennsylvania in his attack upon the failure of the administration to give the Keystone State representation on the Commission. Governor Pinchot several weeks ago urged a reopening of the case and promised state aid to the protesting operators.



Attempt to Blow Up Western Maryland Ry. Bridge Wrecks High-Tension Pole

A pre-holiday demonstration against non-union coal operators in northern West Virginia was marked by an attempt to destroy the bridge across the West Fork River at Bingamon on Dec. 23. A piece of flying iron snapped the pole shown above, which is on the far side of the river. The bridge was damaged to the extent of about $5,000, but repairs were completed and service was restored by Dec. 28.

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Adoption of Arbitration In Hard-Coal Peace Is Hope of Federal Officials

By Paul Wooton
Washington Correspondent of *Coal Age*

Representatives of the public, both on Capitol Hill and in the executive departments, for the most part seem to be of the opinion that the anthracite operators should agree to no truce or permanent settlement that does not recognize the principle of voluntary arbitration of all matters under controversy. It is felt that neither the public interest nor the long-time interest of the industry itself would be served by a quick settlement, which doubtless could be reached were the operators willing to waive the principle of arbitration. To resume work at the status quo would mean, many believe, that the four months' travail would go for naught.

It is recognized that the operators are in a strong position and never before have had such an opportunity to provide for continuity of production.

There is an ill-disguised eagerness on the part of the miners and their friends for a quick settlement. President Green, of the American Federation of Labor, predicts a prompt return to work. His forecast is hailed as a promise by the White House spokesman. The utterance suggests that there is a feeling of discomfort at Federation headquarters in connection with this strike. That it proved to be unpopular is thought not to be surprising to Mr. Green.

The weakening of the mine workers is attributed to the failure of the settlement plan proposed by Governor Pinchot to attract public support and to the realization that little could be expected from the special session of the Pennsylvania Legislature.

Back of these immediate causes has been the remarkable defense put up in the anthracite-consuming area. Even the recent low temperatures failed to reveal any disposition to beg for mercy. Ample evidence has reached Washington that this demonstration of ability to meet the situation without an appeal for federal help has excited the admiration of the entire country. Much of the credit for this accomplishment is being given the leadership in the campaign for the use of substitutes. Success could not have been attained, it is pointed out, had not the people been directed effectively and their determination kept up by frequent communications emanating from those directing the campaign.

One of the most recent statements of the Emergency Fuel Administration of Massachusetts is cited as typical of many well selected messages calculated to put the people on their mettle. In this statement the full administration pointed out that "there is no coal situation outside of the Northeast." Attention was called to St. Louis, which formerly was a regular customer of the anthracite industry and took 500,000 tons of its product each year. Last year St. Louis bought only 40,000 tons of anthracite because "the people have learned to burn soft coal, which is costing them one-half the price they were paying for anthracite."

The attention the people have given to such doctrine is one of the reasons why it is regarded in Washington as so necessary for the anthracite operators to insist upon a plan that will guarantee against interruption of production. It is believed to be the only course that will protect the industry's $800,000,000 investment, its $2,000,000,000 annual turnover and its payroll on which 155,000 names appear.

There is a disposition in Washington also to give generous credit to the foreign language priests for the part they have played in preparing the way for settlement. It was they who revealed to the union leaders that their men, particularly those in the Wyoming region, were ready to go back to work. None would be surprised to learn that the priests went even further and told the union leaders that they themselves would advise the men to go back unless steps were taken at once to reopen peace negotiations. Under present conditions it is probable that the men would be more inclined to take the advice of the priests than to follow the union leaders.

Despite published reports to the contrary, it was stated on Dec. 31 at the Interstate and Foreign Commerce Committee of the House that no arrangements had been made for an inquiry into the anthracite situation. Representative Treadway, who is urging such action, admits that he has been unable to obtain any promise as to what will be done, but that he fully expects that hearings on his two bills will be accorded promptly.



T. M. Dodson

Has resigned as vice-president of the Pittsburgh Coal Co. in charge of operations. Mr. Dodson, who went to Pittsburgh several months ago, will return to Bethlehem, Pa., to his own company, the Weston Dodson Company. He will retain a connection with the Pittsburgh Coal Co., however, as a consulting engineer.

Trade Commission Segregates Trial Examiners

Trial examiners of the Federal Trade Commission have been made an independent division and are to be designated hereafter by the chief of that division, according to a statement recently released by the commission. The preparation of all stipulations in settlement of applications for complaint also has been placed in this division.

This change does not mean an increase in personnel or duties, but only the assignment of those related duties where they logically belong. Every one of the duties specified or contemplated to be performed by this new division is now performed by someone in the several departments. Under this new order of things better efficiency will be acquired and the trial examiner's staff will function more economically.

Heretofore the trial examiners who presided at the hearings in the taking of testimony were designated by the examining division which investigated the cases. Some criticism has been made that the division which investigated and recommended complaint should not select the trial examiner to try it.



Johnstown Celtic Glee Club that Sang at the Coal Mining Institute of America Dinner

The men in this choral club are all employees of the Bethlehem Mines Corp. at Johnstown, Pa., and work in and around the coal mines. Back row, left to right: P. Hughes, trackman; R. Tremain, foreman; H. W. Plotts, foreman; D. Lees, miner; W. Regittko, clerk; C. Ellis, salesman; C. L. Strayer, inspector; W. T. Roberts, miner. Center row: T. Griffith, miner; E. Jones, salesman; E. Dodd, miner; D. A. Lewis, supply clerk; B. Hughes, repairman; E. Roberts, miner; T. L. Jones, machinist; J. Thomas, foreman. Front row: E. C. Roberts, miner; D. Jones, miner; W. E. Ellis, foreman; Prof. J. L. Jones, clerk; Miss Annie Hughes, stenographer; B. E. Henderson, manager; H. B. Mishler, transportation; E. Ellis, clerk, and J. Jones, miner. The fine appearance of the glee club, almost every man attired in a dinner coat, attracted almost as much attention as the excellence of their music.

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162 Die in November From Mine Accidents; Ratio to Output Higher

Accidents at coal mines in the United States in November, 1925, resulted in the loss of 162 lives, according to information received from state mine inspectors by the U. S. Bureau of Mines. Three of the fatalities occurred at anthracite mines in Pennsylvania; the remaining 159 were at bituminous mines throughout the country. As the output of bituminous coal in November was 50,780,000 tons, the fatality rate for the month, for the bituminous industry, was 3.13 per million tons, as compared with 2.63 in the preceding month and 2.85 for November a year ago. The anthracite rate for November last year was 7.72; no corresponding rate is available for November, 1925, because of the stoppage of work at the mines.

The November fatalities brought the total number of deaths at all coal mines during the first eleven months of the present year to 1,934 as compared with 2,203 during the same period last year. The accident cost of the coal, as represented by deaths per million tons, was 3.64 as against 4.25 last year. For bituminous mines alone the 11-month rate was 3.27 as compared with 3.99 for the first 11 months of 1924; for anthracite mines alone the rate was 6.40, including dredge coal produced since the strike, as compared with 5.65 during the same 11 months last year.

An explosion at Madisonville, Ky., on Nov. 13, in which five lives were lost, brought the total number of major disasters during the first 11 months of 1925 to 11 with an aggregate loss of 204 lives. During the corresponding months last year 9 similar disasters occurred with a loss of 452 lives. The per-million-ton death rate, based exclusively on major disasters, was 0.38 for January-November, 1925, compared with 0.87 for those months in 1924.

An examination of the causes of the accidents in 1925 shows a slight reduction, as compared with 1924, in the per-million-ton death rates from falls of roof and coal, haulage, and explosives, and a marked reduction for explosions of gas and coal dust. The rate from electricity remained unchanged. The comparative rates per million tons were:

	Jan.-Nov., 1924	Jan.-Nov., 1925
All causes	4.251	3.635
Falls of roof and coal	1.835	1.791
Haulage	.608	.592
Gas or dust explosions	1.009	.528
Explosives	.179	.163
Electricity	.143	.143

Mexican Mine Blast Kills 42

The bodies of forty-two victims had been recovered on Dec. 31 from a Mexican National Ry. coal mine at Palau, State of Coahuila, where an explosion occurred Dec. 26.

A score of miners were injured and it is believed that more victims are in the mine. The blast is believed to have been caused by the breaking of a miner's safety lamp, which ignited gas. Palau is about eighty-five miles from Eagle Pass, Texas.

West Virginia Coal Output 101,943,765 Tons in 1925

Production of 101,943,765 tons of coal in West Virginia in 1924 established a new high record for the state, according to statistics compiled by R. M. Lambie, chief of the West Virginia Department of Mines. Owing to a change made in the mining laws by the Legislature last spring the calendar year is now used in compiling production statistics instead of the fiscal year, and this will simplify and expedite the collection of data.

McDowell County, as usual, led with an output of 17,860,908 tons, closely followed by Logan County, with shipments of 17,659,307 tons.

The Island Creek Coal Co., of Logan County, was the largest individual producing company in the state, having an output of 4,951,399 tons, or more than a fourth of the entire output of the Logan district. The Consolidation Coal Co. ranked second, with 4,131,477 tons. Nine companies in the state produced over one million tons each, and ten companies produced more than 25 per cent of the state's entire tonnage.

The companies producing more than one million tons each besides the Island Creek and the Consolidation companies, were the United States Coal & Coke Co., Pocahontas Coal Co., West Virginia Coal & Coke Co., Kingston Pocahontas Coal Co., New River & Pocahontas Consolidated Coal Co., Elm Grove Mining Co. and the Bethlehem Mines Corporation.

Coal-Mine Fatalities During November, 1925, by Causes and States

(Compiled by Bureau of Mines and Published by *Coal Age*)

State	Underground												Shaft					Surface							Total by States	
	Falls of roof (coal, rock, etc.).	Falls of face or pillar coal.	Mine cars and locomotives.	Explosions of gas or coal dust.	Explosives.	Suffocation from mine gases.	Electricity.	Animals.	Mining machines.	Mine fires (burned, suffocated, etc.).	Other causes.	Total.	Falling down shafts or slopes.	Objects falling down shafts or slopes.	Cage, skip or bucket.	Other causes.	Total.	Mine cars and mine locomotives.	Electricity.	Machinery.	Boiler explosions or bursting steam pipes	Railway cars and locomotives.	Other causes.	Total.	1925	1924
Alabama	3	....	3	....	....	....	....	....	....	....	1	7	....	....	....	....	....	....	....	....	....	....	....	....	7	3
Alaska	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Arkansas	....	1	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	0
Colorado	1	1	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	1	....	....	....	....	....	1	3	5
Illinois	6	....	5	3	....	....	....	....	....	....	....	14	....	....	....	....	....	....	....	....	....	....	....	....	14	7
Indiana	1	....	2	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	3	4
Iowa	....	....	....	....	....	....	1	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	1
Kansas	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Kentucky	11	....	1	6	....	....	2	....	....	....	....	20	....	....	....	....	....	....	....	....	....	....	....	....	20	6
Maryland	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	1
Michigan	....	....	1	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	0
Missouri	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Montana	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	....	....	....	1	1
New Mexico	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	2
North Dakota	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	1	1	2	1
Ohio	7	....	....	....	1	....	....	1	....	....	....	9	....	....	....	2	2	....	....	....	....	....	....	....	11	9
Oklahoma	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Pennsylvania (bituminous)	15	....	4	....	1	....	3	....	....	....	2	25	1	....	....	....	1	....	....	1	....	....	....	1	27	24
South Dakota	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Tennessee	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	2
Texas	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	0
Utah	3	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	3	4
Virginia	3	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	3	2
Washington	2	....	....	....	....	1	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	1	1	4	3
West Virginia	25	4	10	....	1	....	3	....	4	....	....	47	....	....	....	....	....	1	....	....	....	1	1	3	50	41
Wyoming	3	....	1	....	....	....	....	....	....	....	....	4	....	....	....	....	....	....	....	....	....	....	....	....	4	4
Total (bituminous)	85	6	27	9	3	1	9	1	4	....	4	149	1	....	....	2	3	2	....	1	....	1	3	7	159	120
Pennsylvania (anthracite)	1	....	....	....	2	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	....	3	51
Total, November, 1925	86	6	27	9	5	1	9	1	4	....	4	152	1	....	....	2	3	2	....	1	....	1	3	7	162	....
Total, November, 1924	83	9	25	8	11	2	5	1	5	....	1	150	....	....	....	1	1	11	....	1	....	1	7	20	....	171

[1]Only one fatality, owing to strike in anthracite mines.

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Government Wins Case on Commandeered Coal

The United States Government won its case in the second trial of the suit of the White Oak Coal Co. against the government for money claimed to be due for coal commandeered for the use of the navy during the world war. Judge George W. McClintic on Dec. 11 directed a jury in the U. S. District Court for the southern district of West Virginia to bring in a verdict for the defendant. About a year ago the plaintiff was awarded a judgment for $790,000, which was appealed to the Circuit Court of Appeals at Richmond.

Approximately 210,000 tons was supplied by the company and the government is said to have fixed the price at $3.08 per ton. It was contended by the plaintiffs that the price continued to rise before the order was filled until at one time it reached $16.50 per ton.

The government contended that it had a contract at the price made, though the coal was purchased on a commandeering order. It was the contention of the coal company that it had the right under the terms of the order to protect the price and to make claim for the difference. The White Oak Coal Co. was the sales agency for fifteen coal mines in Raleigh and Fayette counties, West Virginia.

Locomotive Fuel Cost Drops Slightly in October

The average cost of coal used by Class 1 railroads in locomotives in transportation train service during October, 1925, was a little below similar figures for September, according to a report by the Bureau of Coal Economics of the National Coal Association, based on figures released by the Interstate Commerce Commission.

The average cost of this coal, which includes any freight charges paid on it by the consuming railroads, is as follows: Eastern district, $2.65 per net ton; Southern district, $2.19; Western district, $2.99; entire United States, $2.66. These figures are 2c. below the average for September in the Eastern district; no change in the Southern district; 1c. lower in the Western district, and 1c. lower for the entire country.

When comparison is made with the averages for October, 1924, a decrease of 24c. appears in the Eastern district; 15c. in the Southern district; 16c. in the Western district, and 20c. in the United States as a whole. Thus the Class 1 railroads of the United States saved nearly $2,000,000 in locomotive coal costs because of the decline in cost since the previous October.

The New York Public Service Commission has approved a new rate of the New York Central (East) on coke, coke breeze and coke dust from Buffalo, East Buffalo and Harriet to Leroy and Stafford of $1.39, a reduction of 13c. per net ton, effective Jan. 19, 1926.

By special permission of the commission a new rate of the Schoharie Valley R.R. has been approved on coke in either direction between Schoharie and Schoharie Junction, 60c. per net ton, effective Dec. 17.



Wolfe Resigns Secretaryship

Officers of the Winding Gulf Operators Association, with offices at Beckley, W. Va., on Dec. 30 announced the acceptance of the resignation of George Wolfe as secretary, which was tendered some months ago. The identity of Mr. Wolfe's successor has not been made public. Mr. Wolfe has been the secretary of this association for the past six years and in leaving Beckley and Raleigh County he is bringing to a close thirty years of activity in the smokeless coal fields of southern West Virginia. Mr. Wolfe's acquaintance and knowledge of the smokeless industry of West Virginia is wide and he has long been considered an authority on coal matters in this section. Accompanied by Mrs. Wolfe he left for a vacation in the South. "I am out of coal entirely," said Mr. Wolfe, "and have not a cent invested in the industry. I consider coal a good thing to stay out of for a while. I have under consideration several propositions which I may take up later, but none of these is directly or indirectly connected with the coal business."

Mistrial in Coronado Case

A mistrial resulted in the third trial of the Coronado Coal Co.'s $2,200,000 anti-trust suit against district 21, United Mine Workers (Arkansas), local unions and individuals, when the jury at Fort Smith, Ark., failed to reach an agreement late in December. After 72 hours of deliberation the jury reported that it was still in a deadlock and was discharged. Judge Frank A. Youmans probably will reset the case for trial. After eleven years and three months in the federal courts the case is again on the docket for trial before a jury.

Three juries have heard the testimony. The first, in 1917, brought in a verdict for the plaintiffs for $20,000 actual damages. That judgment was reversed by the Supreme Court of the United States on the grounds that a conspiracy to restrain interstate commerce had not been proved.

Pattison & Bowns in Deal

Full control of Pattison & Bowns, Inc., New York City, coal distributors, was acquired Dec. 28, by the United States Distributing Corporation, through the purchase of a one-fourth interest from Burns Brothers. The corporation had previously owned three-fourths of Pattison & Bowns, Inc., which is the distributor in the East for the anthracite output of the Pennsylvania Coal Co. and the Hillside Coal & Iron Co., both owned by the Erie R.R.

Coal River Company Forms Sales Organization

A coal sales corporation known as the Fuel Distributors, Inc., through which the entire production of mines of the Coal River Collieries Co. will be sold, in addition to heavy tonnages from other fields, was organized last week, according to an announcement Dec. 31 from the office of J. T. Dunigan, Huntington, W. Va., president of the collieries company, which is controlled by the Brotherhood of Locomotive Engineers.

The new concern, which started operation Jan. 2, began business with a contracted tonnage of almost 2,000,000 and expects to swell this to 3,000,000 tons during the first year, establishing an annual business of more than $5,000,000. The headquarters will be maintained in the Brotherhood of Locomotive Engineers' Bank Building in Cleveland with a branch office at Huntington.

Fuel Distributors, Inc., organized under the laws of Delaware and capitalized at $200,000, fully subscribed, completed its organization at a meeting in Cleveland Dec. 29, when Fred L. Smith was elected to the presidency; Walter Myers, vice-president; G. G. Hoffman, secretary-treasurer, and Harry E. Moran, Charles Lindquist, W. E. Dunigan and Mr. Huffman, directors, with Mr. Smith as chairman of the board.

Miners Indorse Pinchot Call For Special Session

Christ J. Golden, president of District 9 United Mine Workers, said that the miners are 100 per cent back of Governor Pinchot in his call for a special session of the Legislature on Jan. 13.

In a statement he said the anthracite operators are trying to put the American miner in a "state of poverty," the same position the English miners find themselves in today.

If Governor Pinchot succeeds in putting the coal industry under the Public Service Commission, Golden said, the profits of the operators and their business methods will be exposed to the public.

C. C. & B. Sale Is Completed

Purchase by the Massachusetts Gas Companies of the old firm of Castner, Curran & Bullitt, Inc., of New York City, as well as a number of important mines in the smokeless coal fields of West Virginia—reported in the Nov. 26 issue of *Coal Age*—has been confirmed by the stockholders of Castner, Curran & Bullitt. The transfer was completed on Jan. 2, and the entire issue of stock was taken over by the New England interests. Castner, Curran & Bullitt were the pioneers in marketing smokeless coal, having shipped the first car of Pocahontas to market in 1882. Since then they have been leaders in the distribution of this coal. Lemuel Burrows, long the head of the company, retires from the presidency on the transfer of stock to the new owners, but it is understood that the rest of the personnel of the old organization will remain.

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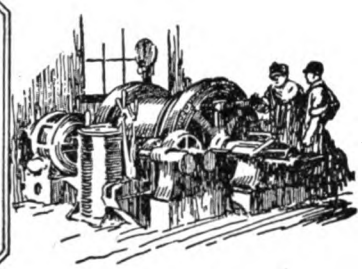
Practical Pointers For Electrical And Mechanical Men



Hammer Used to Surface Arc-Welded Locomotive Tires

Repairing worn locomotive tires by filling is practiced at comparatively few mines, and is accomplished by means of an arc welder. With this method it is not considered practical to put the tires back in service without smoothing the welded surface, so in most cases they are ground or turned to the desired finish.

Turning of the larger tires requires a lathe of size seldom included in the shop equipment of a small mine. A method of handling which does not require a lathe is followed at the Nuttallburg (W. Va.) operation of the Fordson Coal Co.

At this mine, C. J. Southard, chief electrician, utilizes one end of the wheel press as part of a rack to hold the truck while filling the tires. The truck is supported by centers in the end of the axle. This brings the tires to a convenient height and leaves them free to be turned by hand as the welding progresses. At the top is fitted an adjustable surface gage which aids in filling to the correct diameter and helps to detect high or low spots.

Mild-steel electrodes ¼ in. in diameter are used for filling. The bead is laid on crosswise and when the last layer is applied each row is hammered vigorously, before it cools, to smooth the surface. This hammering adds materially to the time of welding the tire but probably takes less time than would be required to turn it in a lathe. Hammering makes the welded surface smooth enough so that the locomotive does not ride rough, and so no decrease is noticeable in tractive power.

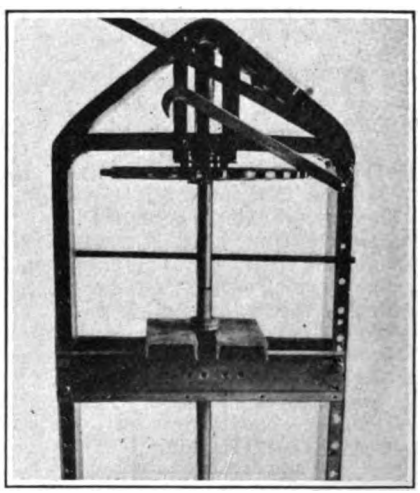


Filling Tires by Electric Welding at a Fordson Mine

By means of a home-made attachment, C. J. Southard utilizes one end of the wheel press as a welding rack. The adjustable surface gage at the top aids in obtaining a true surface. Each cross row of the last layer of metal is hammered flat before it cools. This method of surfacing the arc-welded tires proves efficient.

Small Capacity Press Is Handy Shop Tool

By use of a press, work such as must often be done on armature shafts is accomplished in less time and with more certain results than if accomplished with a hammer or sledge. When a shop is equipped with a wheel press of 100 to 200 ton capacity this machine usually serves for handling the lighter work also. But at some mines where there is little heavy work to do no press of any kind is provided even though it would pay to have a small one.



An Improvement Over Hammering

This home-made press proves convenient for work such as renewing armature shafts.

V. D. Picklesimer, foreman of the Thealka, Ky., shop of the North East Coal Co., contributes the accompanying photograph of a home-made, hand-operated press which is used successfully for light work. The hand wheel at the top once served as a sprocket on a chain-driven machine. Fastened at the center of the wheel is a threaded steel bushing through which the movable plunger operates. A hook-shaped pawl fastened near the pivot of a long lever arm is used to ratchet the wheel around when the pressure required is such as to make it difficult to be turned directly by hand. The hook engages the teeth of the sprocket.

The one-piece main frame of the press is made from a 6-in. channel. This is braced at the top so as to withstand successfully any ordinary pressure required. The two cross-beams which form the back-stop are adjustable through a distance of several feet. When the photograph was taken the machine was being used to press a collar on a short piece of shafting.

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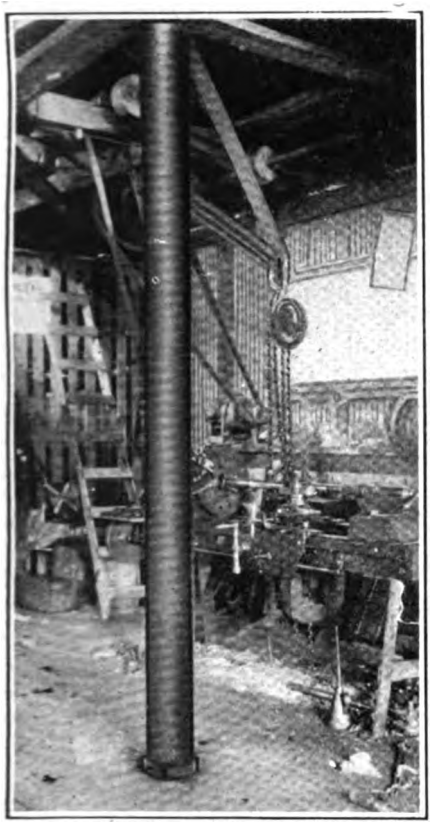
Home-Made Revolving Crane Aids Men in Mine Shop

To the list of mechanical stunts for lightening the work of handling heavy objects about coal mine shops M. S. Suffridge, master mechanic, Ajax Coal Mining Co., near Hazard, Ky., adds a home-made revolving jib crane which can be swung in a complete circle. It is shown in the accompanying illustration and consists of an 8-in. round oak post the ends of which are 1½-in. iron pins. A horizontal beam consisting of a 30-lb. rail is strapped to the post at one end and suspended from a 4½x½-in. iron strap to the post at the other. The beam is 5 ft. long. From it is hung a 1½-ton chain block which, together with the swinging beam, has lifted one end of a 6-ton locomotive.

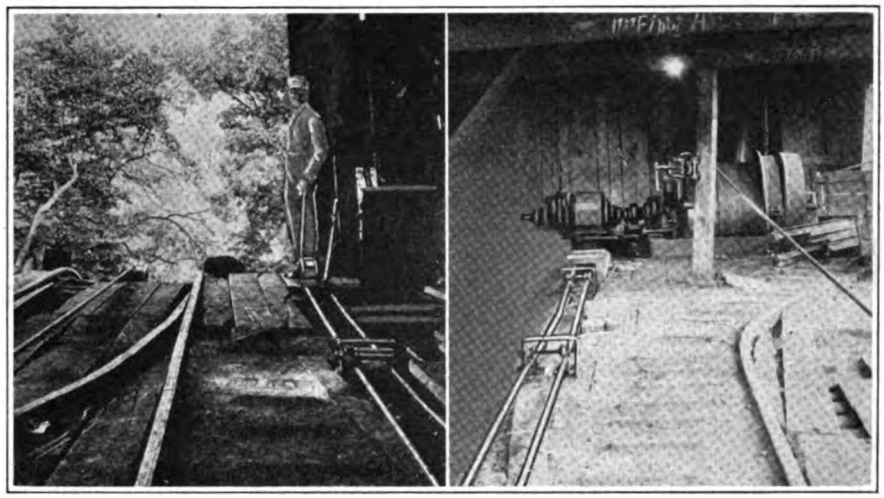


Handles Material Easily

This tackle-block beam, now in service in a mine shop near Hazard, Ky., lifts heavy equipment at any point within its circle of operations.

Mine Borrows Switch Control Idea from Railroads

The scheme used by railroads for remote mechanical control of track switches by long connecting rods which ride between rollers has been applied to the control of the friction clutch and brake on a hoist at the top of an incline at the Elsie No. 2 mine of the Consolidated Fuel Co., Elsiecoal, Ky. Photographs of both ends of the installation are reproduced here showing the 40-ft. connecting rods which are made of 1-in. pipe.



Remote Control Makes Operation of This Inclined Hoist Safer

The operator, standing at the top of the slope where his view is unobstructed, can meet emergencies quickly in the same way that the railroad signal towerman controls the distant switches and signals which respond to the levers at his hands.

The hoist is set back from the point where the incline track breaks to the horizontal and in the clear of the curve, as shown in one of the accompanying illustrations. The incline is steep and rises about 600 ft. For this reason it is dangerous to locate the mechanical and electrical controls at the hoist out of sight of the incline. By borrowing the switch tower idea from the railroads the Consolidated Fuel Co. has found a way to put all the control devices, mechanical and electrical, at the brink of the hill. From this point the operator has a view of the incline and can act quickly and without signals in an emergency.

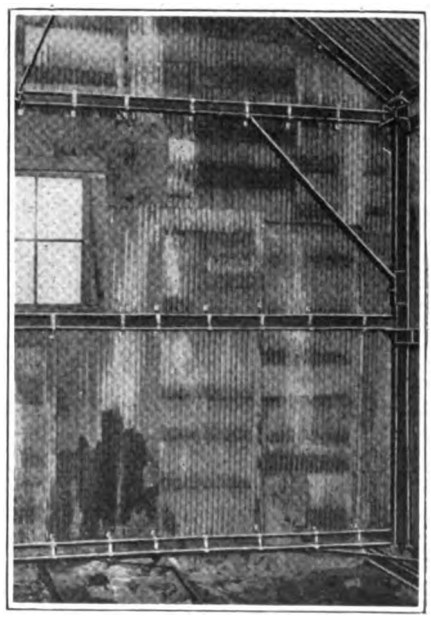
Worn Rails Make Good Frame For Motor Barn

The practice of using rail instead of the more suitable and lighter shapes of material in structural work is seldom commendable from an engineering standpoint. When, however, second-hand rail of little more than scrap value is available, its use may be economical.

Utilization of waste material in such a way represents true saving, since it means turning a comparatively worthless product to a useful end. The mine is an excellent place for the practice of this kind of economy, because, as a rule, an abundance of scrap material is there available.

The entire frame of the 20x80-ft. motor barn of the Southern Mining Co., at Balkan, Ky., was made from old rail. In fact, practically all of the material came from the scrap pile. A few windows and the galvanized straps and bolts for securing the siding made up the only new material purchased for the job. The corrugated metal had seen previous service on an old motor barn, and sand house.

The building has such a neat appearance, inside and out, that, except for the uneven discolorations on the siding, there is little to suggest that it was built from scrap material. G. L. Birch, chief electrician of the Balkan mine, designed the frame and erected the structure with his "gang."



Scrap Pile Yielded this Frame

Except for the one strap-iron brace all of the framing seen in this picture of the back corner of a motor barn is of old rail. Very little new material was used in the construction of the building.

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Problems In Underground Management



High Frequency and Low Voltage Make Face Illumination Safe*

By Edward Hughes
Cumberland, B. C.

Illumination of coal mine workings presents difficulties not usually encountered in other industrial undertakings. The danger from explosion attendant upon the use of any sort of lighting, particularly high intensity illumination in the presence of coal dust or methane has in most instances prevented the use of effective lighting under ground. In electrified mines, hoist rooms, pumprooms, partings and the like are electrically illuminated to a limited extent.

Within a mine where coal dust or methane are liable to be encountered, the illumination is ordinarily obtained from small units giving at best only two or three candle power. Higher labor efficiency unquestionably could be realized if better lighting could be obtained in a safe manner. This higher efficiency would entail quicker extraction, safer working conditions and cleaner coal.

The problem of obtaining better and safer illumination at the face has been attacked from several angles. The most promising of these appears to be that suggested by Professor Thornton, who has carried out a series of experiments to demonstrate the advisability of employing for this purpose alternating currents of higher frequencies than are now used for power transmission. The standard frequencies now used at coal mines are 25 and 60 cycles per second. In the course of his experiments Professor Thornton has developed several graphs showing the ignition points of various mixtures of methane and air at given voltages and amperages of both direct and alternating current. Some of these are presented herewith. Figs. 1, 2 and 3 show the ignition points of methane and air at various voltages for direct and alternating currents, also the effect of raising and lowering the frequencies of alternation upon the ignition point at a given potential. Fig. 4 shows the variation of time between maximum and minimum voltage of three frequencies of alternating currents.

It might be well at this point to call attention to the fact that an alternating current does not draw as long an arc for a given voltage and current value as does a direct current. Direct current is an electrical flow which does not vary in potential or polarity, while an alternating current is one that varies periodically at a predetermined rate from zero to maximum voltage in a positive direction, then descends to zero, passes to a negative direction, attains a maximum voltage and then ascends to zero again, commencing the cycle anew in a positive direction. The number of complete cycles per second establishes the frequency of the particular current under observation. When a direct current is broken from any cause, an arc is formed and as the voltage has a tendency to increase rather than diminish on most power lines at the moment of breaking, the arc tends to draw out rather than to cease sharply. Particularly is this the case on circuits using 200 volts or more.

As the arc is elongated the positive side of the circuit tends to heat rapidly thus aiding the prolongation. When an alternating-current circuit

*Abstract of paper entitled "A Safe Method for Lighting the Working Faces of Coal Mines by Electricity," read before a meeting of the Vancouver Island Branch of the Canadian Institute of Mining and Metallurgy.

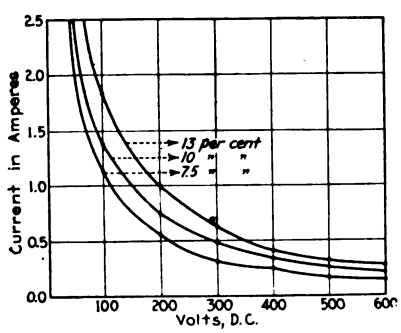

Fig. 1—Least Igniting Currents of Methane-Air Mixtures

This shows the smallest amperages of direct current that will ignite various percentage mixtures of methane and air at voltages up to 600. As might be expected small current volumes at high potential are as effective in igniting gas as much larger amperages at lower voltages.

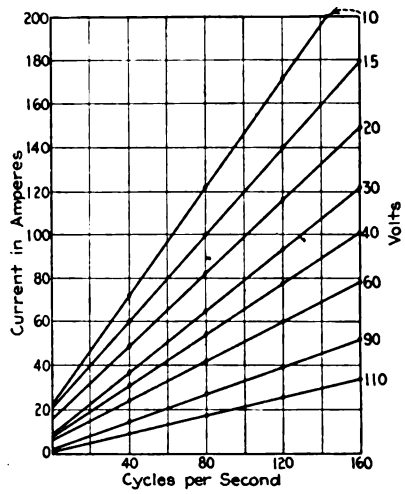

Fig. 2—Methane Ignition with Alternating Current

This reveals the high amperages that are necessary to ignite gas with current of low potential, also the increase in current volume necessary for ignition at high frequencies. With current of a given voltage the amperage necessary for ignition is almost directly proportional to the number of cycles per second.

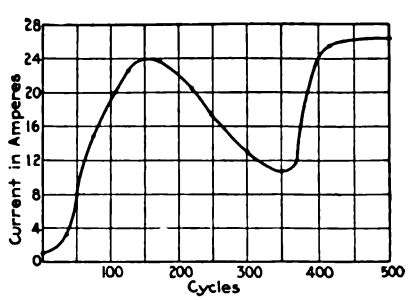

Fig. 3—Influence of Frequency on Ignition

This graph shows the effect of holding the potential constant at 200 volts but varying the frequency from 0 to 500 cycles per second. A pronounced hollow or low point occurs in this graph at a frequency of 350 cycles.

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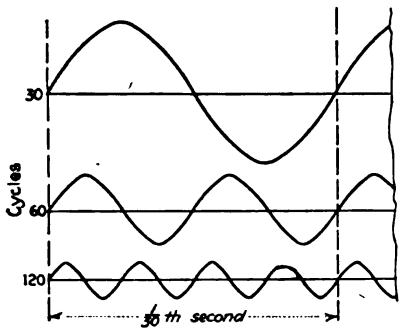

Fig. 4—Relation Between Cycles and Potential Changes

Direct current is a continuous flow in one direction at uniform potential. With alternating current the potential and consequently the direction of current flow changes direction twice during each cycle or the total number of reversals per second will be twice the number of cycles.

is broken the polarity of the ends of this circuit will vary with the frequency of the generator or source of energy supplying the current, and since the potential reaches zero and the polarity changes twice during each cycle it becomes evident why a shorter arc will be drawn than is the case with a direct current.

Company rules and state laws governing the use of electricity in coal mines allow its employment for signaling at potentials not exceeding 25 volts in either direct or alternating current, and the wires may be extended to the coal face. To obtain a source of adequate illumination it will only be necessary to use alternating current at a frequency of 150 cycles per second at 8 or 10 volts potential to energize lamps of any candle power that may be deemed sufficient by the operators.

Explains Necessary Current Volume

An illustration of the current volume necessary to energize a 21 cp. 8-volt mazda lamp such as is used on automobiles might aid in understanding this point. A 21 cp. lamp burning one-half watt per candle power would require 10½ watts. This divided by 8 volts would equal 1 5/16 amp. Referring to Fig. 1, it is found that it would require a current of 200 amp. at a potential of 10 volts to ignite a mixture of air and methane. If choke coils were placed in the lamp circuit so as to limit its possible capacity to 10 amp. it will be seen that a safety factor of 2,000 per cent would be established for ignition by electric sparking.

If the generator were designed to supply ten 21-cp. lamps a choke coil might be placed in the main circuit or the self induction of the generator could be so designed as to limit its output to 50 amp. which would afford a safety factor of 500 per cent. The voltage being low the insulation of the wiring could be of a nature that would be comparatively cheap such as a weatherproof and slow-burning covering, although some kinds of slow-burning insulation are liable to damage from acid water.

One detail in any scheme of this kind is highly important, namely, the lamp fixture. This should be so designed as to be capable of withstanding mechanical abuse, also of being easily placed in any convenient position. It has been suggested that the present miner's safety lamp be designed to hold two bulbs, one of which might be operated from the present type of storage battery, the other being energized by means of a length of flexible cord. This latter might well terminate in a plug connection, which could be plugged in to a source of high frequency current at convenient points. The objection to any method of this kind would be the necessity of the miner having to drag the connecting cord around with him as he moved from place to place.

Describes Another Method

Another, and probably a feasible method, would be to install a suitable generator in any convenient position, run the necessary wiring to such places as might be desired, as many plug outlets being placed in the circuit as might be necessary. From these points, extension cord with cab tire insulation could be run to lamp fixtures capable of being hung on a nail or stuck in the timbers as might prove most convenient. The miner could be supplied with his standard safety lamp to enable him to enter and leave the workings or move about outside his room, as occasion might demand.

The generator supplying current to such lamps would be of special design and could be arranged for either an air- or electric-motor drive, and could be placed a suitable distance from the face. Of course, steam engine drive could be used if this were desired. Such a generator could be designed to operate with permanent magnets so as to embody no moving conductors in its construction, thus eliminating collector rings, brushes and exciters. A combined motor-generator set designed to deliver 100 watts or 200 cp. of lighting capacity would weigh about 100 lb. and therefore could be shifted easily from point to point as occasion might demand. Such units could be built with dustproof ball or roller bearings.

To sum up, it would appear that high frequency alternating current might be obtained by the use of a low cost motor-generator set. This could be built to energize 20- to 30-cp. lamps in mechanically strong fixtures capable of being placed in any desired position. Current could be either plugged in or connections made permanently as the operator might see fit. Such a current supply affords a method of mine illumination that is safe for both miner and operator, whether the danger of explosion or fire be from mixtures of air and methane or air and coal dust. The whole system would be free from costly installation and operation charges.

Wooden Box Helps Advance Heading Rapidly

Advancing an entry at the rate of 709 ft. per month, by hand loading, is no easy task. This average was maintained for three consecutive months at the No. 2 mine of the Sudduth Fuel Co., at Huddy, Ky. The mine is in the Pond Creek seam, and the coal averages 51 in. in thickness. The main heading, the one advanced so rapidly, consists of three parallel entries. Driving had to be stopped every 300 ft. and a cross entry turned off on a 150-ft. radius curve.

Undercutting was done with a shortwall machine having a 7½-ft. cutterbar. Four, and sometimes five, cuts per entry, were made each 24 hr. Entries were driven 15 ft. wide and ventilation of the face was effected by a blower and wind-pipe. An interesting feature was the use of a wooden box rather than canvas. This was made up in 16-ft. sections fitted with sleeve or muff joints. The sides were formed of four ⅞x12-in. boards, giving the box an inside cross-sectional area of 100 sq.in. The lumber used cost approximately $40 per M., making the material cost for each section around $2. T. H. Huddy, general manager of the company, states that for this work the wood boxing proved to be economical and highly satisfactory. The 16-ft. sections are easy to handle and require no hangers or supports, but are laid directly on the bottom.

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Book Reviews

Toured the States Checking Machine Loader

Convincing proof of the progress in mechanical loading in coal mines is furnished in "Bulletin 17, Coal Mining Investigations," published by the Carnegie Institute of Technology, Pittsburgh, Pa., which includes "Mechanical Loading in Coal Mines," by F. E. Cash, mining engineer, U. S. Bureau of Mines and E. H. Johnson, research fellow, Carnegie Institute of Technology. The speed with which this bulletin has been produced is one of its most valuable attributes, for, with a development which moves along as rapidly as mechanical loading of coal, the would-be authors who have hot-footed it round the country from Dan to Beersheba, or shall we say, from the Dodge Slope in Scranton, Pa., to the Sublet mine near Kemmerer, Wyo., find when they get back that to cover the ground satisfactorily they ought to be making another round.

It is interesting to note how complete this record is. The reader can get a good idea of about all that has been done in the United States. Not all the mines, it is true, have been visited that have mechanical loaders, but almost all kinds of devices have been covered. We note that the Paris Purity Coal Co.'s installation in Arkansas is omitted as is also the activities of the Montevallo Coal Co. in Alabama. The Phelps-Dodge Corporation, in Dawson, N. M., is not covered and at Sublet, Wyo., there are two kinds of conveyors now beside the one listed.

Inspection Reveals Value

But what a valuable symposium this book is can only be judged by its inspection. It not only describes all the devices giving their heights, lengths, widths, gages, power required, gathering system, types of conveyors, propelling mechanism, speed and crew but in many cases it gives time studies and plans of the mine workings. It also publishes a cost analysis of operation with average loading machines of the portable car-loading type and with scrapers and conveyors in thin beds. Assuming a machine cost delivered of $15,000 and machine labor at $8.14, $4.00 and $6.50 per day respectively, the cost of loading by a portable car loader is given as 40.3c., 27.0c. and 34.6c. respectively, making a saving over handloading costs of 39.7c., 8.0c. and 20.4c. respectively. Scraper equipment is recorded as costing $5,100 delivered, and with machine labor at $7.50, $4.00 and $5.50 per day the cost of loading is placed at 59.7c., 38.3c. and 48.2c. per ton respectively giving a respective saving of 40.3c., 11.7c. and 27.8c.

The industry is greatly indebted to F. E. Cash and E. H. Johnson, to the Advisory Board for the Co-operative Mining Courses of the Carnegie Institute of Technology and to the U. S. Bureau of Mines for the preparation of this little volume. It contains 113 pp., is 6x9 in. in size and sells for $1.

Mainsprings of Men

Poincare, says a recent Parisian epigram, knows everything, everything, and understands nothing, but Briand knows nothing, nothing, and understands everything. Something, such as has been said of Briand, might be said of Whiting Williams, author of a recent book entitled "Mainsprings of Men." The reviewer has made no count, but if there are a half dozen figures in the book he will be surprised.

Mr. Williams has traveled far and wide and worked entirely incognito and unsuspected in all manner of industrial plants, including many coal mines, and in many countries. He knows the mind of the worker and can quote his very words. He can cause the reader to see the worker's point of view. Perhaps the reader could dispense with this book altogether if he could look into his own heart and impulses and judge of other men's "mainsprings" by his own. But that he cannot do without some intelligent explorer like Whiting Williams to show him the way.

Mr. Williams' first chapter is on the immediate need of the laboring man for his pay envelope, a need so pressing that he is not interested in delayed bonuses, thrift and group insurance. These attract only the men who are better paid and are able for that reason to look ahead.

Then follow two chapters on working conditions and caste. Those capitalists who have worked their way up will recall that every time they rose, the honor of the better job was as large an item as the increased pay and that often the status, even without authority, of the job is so important as to make men seek it even at a decreased rate of remuneration. The undesirability of the job usually determines the class of men in it and so tends to make the caste distinction the more obvious. When the wage rate is changed relatively the caste alignment is revised, and dissatisfaction results. But danger and hard labor in a job is not a deterrent but rather a source of vainglory. The cry, "You ain't got 'guts' enough for this job" shows the attitude of the worker to this feature of his work.

The Superiority of the Miner

"In a Welsh coal town," says Mr. Williams, "the 'colliers' as they came down the street at the end of a shift were always grimier than those who only helped those experts by shoveling, not coal, but mud or rock. So because the colliers were immediately more important than laborers, one way we had of showing our importance on the street was to get as black as possible. That, however, did not keep every coal worker in the town from figuring, along with all the other miners in Christendom, that he was superior to any ordinary factory hand because as a miner he was in the habit of taking a daily bath!"

The "Worker and His Organizer" and "The Worker and His Employer," "The Wish for Worth" and other like chapters follow. At the end of each chapter are "Problems" for solution based on the foregoing considerations; problems such as all employers must solve frequently, but they don't involve figures quite so much as principles. After all, wages are not the sole consideration in economic production; the will to work, the ability and readiness to co-operate are often as big a factor as the wage scale. Mutual regard in industry is as fateful as rates of pay. The worker's mind is more important than his body. How he thinks, what he thinks, why he thinks when he thinks is the subject of "Mainsprings of Men." The book has 311 pages, 5½x8¼-in. and is published by Charles Scribner Sons, Fifth Ave., New York City. The price is $1.50.

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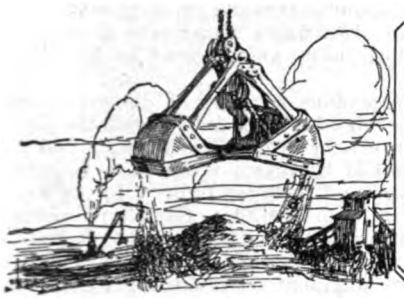
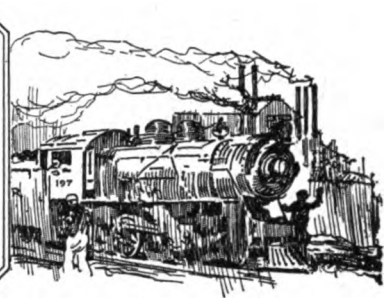


Production And the Market



Unwonted Holiday Activity Marks Coal Trade As Anthracite Peace Parley Drags

Tradition as well as such seasonal influences as the Christmas holiday lull and pre-inventory hesitancy have affected the coal market more or less during the last week, as in the corresponding period of years past. These influences have been offset to a certain extent, however, by the anthracite suspension, but most of all by the appearance of real winter weather over a broad expanse of territory—the first cold snap of any consequence thus far this season, reaching sub-zero levels in some localities. Domestic demand has picked up notably in response to the mercury's dip and steam consumers in many instances have discarded the waiting game and replenished waning stocks to be on the safe side.

Curtailment of production by reason of low running time during the last two weeks has had a strengthening tendency, but the heavy volume of output in previous weeks since October gave ample assurance that there would be no dearth of supplies. As a matter of fact "no bills" had become uncomfortably plentiful in many sections, and the cleaning up of tracks cluttered with unordered coal was a job of no mean proportions. The net result has been a firmer tone in prices without any markedly buoyant characteristics. As a rule, steadiness continues to be more marked in Eastern markets, the outstanding weak spot being New England, where steam grades have slumped again, despite the help of seasonable weather. As this is generally attributed to the belief that the end of the anthracite strike is near, there is a likelihood that consumers will soon begin to show more interest if negotiations tend to be prolonged.

As prospects for general business are considered favorable, industrial operations, car loadings and pig iron production being at high levels, and plenty of cold weather is likely before the winter ends, the coal trade outlook is good.

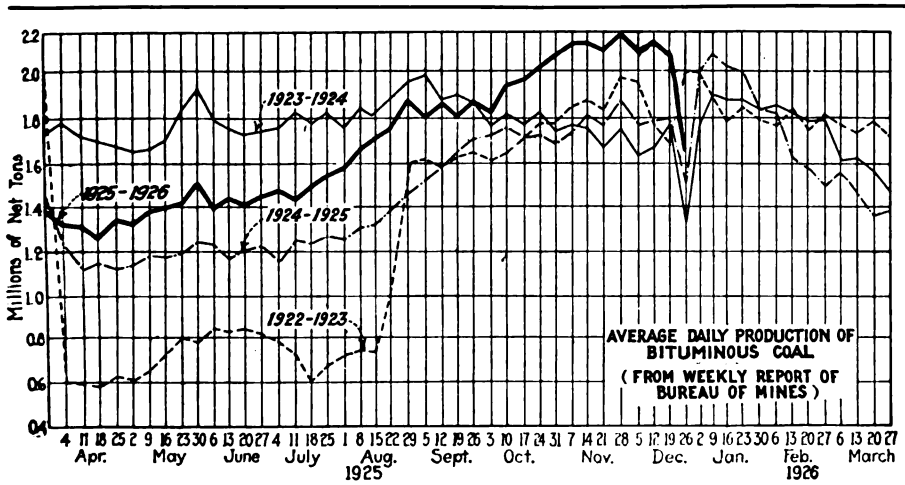
Belief that the anthracite difficulty was about to be settled caused a number of cancellations of orders for anthracite substitutes, but the appearance of cold weather and a realization that hard coal would not be flowing freely for quite awhile even if the strike was settled quickly—which is not at all certain—brought a flood of renewals, and at advanced prices in many instances. Coke continues to be most in demand as a substitute, and many in the trade are of the belief that it will hold many new customers when the strike ends.

Output in 1925 Over 500,000,000 Tons

Production of bituminous coal during the week ended Dec. 26 is estimated by the Bureau of Mines at 8,452,000 net tons, a decline of 4,237,000 tons from the total for the preceding week but 912,000 tons more than was produced in the corresponding week of last year. Total output for the calendar year 1925 to Dec. 26 is 514,827,000 net tons, compared with 473,208,000 tons in the same period of 1924. Anthracite production during the week ended Dec. 26 totaled about 32,000 net tons, as against 55,000 tons in the preceding week. Hard-coal output for the calendar year to Dec. 26 is about 62,119,000 net tons, compared with 89,320,000 tons up to the same date a year ago.

Coal Age Index of spot prices of bituminous coal stood on Jan. 4 at 181, the corresponding price being $2.19, compared with 178 and $2.16 on Dec. 28.

Dumpings of coal at Hampton Roads during the week ended Dec. 31 underwent the usual holiday slump, the total being 355,126 net tons, compared with 446,093 tons in the preceding week.



Estimates of Production

(Net Tons)

BITUMINOUS

	1924	1925
Dec. 12 (a)	10,873,000	12,908,000
Dec. 19 (a)	10,814,000	12,689,000
Dec. 26 (b)	7,540,000	8,452,000
Daily average	1,508,000	1,690,000
Cal. yr. to date	(c) 473,208,000	514,827,000
Daily av. to date	1,565,000	1,697,000

ANTHRACITE

Dec. 12	1,772,000	64,000
Dec. 19 (b)	1,867,000	55,000
Dec. 26 (b)	1,029,000	32,000

BEEHIVE COKE

Dec. 12 (a)	192,000	290,000
Dec. 19 (b)	218,000	313,000
Cal. yr. to date	(c) 9,275,000	10,258,000

(a) Revised since last report. (b) Subject to revision. (c) Minus two days' production to equalize number of days in the two years.

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Midwest Demand Responds to Cold Snap

About a week of very cold weather has created a tremendous difference in the Midwest market. This has made itself felt in a brisk demand for all grades of coal and at better prices.

The domestic market was the first to be affected, as two or three days of below zero weather taxed the bins of retailers to the utmost and a lot of them saw their reserve piles dwindling at an alarming rate of speed; consequently they placed orders for renewed supplies and for immediate shipment. Those who were actually cleaned out of coal were paying a premium to the producers and wholesalers for car numbers. The demand for southern Illinois and central Illinois coals has been very good indeed. Most operators find themselves heavily booked on lump coal, comfortably supplied with orders for egg, and fairly well booked on their 3x2-in. small egg. In Indiana the condition is about the same.

West Virginia high volatile and eastern Kentucky coals moving into the Middle West are being absorbed rapidly, with additional orders being placed daily. Prices are firm to rising, and the market, generally speaking, is good. Smokeless coals from West Virginia have reacted some and prices have gone up a little, but they are a long way from the $5 and $6 levels they attained six or eight weeks ago when most of the smokeless coal was diverted to the East.

There is no great fuss about anthracite as those who have burned up their supply are now using either coke or smokeless, or a combination of both, and appear to be quite satisfied.

In the face of the tremendous tonnage of domestic coal that is being produced this week, it is remarkable that prices on steam coals have held firm. This is explained by the fact that a great deal of the extra steam coal is being used for heating purposes and it takes quite a lot of coal to heat large factories in zero weather. Operators anticipate that if the cold weather lasts another week or so steam coal prices will slip, but the buying public are placing orders heavily for future shipment on present price levels.

Demand for domestic sizes has been unusually good in the Carterville field. Egg is in greater request than lump as a rule, but the nut sizes are slow and steam coal is heavy, which is unusual around the holidays. Railroad coal has been fair at the shaft mines, car supplies good, and working time from four to six days a week for the mines that are working. The strip mines have good working time; railroad tonnage shows improvement and prices seem to be better.

In the Duquoin and Jackson County field there is no change—the mines are working four to six days a week; railroad tonnage is light; no change in prices but the smaller sizes remain unbilled. In the Mount Olive field domestic has been moving well, but steam is slow; the only

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	Jan.5, 1925	Dec.21, 1925	Dec.28, 1925	Jan.4, 1926†
Smokeless lump	Columbus	$3.85	$3.50	$3.50	**$3.35@ $3.75**
Smokeless mine run	Columbus	1.90	2.75	2.75	**2.75@ 3.00**
Smokeless screenings	Columbus	1.10	2.60	2.60	2.50@ 2.75
Smokeless lump	Chicago	3.75	3.10	3.35	**3.75@ 4.25**
Smokeless mine run	Chicago	1.85	2.15	2.10	2.00@ 2.25
Smokeless lump	Cincinnati	4.10	3.60	4.00	**3.75@ 4.50**
Smokeless mine run	Cincinnati	2.10	2.35	2.55	*2.50*
Smokeless screenings	Cincinnati	1.15	1.85	1.85	*1.75@ 1.90*
*Smokeless mine run	Boston	4.10	5.00	5.00	*4.50@ 4.75*
Clearfield mine run	Boston	1.95	2.00	1.90	**1.75@ 2.25**
Cambria mine run	Boston	2.20	2.30	2.30	2.10@ 2.50
Somerset mine run	Boston	2.05	2.10	2.05	**1.85@ 2.35**
Pool 1 (Navy Standard)	New York	2.80	2.95	2.95	2.75@ 3.15
Pool 1 (Navy Standard)	Philadelphia	2.75	2.95	2.95	2.80@ 3.10
Pool 1 (Navy Standard)	Baltimore	2.25	2.20	2.20	**2.25@ 2.35**
Pool 9 (Super. Low Vol.)	New York	2.05	2.30	2.30	*2.15@ 2.45*
Pool 9 (Super. Low Vol.)	Philadelphia	2.15	2.30	2.30	2.20@ 2.45
Pool 9 (Super. Low Vol.)	Baltimore	1.75	2.00	2.00	**2.10@ 2.20**
Pool 10 (H.Gr.Low Vol.)	New York	1.85	2.10	2.05	1.90@ 2.25
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.80	2.05	2.05	2.00@ 2.15
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.60	1.90	1.90	**1.90@ 2.00**
Pool 11 (Low Vol.)	New York	1.60	1.75	1.75	1.65@ 1.90
Pool 11 (Low Vol.)	Philadelphia	1.55	1.90	1.90	1.85@ 2.00
Pool 11 (Low Vol.)	Baltimore	1.45	1.65	1.65	**1.70@ 1.75**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.50	1.60	1.60	1.50@ 1.70
Pool 54-64 (Gas and St.)	Philadelphia	1.50	1.60	1.60	1.55@ 1.70
Pool 54-64 (Gas and St.)	Baltimore	1.55	1.65	1.65	1.65@ 1.70
Pittsburgh scr'd gas	Pittsburgh	2.40	2.65	2.65	2.60@ 2.75
Pittsburgh gas mine run	Pittsburgh	2.10	2.10	2.10	2.00@ 2.25
Pittsburgh mine run (St.)	Pittsburgh	1.85	2.05	2.05	2.00@ 2.10
Pittsburgh slack (Gas)	Pittsburgh	1.30	1.55	1.55	1.50@ 1.60
Kanawha lump	Columbus	2.30	2.25	2.25	2.00@ 2.50
Kanawha mine run	Columbus	1.55	1.70	1.70	1.55@ 1.85
Kanawha screenings	Columbus	.95	1.20	1.20	*1.10@ 1.25*
W. Va. lump	Cincinnati	2.25	2.75	2.35	**2.50@ 3.00**
W. Va. gas mine run	Cincinnati	1.45	1.65	1.60	1.50@ 1.75
W. Va. steam mine run	Cincinnati	1.35	1.55	1.55	**1.50@ 1.75**
W. Va. screenings	Cincinnati	.85	1.15	1.10	**1.00@ 1.25**
Hocking lump	Columbus	2.50	2.35	2.35	2.25@ 2.50
Hocking mine run	Columbus	1.60	1.85	1.85	1.75@ 2.00
Hocking screenings	Columbus	1.05	1.25	1.25	1.20@ 1.30
Pitts. No. 8 lump	Cleveland	2.40	2.35	2.35	*1.90@ 2.75*
Pitts. No. 8 mine run	Cleveland	1.85	1.85	1.85	*1.80@ 1.85*
Pitts. No. 8 screenings	Cleveland	1.50	1.45	1.55	*1.45@ 1.55*

Midwest	Market Quoted	Jan.5, 1925	Dec.21, 1925	Dec.28, 1925	Jan.4, 1926†
Franklin, Ill. lump	Chicago	$3.35	$3.35	$3.35	**$3.50**
Franklin, Ill. mine run	Chicago	2.35	2.50	2.50	2.35@ 2.65
Franklin, Ill. screenings	Chicago	1.95	1.85	1.85	1.75@ 2.00
Central, Ill. lump	Chicago	3.10	2.85	2.85	**3.00@ 3.25**
Central, Ill. mine run	Chicago	2.20	2.30	2.30	2.25@ 2.35
Central, Ill. screenings	Chicago	1.95	1.40	1.40	1.35@ 1.50
Ind. 4th Vein lump	Chicago	3.35	3.00	3.00	2.75@ 3.25
Ind. 4th Vein mine run	Chicago	2.35	2.30	2.30	2.25@ 2.35
Ind. 4th Vein screenings	Chicago	1.85	1.85	1.85	1.75@ 2.00
Ind. 5th Vein lump	Chicago	3.00	2.50	2.50	2.35@ 2.65
Ind. 5th Vein mine run	Chicago	2.10	1.95	1.95	1.85@ 2.10
Ind. 5th Vein screenings	Chicago	1.70	1.40	1.40	1.35@ 1.50
Mt. Olive lump	St. Louis	3.00	2.85	2.85	2.75@ 3.00
Mt. Olive mine run	St. Louis	2.35	2.00	2.00	2.00
Mt. Olive screenings	St. Louis	1.80	1.75	1.75	1.75
Standard lump	St. Louis	2.85	2.40	2.40	2.35@ 2.50
Standard mine run	St. Louis	1.95	1.80	1.80	1.75@ 1.90
Standard screenings	St. Louis	1.55	.85	.85	.75@ 1.00
West Ky. block	Louisville	2.60	2.00	2.00	1.85@ 2.15
West Ky. mine run	Louisville	1.55	1.35	1.35	1.25@ 1.50
West Ky. screenings	Louisville	1.10	.95	1.00	*.80@ 1.10*
West Ky. block	Chicago	2.60	2.00	2.00	**2.00@ 2.50**
West Ky. mine run	Chicago	1.50	1.25	1.25	**1.25@ 1.75**
South and Southwest					
Big Seam lump	Birmingham	2.85	2.75	2.75	2.50@ 3.00
Big Seam mine run	Birmingham	1.70	2.10	2.10	2.00@ 2.25
Big Seam (washed)	Birmingham	.85	2.30	2.30	2.10@ 2.50
S. E. Ky. block	Chicago	2.50	3.10	3.00	**3.00@ 3.25**
S. E. Ky. mine run	Chicago	1.50	2.15	1.85	1.75@ 2.00
S. E. Ky. block	Louisville	2.50	3.00	2.85	**2.75@ 3.25**
S. E. Ky. mine run	Louisville	1.35	1.60	1.60	*1.40@ 1.75*
S. E. Ky. screenings	Louisville	.95	1.10	1.15	**1.10@ 1.35**
S. E. Ky. block	Cincinnati	2.60	2.85	2.85	**2.75@ 3.50**
S. E. Ky. mine run	Cincinnati	1.45	1.60	1.60	1.50@ 1.75
S. E. Ky. screenings	Cincinnati	.90	1.15	1.10	**.90@ 1.35**
Kansas lump	Kansas City	5.00	5.00	5.00	5.00
Kansas mine run	Kansas City	3.50	3.10	3.10	3.00@ 3.25
Kansas screenings	Kansas City	2.50	2.30	2.30	2.25@ 2.35

* Gross tons, f.o.b. vessel, Hampton Roads.

† Advances over previous week shown in **heavy type**; declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Jan. 5, 1925 Independent	Jan. 5, 1925 Company	Dec. 28, 1925 Independent	Dec. 28, 1925 Company	Jan. 4, 1926† Independent	Jan. 4, 1926† Company
Broken	New York	$2.34	.....	$8.00@ $9.25	.....	.....	.....	.....
Broken	Philadelphia	2.39	.....	9.15	.....	.....	.....	.....
Egg	New York	2.34	$8.50@ $8.75	8.75@ 9.25	.....	.....	.....	.....
Egg	Philadelphia	2.39	9.45@ 9.75	8.80@ 9.25	.....	.....	.....	.....
Egg	Chicago*	5.06	8.17@ 8.40	8.08	$9.50@10.00	$8.03@ $8.25	$9.50@10.00	$8.03@ $8.25
Stove	New York	2.34	9.75@10.25	9.00@ 9.50	.....	.....	.....	.....
Stove	Philadelphia	2.39	10.00@10.75	9.15@ 9.50	.....	.....	.....	.....
Stove	Chicago*	5.06	8.80@ 9.00	8.53@ 8.65	10.00@11.00	8.48@ 8.80	10.00@11.00	8.48@ 8.80
Chestnut	New York	2.34	10.00@10.25	8.75@ 9.40	.....	.....	.....	.....
Chestnut	Philadelphia	2.39	10.00@10.75	9.25@ 9.40	.....	.....	.....	.....
Chestnut	Chicago*	5.06	8.61@ 9.00	8.40@ 8.41	10.00@11.00	8.50@ 8.75	10.00@11.00	8.50@ 8.75
Pea	New York	2.22	4.50@ 5.50	5.50@ 6.00	.....	.....	.....	.....
Pea	Philadelphia	2.14	5.75@ 6.00	6.00	.....	.....	.....	.....
Pea	Chicago*	4.79	5.36@ 5.75	5.36@ 5.95	5.50@ 6.00	5.50@ 6.00	5.50@ 6.00	5.50@ 6.00
Buckwheat No. 1	New York	2.22	2.10@ 2.50	3.00@ 3.15	.....	.....	.....	.....
Buckwheat No. 1	Philadelphia	2.14	2.50@ 3.00	3.00	.....	2.50@ 3.00	.....	2.50@ 3.00
Rice	New York	2.22	1.85@ 2.25	2.00@ 2.25	.....	.....	.....	.....
Rice	Philadelphia	2.14	2.00@ 2.25	2.25	.....	.....	.....	.....
Barley	New York	2.22	1.40@ 1.60	1.50	.....	.....	.....	.....
Barley	Philadelphia	2.14	1.50	1.50	.....	.....	.....	.....
Birdseye	New York	2.22	1.40@ 1.60	1.60	.....	.....	.....	.....

*Net tons, f.o.b. mines. †Advances over previous week shown in **heavy type**; declines in *italics*.

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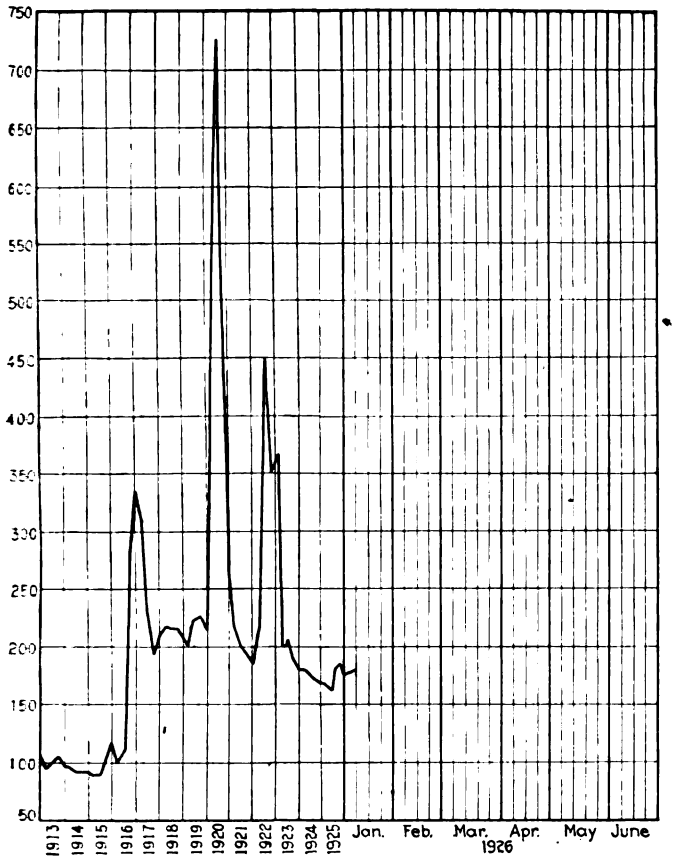

Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926	1925		
	Jan. 4	Dec. 28	Dec. 21	Jan. 5
Index	181	178	179	172
Weighted average price	$2.19	$2.16	$2.17	$2.08

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke; 1913-1918," published by the Geological Survey and the War Industries Board.

thing that saved this field was railroad tonnage, which came in the last few days in the month quite heavily and cleaned up everything. The prevailing price on this coal for domestic sizes is $2.75 both city and country.

In the Standard field there was an increase of about 10c. a ton for a day or two on domestic sizes and then they slipped back. At present there is a surplus of all other sizes than 6-in. lump and there is no unusual demand for this size. All mines are carrying "no bills." Railroad tonnage shows some improvement, there are plenty of cars and the mines are getting from three to five days per week.

Zero weather at St. Louis put the retail business on the map for a few days to finish up the year. All sizes moved, principally middle grade, and Standard is in fair demand. Orders for high grade have not been as numerous and there has been no unusual call for anthracite; smokeless showed some activity and coke is moving fairly well.

Country domestic business is unusually good on middle-grade coals. There is some activity in the country on coke. Country steam is fairly good and city steam in carloads is a little slow, but is expected to show improvement soon.

Wagonload steam is good and continues to show gains. No change in prices.

Tracks Cleared in Kentucky

In Kentucky there has been a heavy demand for car numbers, due to zero temperature, which brought about heavy demand for coal from retailers and for heavier firing for heating purposes.

With light production over the holidays in eastern Kentucky and strong demand for all sizes, coal on track has been in good movement and producers have been putting coal in transit more freely on prospect. Western Kentucky took advantage of an opportunity to increase tonnage over the week. River coal has been shut out of the markets by heavy ice in the Ohio River.

Inventory work is nearly completed and improved demand for industrial coal is expected soon. Railroad consumption is heavy; utilities are consuming a lot of fuel and cement plants are working at full spead. Prices are no better on steam or small prepared sizes, but block coals are stronger by 25c. a ton or so in eastern Kentucky, and a trifle stronger in western. Except for special coals, eastern Kentucky prices are: Block, $2.75@$3.25; lump and egg, $2@$2.25; nut, $1.75@$2; mine-run, $1.40@$1.75; screenings, $1.10@$1.35. Western Kentucky block, $1.85@$2.15; lump and egg, $1.75@$2; nut, $1.35@$1.50; mine-run, $1.25@$1.50; screenings, 80c.@$1.10.

Northwestern Trade Spurts

Coal dock operators at Duluth-Superior experienced a burst of activity last week as a result of a spell of sub-zero weather. Retailers were flooded with orders. The docks had comparatively moderate orders for prompt shipment but soon got batches of orders for later delivery.

December coal shipments are estimated at around 28,000 cars, compared with 27,411 cars in November and 29,615 cars in December last year. Increased movement is looked for in January as a result of the heavy accumulations of orders on dock operators' books and expectations that larger consumers and dealers will be in the market to replenish supplies that have been running low.

Cold weather and the knowledge that supplies on the docks are running low contributed to a rush for anthracite by domestic consumers late last week. From the present outlook stocks will be about cleaned up within three weeks. Supplies of bituminous coals on commercial docks are estimated at around 4,890,000 tons, so that no apprehensions are felt regarding the possibility of a shortage before spring. Quotations are unchanged for both anthracite and bituminous coals.

There has been no change whatever during the last week in the fuel situation in Milwaukee. Demand fluctuates with the mercury, and consumers are uncomplainingly facing the colder weeks of the winter now closely ahead. There is plenty of coke and Pocahontas and the better grades of bituminous coal, and there will be no hardship in this section except such as accompanies all wintry weather among the poor.

Arctic temperatures touching considerably below zero in the Twin Cities served to increase domestic and other heating-plant consumption of coal materially while it lasted. The severe weather endured but four or five days, but it did give a sudden increase to retail demand.

Steam coal demand has been better as long as the severe weather threatened to cut down deliveries as well as to augment demand. But supplies have been too good and the severe weather too short to do more than give passing help.

Southwest Trade Sensitive to Weather

The first zero weather of the season in the Southwest last week relieved the congestion of 234 "no-bill" cars on Kansas tracks, for the Southwestern market throughout the year has been unusually responsive to climatic changes. With the rising of the thermometer in the middle of the week orders again began to fall off and the surplus situation threatened to revert to its former condition. Arkansas, while not confronted with the surplus of Kansas, because a much smaller proportion of its mines are in operation, is having greater difficulty moving what it does produce, and many mines are working only two or three days a week.

During the past week there was a slight improvement in the Colorado domestic trade, which is attributed to the material change in the weather conditions. The increase is expected to continue, as the stocks on hand are getting very low, and it is not unlikely that if the cold weather continues the mines will be working to full capacity in order to supply the demand. Several operators are booked into the middle of January and are unable to take on any additional orders at this time.

There has been no change in the prices and in all probability present quotations will continue until April 1. There is ample labor supply and no interruptions from a transportation standpoint.

Demand for coal for heating purposes is quieter in Utah now than for years at this season. The weather has

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been spring-like of late and consumers are buying only from hand to mouth. Domestic lump continues to be the most popular grade for residences. Industrial demand continues fairly steady with the metal industry and the railroads the best customers. The sugar manufacturing "campaign" is practically over and the sugar companies are no longer in the market for coal. Prices remain as firm as ever, and the labor situation is all that could be desired from the standpoint of the operator.

Cold Snap Lightens Holidays at Cincinnati

At Cincinnati cold weather that hit both ways served to enliven what otherwise would have been a dull season caused by the holidays. Already a fall in production has been shown through the American Railway Association's report for the Cincinnati district, where last week 12,044 cars passed from the south to the north side of the Ohio River, a decrease of 1,818 cars from the week previous, but 2,514 more than in the corresponding week of last year.

The anthracite conference also acted as a control to keep the market from running away with itself once the surplus and distress cars were cleaned up. Rises in price, it follows, were close to a semblance of normal. West Virginia high volatile lump advanced to $2.75@$3. Southeastern Kentucky, which had been holding out for $3 as its December price but which had dropped to $2.75 and lower for block, recovered, and at this writing some wholesalers are asking $3.25. Egg recovered to its first of the month range and all lines of mine-run went on the same basis, steam and gas being quoted $1.50@$1.75. Inventory time, which always plays hob with the slack piles, caused a slight recession there.

In smokeless the advances made last week on nut, egg and lump were maintained. Mine-run is firm but screenings slid off 10c.@15c. Production both in the Pocahontas and New River fields, coupled with the domestic demand, has straightened things out for the low-volatile producers.

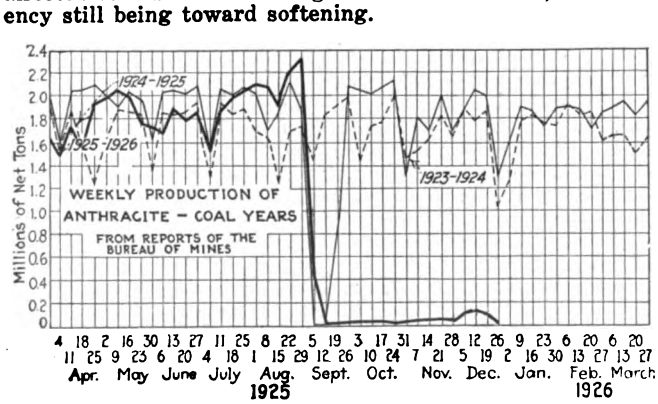
Zero weather froze the Ohio River on Dec. 27 and put a quietus to river movement. Retail business enters the year with practically the same price level that has been maintained for months. On smokeless lump quotations are $9@$9.50; mine-run, $6@$6.50; bituminous lump, $6.25@$7; slack, $4.50.

A drop in temperature has stimulated the domestic trade at Columbus to a marked extent. Dealers have cleaned up stocks to a large extent and distress coal has disappeared from the Columbus market, as well as from Detroit and Toledo, and better prices are obtained for the supply which is available. Retailers have been holding prices steady. Pocahontas users are now coming into the market better.

In the steam trade, buying is still for present needs as reserves are still good and large users are not disposed to increase them. One of the unexplained features is the weakness of screenings, which had been holding up fairly well. Practically no consignment steam grades are on the market and the usual mine prices are being obtained.

Output in the southern Ohio field is estimated at about 25 per cent of capacity, with the Pomeroy Bend field producing the lion's share. Preparations are being made to place additional mines in operation, however, and a better run is expected in January.

The only ripple in the eastern Ohio coal trade during the past week or so has been the increased activity of retailers due to the cold snap and heavy snowfall, which resulted in a rush of orders. However, prices have been in no wise affected so far as domestic grades are concerned, the tendency still being toward softening.



In the steam trade, inactivity has been the controlling feature during the holidays, due to many industrial plants being practically closed down or running such short time as to seriously curtail coal consumption. Spot prices on slack and nut-and-slack are 10c. lower than a week ago, and the market is slow to absorb the fuel being offered.

Depression Less Heavy at Pittsburgh

The Pittsburgh market shows a larger turnover, with more consumption and more production, but the relation between production and consumption is unfavorable to trading. There is a slight accumulation of steam coal on track. Demand for domestic coal has been much heavier in the past fortnight, but domestic coal is not a large enough proportion of the total business to make much difference in the general showing that the market is in poor shape. Prices are the same all along the line as formerly, except that while steam slack in general has been $1.40@$1.50, Panhandle slack is now strictly $1.50, with slack from some other parts of the district readily obtainable at $1.40.

The Buffalo bituminous trade is awaiting the possibilities of the next few days with much interest. That the resumption of anthracite mining is going to get the present trade to rights is shown by the fact that while Pocahontas egg now sells here for $12 at the curb, dealers say that they hope to be able to hold that trade against anthracite by selling it for $9. The regular bituminous shippers rather dread a return to mining, for it is expected to hurt that business more or less. Bituminous shippers declare that they are selling coal for exactly the same prices that it brought last summer.

New England Steam Trade Dips Again

Demand for steam coal has taken another slump in New England. While the weather has been more seasonable the trade has been much influenced by the impending anthracite settlement, and should negotiations be further protracted it is quite likely that the average consumer will be more interested than he professes to be today. For screened bituminous the inquiry from retail dealers is still reasonably good, but for run-of-mine there is only a scattering market.

At Hampton Roads there is perhaps less accumulation than a week ago, owing to the holidays, but spot prices are soft, even for the best grades. No. 1 Pocahontas and New River are quoted at $4.75 down to $4.50 per gross ton f.o.b. vessels, but most of the coal dumped is being applied on contract.

On cars Boston and Providence for inland delivery the smokeless coals range from $6 per gross ton up to $6.40@$6.50, depending upon the situation of the shipper and the tonnage involved. Consumers, especially the industrial users, know that the aggregate of steam coal above ground is relatively very large and they will not be stampeded for the present.

There continues moderate request for substitutes for anthracite. A considerable proportion of the householders in search of fuel are insisting upon something better than run-of-mine bituminous, and various kinds of coke as well as Welsh anthracite and Welsh ovoids, a form of briquet, apparently are in more favor. Steamer cargoes from Welsh and other ports are arriving day by day and, in all, the January arrivals are likely to be heavy.

Prepared smokeless coal is being freely offered at $4.25@$4.75 per net ton at the mines, while low volatiles from Pennsylvania, also in domestic sizes, are commanding $5.25@$5.55, owing to the through rate differential in their favor.

New York Trade Holds to Even Grade

Snow storms which interrupted mining and movement of soft coal in central Pennsylvania late last week did not interfere with receipts in the New York market to such an extent as to cause any uneasiness, but less coal was coming forward, some shippers receiving less than half their usual daily shipments. Mine-run movement sustained the local market, for, in addition to the industrial consumption, a fair volume is moving into residences and other buildings where anthracite formerly was used.

The taking of inventory did not appear to have as much effect on buying as in previous years when buyers usually held off until after New Year's Day.

The market for sized bituminous coal from central Pennsylvania is not particularly brisk, but a fair amount of New River and Pocahontas coals is coming into the market on the basis of $4@$4.75.

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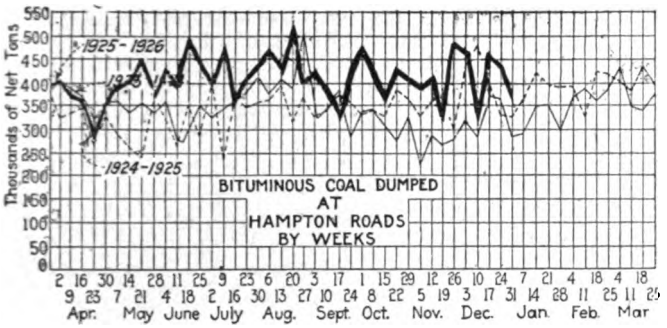

At Philadelphia the bituminous market is still quiet, but there are signs of a pick-up. Concerns that suspended purchases on account of inventory are coming back for regular shipments, and this in conjunction with the drop in production due to the holidays has imparted a touch of firmness to the situation. Offsetting this is the possible end of the anthracite suspension. There has been a fair increase of steam buying by retailers who cater to steam trade, as they have exhausted their anthracite stocks, but even these buyers are quite cautious.

Contract customers are slow to come in for renewals, feeling that by waiting until the end of the anthracite troubles they may be able to close a better bargain. A good volume of rail fuel is moving, but with no special inquiries abroad. Tide movement continues ordinary, with only a couple of clearances recently.

The Baltimore soft-coal market, which had been gradually stiffening for a week, tightened up on prepared sizes with a bang when the cold spell swept the East last week. Quotations for low-volatile lump went up to $4 a net ton; egg and nut were quoted variously from $4.25 to $4.50, and mine-run around $2.25. Industrial coals also were in more brisk demand. Pool 71, quoted quite freely a week ago at $2.15, was bringing generally around $2.25@$2.35, while good Pool 9 coals were generally quoted around $2.15. There was little change in lower grade steam coals or gas coals, either for spot delivery or on contract. The export situation is simply one of absolute stoppage.

At Birmingham the slump in buying ordinarily following the Christmas holidays is not pronounced. Inquiries are good and new business is being booked right along for commercial coal. Consumers are not pressing deliveries as strongly as they were several weeks prior to the holidays and the volume of sales is not quite so large, but otherwise the status of the market is sound and the outlook promising. Bunker trade has suffered little if any setback, inquiry being good, but requirements are not being placed without some delay and effort.

Cold weather has given stimulus to the domestic market, and inquiry and booking have been good for the week. Some grades and sizes have been sold up several weeks ahead and demand has been sufficient to provide an outlet for current production of even the lower and medium qualities for the time being. There has been no change in quotations.

Coke is very active and there is a good market for all grades. Spot foundry is still holding at $6@$6.50; contract, six months and under, around $5.75@$6 per ton; gas coke, $6@$6.50. Egg is quoted $5.25 and nut $4.75@$5 per ton ovens.

Peace Parley Causes Substitutes to Wobble

Failure of the anthracite operation and miners to iron out their differences last week caused much uneasiness and disappointment at New York. Optimism was rampant earlier in the week, as it was thought a settlement would be reached and that hard coal would soon be flowing into the market.

The market for substitutes, which had been active, became dull and wholesale dealers received many cancellations of orders, some of which had been placed at lower than current market prices. When the conference recessed without reaching any conclusion buyers who endeavored to reinstate cancelled orders found prices higher.

So positive were some wholesale dealers that a settlement would be reached that they discussed opening prices at the mines for independent coals.

With the exception of some No. 1 buckwheat held by speculators the wholesale market is cleaned up of anthracite. Coal users are not without fuel, however. There are some domestic sizes of hard coal in retail yards and plenty of coke and soft coal, besides a fair volume of Welsh and German fuels.

As a substitute coke has the inside track and it is expected to continue to hold a part of its present clientele after the anthracite market becomes active. Byproduct coke is well sold up, nut sizes being held at around $9.40 at the ovens, with beehive product fluctuating between $7 and $9.

The peace conference is exerting a strong influence upon the Philadelphia trade. Retailers, facing an active demand for fuel, do not know how to order substitutes to meet this demand, being fearful if the strike ends that they will have coke and bituminous coal on their hands. The cold wave created such a strong demand for fuel that the supplies of coke, the fuel in best demand, have been about cleaned up. Prices have jumped $1 to $2.50 a ton. What little coke is available is of the beehive variety, as all byproduct concerns are sold up for a couple of weeks.

There is a feeling in the Baltimore hard-coal trade that the end of the anthracite strike is approaching, but retailers are not encouraging customers in the belief that an adequate hard coal supply will be had within a month, even under most favorable conditions. It will take considerable time to get hard coal moving again and to restock yards here to a point where they can begin to supply anthracite demands. Soft coal is being pushed meantime, and the public is not only learning how to burn prepared sizes but is taking quite kindly to mine-run in many cases.

The trade at Buffalo is watching with increased interest for the outcome of the peace conference. Some of the wholesalers have run out of buckwheat anthracite and say they cannot get any more. It has been put up in price a little when sold by the independents, but the regular companies kept their old price to the end, selling it as low as $6.85 at the curb. One concern is still delivering its byproduct coke to the curb for $9.50, while others are charging $12. Nobody knows what the coke people will do when anthracite again is in competition, so the trade is getting what it can out of it and the producer is taking it all.

Connellsville Coke Market Turns Calm

Since the top of the Connellsville coke market was reached during Christmas week the market was very quiet for about a week and prices began to yield rather sharply. Standard blast-furnace coke, run-of-oven, which had gone up to $6, but with scarcely any turnover at that figure, is now, say, $4.50@$4.75. Prepared coke, which had gotten up to $8 and more for some grades, is around $5.50@$6.50, but quite irregular.

There is no blast-furnace demand, as some blast furnaces bought prompt lots well before Christmas, to tide over any curtailment that might occur in shipments. Contracting was all done before the latest rise. There may be a few uncovered inquiries, but these would be chiefly among furnaces thinking of starting, and such furnaces can now wait a little while to get their coke at a fair price. One furnace, which had a contract with a byproduct plant through December, is reported to be banking.

The trade in Pittsburgh figures that even if the anthracite strike is settled soon the resumption of mining will take time and that there will be demand for Connellsville coke in the East for about a month after the settlement is signed. This coke, however, will have to go at a moderate price, say $4 to $5 or perhaps $5.50 for prepared coke, according to quality.

The *Courier* reports coke production in the Connellsville and lower Connellsville regions in the week ended Dec. 26 at 95,800 tons by the furnace ovens, a decrease of 28,400 tons, and 95,290 tons by the merchant ovens, a decrease of 7,110 tons, making a total of 191,090 tons, a decrease of 35,510 tons.

Car Loadings, Surplusages and Shortages

	Cars Loaded	
	All Cars	Coal Cars
Week ended Dec. 19, 1925	967,886	187,398
Previous week	1,008,824	191,884
Week ended Dec. 20, 1924	900,654	190,847

	Surplus Cars		Car Shortage	
	All Cars	Coal Cars		
Dec. 14, 1925	172,577	60,245	.....	.....
Dec. 7, 1925	159,897	54,277	.....	.....
Dec. 14, 1924	223,431	100,793	.....	.....

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Foreign Market And Export News

Stiffening of Tone in British Coal Market With Revival of Demand

Revival of demand for coal has placed the British market in a firm position. The low prices are stimulating fresh inquiries and steady bookings are now running well into the new year. Most collieries are fully sold for the next week, many being unable to accept further commitments. A number of pits are reopening on the strength of the subsidy and larger demand, though eighty-five large mines remain idle. The Swedish State Railways are inquiring for 30,000 tons of Admiralty large for January-March delivery. Employment is at the highest level since June. Monmouthshire coals are enjoying a good business and prices are a shade better. Coke holds steady on a fairly good home demand.

The Newcastle-on-Tyne coal trade continues to show a firm, quiet tone until well into January, but the sellers' firmness for sticking out for current quotations is rather checking actual business beyond. The chief inquiry for the past week has been for gas coals, and the major proportion of interest has been shown in such qualities. Steam coals have been rather erratic, becoming somewhat too plentiful for prompt movement at times, but on the whole maintaining a firm front. Coking coals and bunkers are quite firmly held, and the coke market is very much stronger, the falling off in values of a fortnight ago having been only a temporary phase. Patent and beehive sorts are very steady, but the firmest section is gas coke, which is in good demand for both export and home.

Production by British coal mines during the week ended Dec. 19, according to a special cable to *Coal Age*, totaled 5,555,000 gross tons, compared with an output of 5,430,000 tons in the preceding week.

Belgian Industrial Grades Dull

The situation of the Belgian coal market, particularly for industrial grades, is dull, even in the Liége district, where, however, there now is much industrial activity.

In domestic grades, anthracite coals, as well as nuts and small cobbles of half-bituminous, quarter-bituminous and lean coals, remain scarce, but the other sized coals are much easier.

The joint wage commission will meet again in a few days to consider the recent 5 per cent increase of wages. Nearly all the collieries are opposed to this increase being maintained, as they deem it unjustified by present conditions in the trade. The slight increase in demand for Belgian coals noticed a few days ago was due to fears of a general strike of the Belgian miners. Meanwhile, competition is keen on the part of French, British, German and Dutch coals.

No change is reported in the situation of coke and briquets except that stocks are increasing again.

Market Listless and Weak At Hampton Roads

Business at Hampton Roads last week continued dull, with the market weak. Practically all mines serving this section shut down, to remain closed until Jan. 4, but it had little effect on the market.

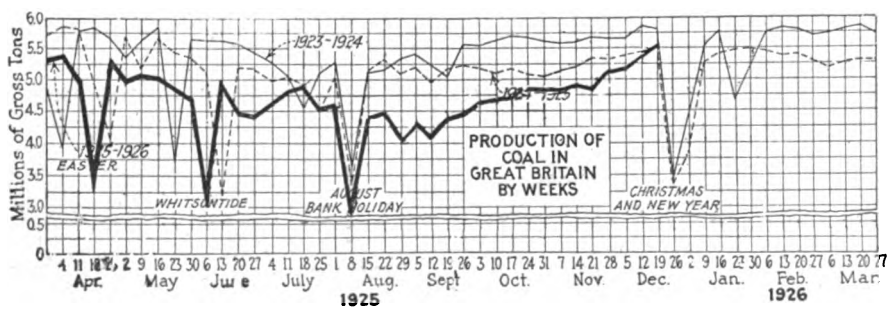
The cold wave apparently did little to stimulate trade, and affected the railroads and those mines that were in operation only slightly. Shipping has been suffering somewhat from bad weather, and the bunker trade consequently has been light.

Strong Demand for All Grades In French Market

The French coal market remains satisfactory. A good volume of orders, for both industrial and house coals, was received by the mines of the Nord and Pas-de-Calais in December, but those for house coals are more pressing and available supplies are becoming scarcer.

Because of the increase in taxes (the advance of 50 per cent of the "royalty" tax alone will add 30,000,000 fr. per annum to the bill of costs of the French collieries), it is probable that prices will be raised as of Jan. 1, when higher rail transportation rates go into effect.

Depreciation of French currency compared with that of Great Britain and Belgium places French coals on such a low price level that there is a good export demand from Belgium, Switzerland and Italy. The Sarre coal field is getting its share of this business through an agreement with the mines of the Nord and Pas-de-Calais.



During November the O. H. S. received from the Ruhr 732,100 tons of indemnity fuel, including 491,100 tons of coal, 210,700 tons of coke, 30,300 tons of lignite briquets. During the past fourteen days of December the O.R.C.A. received from the Ruhr 113,448 tons of coke.

U. S. Fuel Exports in November

	1924	1925
Anthracite, gross tons....	282,217	31,246
Value.....	$3,188,505	$291,981
Bituminous, gross tons...	979,828	1,477,023
Value.....	$4,607,624	$6,408,430
Coke, gross tons.....	57,227	86,551
Value.....	$442,140	$797,238

ELEVEN MONTHS ENDED IN NOVEMBER

	1924	1925
Anthracite, gross tons....	3,266,463	2,833,264
Value.....	$36,405,675	$31,705,283
Bituminous, gross tons...	14,177,681	14,193,946
Value.....	$65,841,614	$62,328,978
Coke, gross tons.....	532,398	720,267
Value.....	$4,452,114	$5,681,929

Export Clearances, Week Ended Jan. 2, 1926

FROM HAMPTON ROADS

For Uruguay:	
Fr. Str. Leopold Ld. for Montevideo	6,020
For Brazil:	
Br. Str. Baluchistan, for Rio de Janeiro	5,773
For Dominican Republic:	
Dan. Str. Phonix, for Macoris	240
Nor. Str. Elna E, for Macoris	242
For Cuba:	
Nor. Str. Cissy, for Cienfuegos	1,538
Br. Str. Maidenhead, for Felton and Daiquiri	6,904
Br. Str. Rexmore, for Havana	4,005
For Chile:	
Nor. Str. Hesperos, for Antofagasta	3,036

FROM PHILADELPHIA

For Martinique:	
Nor. Str. Kopolna, for Genipe Bay	——
For Cuba:	
Br. Str. Pacific, for Havanna	——

Hampton Roads Coal Dumpings*

(In Gross Tons)

	Dec. 24	Dec. 31
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week..	146,756	110,471
Virginian Piers, Sewalls Pt.:		
Tons dumped for week..	104,621	72,295
C. & O. Piers, Newport News:		
Tons dumped for week..	146,921	134,311

*Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS

	Dec. 26	Jan. 2†
Pool 1, New York....	$5.75@$6.00	$5.75@$6.00
Pool 9, New York....	5.10@ 5.30	5.10@ 5.30
Pool 10, New York....	4.80@ 5.15	4.80@ 5.15
Pool 11, New York....	4.55@ 4.75	*4.55@ 4.70*
Pool 9, Philadelphia..	5.05@ 5.30	5.05@ 5.30
Pool 10, Philadelphia..	4.80@ 5.10	4.80@ 5.10
Pool 11, Philadelphia..	4.50@ 4.75	4.50@ 4.75
Pool 1, Hamp. Roads.	4.75@ 4.85	*4.60@ 4.75*
Pool 2, Hamp. Roads.	4.50@ 4.60	*4.30@ 4.30*
Pools 5-6-7, Hamp. Rds.	4.30@ 4.40	*4.00@ 4.15*

BUNKERS

Pool 1, New York....	$6.00@$6.25	$6.00@$6.25
Pool 9, New York....	5.35@ 5.55	5.35@ 5.55
Pool 10, New York....	5.05@ 5.40	5.05@ 5.40
Pool 11, New York....	4.80@ 5.00	*4.80@ 4.95*
Pool 9, Philadelphia..	5.30@ 5.55	5.30@ 5.55
Pool 10, Philadelphia..	5.10@ 5.35	5.10@ 5.35
Pool 11, Philadelphia..	4.75@ 5.00	4.75@ 5.00
Pool 1, Hamp. Roads.	4.85	*4.75*
Pool 2, Hamp. Roads.	4.60	*4.30*
Pools 5-6-7, Hamp. Rds.	4.30@ 4.40	*4.15*

Current Quotations British Coal f.o.b. Port, Gross Tons

Quotations by Cable to *Coal Age*

Cardiff:	Dec. 26	Jan. 2†
Admiralty, large.....	22s.6d.@ 23s.6d.	**23s.@ 23s.6d.**
Steam smalls.....	13s.6d.	13s.6d.
Newcastle:		
Best steams.....	15s.3d.@ 18s.	**18s.**
Best gas.....	16s.6d.	16s.6d.
Best bunkers.....	15s.6d.@ 16s.6d.	**16s.@ 17s.**

†Advances over previous week shown in **heavy type**; declines in *italics*.

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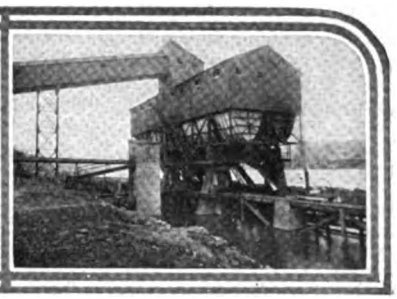
News Items From Field and Trade



ALABAMA

Major developments which will have a marked effect on coal production during 1926 include the Crockard No. 5 Mine of the Woodward Iron Co., near Mulga, a shaft opening which is being driven 500 ft. into a large virgin field of Pratt coal. This mine is being developed with a view of being the largest source of fuel supply for the Woodward company. The Yolande Coal & Coke Co. will have its Connellsville Mine, in Tuscaloosa County, in operation soon. This operation has been rehabilitated at a cost of about $300,000 after being idle about fifteen years. The Black Diamond Coal Mining Co. is building a washery and other plant facilities at Johns, in the Blue Creek field, and will be producing coal there from an old development at an early date. The seven drift openings being developed by Moss & McCormack in Fayette County will be producing coal for shipment during the early part of the year, as will also the new slope of the Brookside-Pratt Mining Co. at its Warrior River plant.

COLORADO

At a meeting of the board of directors of the Colorado Fuel & Iron Co. at Denver, Dec. 30, J. B. Marks was elected vice-president in charge of sales, traffic and purchases. Mr. Marks will continue his present duties as assistant to the president.

ILLINOIS

A. N. Poli, operator of the Greenfield Coal Co., of Greenfield, for the past four years, has sold his lease and improvements to Joseph Dubinick and James O'Brien of Virden. Mr. Poli has accepted a position as Superintendent of the mining department of the Carrollton Clay Corporation, of Carrollton.

INDIANA

Five non-union miners were kidnaped from the Buckskin Mines of the Bosse Coal Co., near Evansville, Jan. 2 by a crowd of nearly 300 men, officials of the mine were informed. John Lenn, mine superintendent, said he did not know where the men had been taken. The mine has been closed eighteen months as the result of a wage disagreement, Lenn said. The men who reported for work were to make repairs preparatory to reopening the shaft.

The Indiana Coke & Gas Co., Terre Haute, has plans under way for the construction of additions to its gas works, including a new byproduct plant for the production of sulphate of ammonia, estimated to cost close to $100,000 with machinery. A new battery of coke ovens and auxiliary equipment will be installed at a cost approximating $400,000.

KENTUCKY

Representative Robsion, of Kentucky, recently introduced a bill in Congress to establish a mine rescue station at Pineville, in the heart of the southeastern Kentucky coal fields, where there has long been need of such service.

G. M. Shoemaker, formerly in the operating department of the Harlan Coal Co., Louisville, stationed at the mines, is now sales manager at the main office at Louisville.

C. D. Glass, head of the Pacific Coal Mining Co., western Kentucky, has moved his office from Louisville to the mines, near Central City, as he spends practically all his time at the mines.

At Madisonville, the West Kentucky Coal Co. and its subsidiary the Kentucky Block Coal Co., which filed joint suits against the Grapevine Coal Co., for $159,000, for coal alleged to have been removed from properties of the companies by the Grapevine concern, have reached an agreement. Settlement was made out of court and the case dismissed.

It was reported from Maysville, late in December that the coal towing boat "J. H. Donald," valued at $80,000 was burned to the water's edge at Ripley, near Maysville.

Emmett O'Neal, head of the Emmett O'Neal Coal Co. and the Process Fuel Co., Louisville, recently was elected vice-president of the Bankers Bond Co., Louisville, a concern which handles insured bonds. O'Neal in November was defeated by a small majority for the office of sheriff of Jefferson County.

Frank D. Rash, former president of the St. Bernard Mining Co. and later vice-president of the West Kentucky Coal Co., has been elected president of the Inland Waterways Co., Louisville, and the Frankfort Elevator Co., and will have charge of their river boats, barges, etc., and development of traffic, terminals, etc. The company handles coal, iron, oil and other products on the Ohio River from Pittsburgh to Louisville principally, as well as below. Mr. Rash is a graduate of the Massachusetts Institute of Technology, coal operator, served a year as head of the American Legion, Kentucky division, and is president of the Western Kentucky Coal Operators' Association, the operators refusing his resignation a short time ago, when he felt that a man who had left the coal trade shouldn't hold the office.

R. R. Webster has returned to Weeksbury and is again chief electrician and master mechanic of the Kentucky operations of the Elkhorn Piney Coal Mining Co. He resigned a position with the Dupont Engineering Co., at the new nitrogen-fixation plant near Charleston, W. Va., to go back to mining work.

More coal has been found in the Parksville community and a company, known as the Parksville Coal Co., with about twenty members, has been formed to develop the product. The latest coal found is a 3-ft. seam discovered on the Allnut place, near the L. & N. R.R. The coal is first class and is being used. The property of W. S. Aldridge contains a 6-ft. seam and it is believed much coal is in the knobs around Parksville. J. Adams of Parksville organized the company to make further investigations and mine the coal if a sufficient quantity is found.

MASSACHUSETTS

The Boston & Maine R.R. is about to build a plant capable of transferring 6,000 tons of coal in an 8-hr. shift from vessels to cars at its Mystic wharf in Boston. The cost will be about $450,000. The yard will have storage capacity for 150,000 tons of coal.

OHIO

An inquest held on Dec. 28 absolved the Cambria Collieries Co. from all blame for the fire in the company's Webb mine which resulted in the death of nine miners. The cause of the fire was not determined, according to an announcement by Coroner Clyde Hardesty, of Bellaire, and State Mine Inspector Jerome Watson.

Bids received Dec. 23 by the Columbus Board of Purchase for 15,000 tons of Hocking nut, pea and slack for the Municipal Light plant, were as follows: Hamilton Coal Co., Columbus, $1.25; Hatton, Brown & Co., Inc., Columbus, $1.25; Jay Miller Coal Co., Columbus, $1.25; W. S. Harman Coal Co., Columbus, $1.28, all f.o.b. mines. For 8,500 tons of Hocking nut, pea and slack for the Scioto River Pumping Station, the bids were: Hamilton Coal Co., $1.25; Hatton, Brown & Co., Inc., $1.25; Jay Miller Coal Co., $1.25. For 3,000 tons

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of Hocking nut, pea and slack for the garbage disposal plant: Hamilton Coal Co., $1.25; Hatton, Brown & Co., $1.25; Jay Miller Coal Co., $1.25; W. S. Harman Coal Co., $1.28. For 600 tons of West Virginia nut, pea and slack: Hatton, Brown & Co., $1.25; W. S. Harman Coal Co., $1.25.

The Stalter-Essex Coal Co. is planning an increase in production from Mine No. 5, in the Pomeroy Bend field, which really is a double tipple serving former mines No. 1 and No. 5. When the tipple was burned eight months ago the company decided to erect a double tipple to serve the two properties. Mine No. 7 also is being operated to capacity, total production from the two mines being 1,800 tons daily. By Feb. 1 this will be increased to 2,200 tons daily. The mines are operated on the 1917 scale basis and little trouble of consequence since the burning of the tipples has occurred in that region.

A meeting of the stockholders of the Hazelton Coal Co., which has a mine at Long Run, in the Hocking Valley section, has been called for Jan. 30 for the purpose of dissolving the corporation. The mine has been completely worked out and the property will be abandoned.

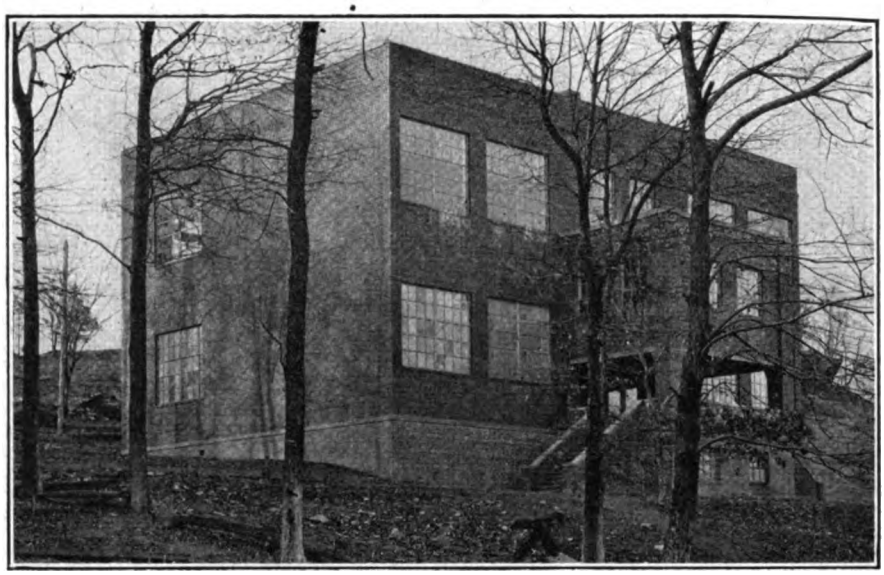
Mine managers, superintendents and others in the production end of the seventeen mines controlled by the Southern Coal & Coke Co., in southeastern Kentucky and northeastern Tennessee mingled with the sales and directing forces in a two day "round-up" held Dec. 28-29 in Cincinnati. E. L. Mahan, president, and John Callahan, general manager, were the chief speakers at meetings that were held for better preparation, better production and better selling methods. The annual dinner was the social event which took place on Mondoy evening.

Aften ten years spent in Cincinnati representing his father's company, the Hutchinson Coal Co., and his own project the Central Fuel Co., B. Lee Hutchinson has moved to Chicago, where he will be located as general Western sales manager for the West Virginia Coal & Coke Co. Mr. Hutchinson and his brother Brooks were the moving spirits last year in the consolidation of their interests the Main Island Creek Coal Co. and other properties into the old line corporation, the West Virginia Coal & Coke Co.

S. R. Jennings, whose properties played a large part in the consolidation recently effected by S. Bascom Slemp of a $9,750,000 company under a Virginia charter, was in Cincinnati recently and said that the general sales offices would be continued there under the direction of W. S. Denham, who has been marketing the Jennings product for several years from offices in the Dixie Terminal Building.

PENNSYLVANIA

Frozen rivers in the Pittsburgh district in the severe cold spell last week caused much inconvenience to consumers of coal and coke, who are dependent on this method of transportation. Fuel was being diverted to the railroads, and one large company was forced to go into the open market and purchase a lot of coke as a result.



A Modern Educational Building in West Virginia

This high school building at Glen White, W. Va., is an example of the progressive development by the E. E. White Coal Co. This building has all the advantages of the modern city school and it also has an abundance of light and fresh air.

Effective Jan. 1, James T. Garbine, coal freight agent of the Pennsylvania R.R. at Philadelphia, became coal freight traffic manager at Pittsburgh, succeeding H. G. Clevenger, who died recently. Carter H. Lippincott, coal freight agent at Pittsburgh, was made coal freight agent at Philadelphia, and Samuel A. Lattimer, chief clerk to the coal traffic manager at Pittsburgh, was appointed coal freight agent at Pittsburgh.

A reward of $5,000 for the recovery of the $48,000 payroll loot obtained by bandits when they held up messengers and guards at mine No. 3 of the Pittsburgh Terminal Coal Corporation at Mollenauer, near Pittsburgh, Dec. 24, has been offered by the company. Isaiah L. Gump, an employee of the company, was slain by the bandits in the holdup.

According to figures compiled by the State Forestry Department the Pittsburgh Terminal Coal Corp. during the first nine months of 1925 mined 2,923,000 tons of coal and used 8,812,804 board feet of lumber. The largest single item was posts, of which 738,000 were used or 6,500,000 board feet. Mine ties were the next largest item, 1,660,000 board feet being used during the nine-month period. Other items were caps, 285,000 ft.; railroad ties, 60,310 ft.; brattice, 77,000 ft. The use of wooden mine rails was discontinued Sept. 1, but up to that time 230,000 board feet was used for this purpose. In the mines of the Clearfield Bituminous Coal Corp. it is estimated, 4.5 board feet of lumber was required for each ton of coal mined.

The Corrado Coal & Coke Co., of Connellsville is putting into operation more plants as a result of the increasing demand for coke. The works at Adelaide are the latest to be put in operation with 100 ovens burning, the coal being shipped from the Vanderbilt mine. The Clarissa mines are furnishing coal for 150 ovens at the Clarissa works, near Vanderbilt. Fort Hill has 40 ovens running. Vanderbilt and Shamrock are furnishing the coal for Fort Hill.

During the Christmas holiday period State Treasurer Samuel S. Lewis came to the aid of the financial institutions of the anthracite and the bituminous regions of Pennsylvania by depositing in them $5,000,000 of state funds. The money was placed in the regular depositories of the Commonwealth and the coal regions were chosen, he said, because of conditions there owing to the strike in the hard-coal counties and continued subnormal conditions in the soft-coal section.

WEST VIRGINIA

Coal production in the 12½ counties of northern West Virginia in 1925 is estimated at 25,604,740 net tons, according to compilations by George S. Brackett, head of the Brackett Statistical Organization. The coal production in the region is the heaviest since 1923, when 27,758,050 net tons was mined. In 1924 the output was 19,909,000 net tons.

The work of rock-dusting Rachel mine of the Bertha-Consumers Co. at Downs, near Fairmont, was completed recently, according to E. Frank Miller, general superintendent.

The Bingamon bridge of the Western Maryland Ry., which had two shoes of the structure blown out by nitroglycerine Dec. 23, has been repaired and transportation has been resumed.

A new coal loading record for the Fairmont region was made recently by Paul Dobele, a 37-year-old French miner, at the Dakota mine of the Bethlehem Mines Corporation. He

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mined 538 tons, or an average of 45 tons a day, in a 12-day period. His biggest day totaled 51 tons in eight hours, which was in addition to drilling the necessary holes for the coal shooters to do their work. Some time ago a negro miner loaded 400 tons in 12 days.

The Smoke Eaters' Society, composed of 225 men, who have been baptized by smoke of mine fires, subjected to noxious and poisonous gases following explosions in which effort was made to rescue entombed miners, and adepts of the self-contained breathing apparatus, will meet in Morgantown next June. The Smoke Eaters were organized at the Leisenring (Pa.) plant of the H. C. Frick Coke Co. 18 months ago, and now has veteran mine-rescue men of several states banded together.

For the first time the men employed in the state's industries excelled those employed in the coal mines this year, according to a recent survey. The report shows that 100,000 men were at work in the coal mines of the state this year as compared with 113,814 men in the industries of the state.

Fairmont region ranked fifth among the lake-coal shipping fields in the country during the 1925 season up to Nov. 1, according to figures of the Ore & Coal Exchange of Cleveland. The region shipped 1,173,352 net tons. The Kanawha, Logan, Kenova-Thacker field led with 8,286,113 tons shipped and eastern Kentucky was second with 5,766,838 tons; the Pocahontas-New River third with 3,029,616 tons and Pittsburgh (Pa.) fourth with 1,923,591 tons. The No. 8 Ohio fields were sixth with 1,122,981 tons. Mines in the Panhandle section shipped 713,420 tons up to Nov. 1. The Fairmont total includes the tonnage on both the Baltimore & Ohio and Monongahela railroads.

An analysis of smokeless production for the month of October brings to light the fact that at the end of ten months of 1925 production was 5,799,230 tons in excess of shipments for the corresponding period of 1924. It had reached a total of 37,518,307 tons, making it certain that the output for the entire year would be approximately 44,000,000 tons. This will be 6,000,000 tons in excess of last year's production. The increase in October alone was 430,051 tons over that for October, 1924.

Probably 50 per cent of the Dakota mine of the Bethlehem Mines Corporation was rock-dusted up to the early part of last week, according to N. A. Emslie, division superintendent. Four coats of rock dust will be applied. The rock-dusting is done at night in order to hasten the work and not interfere with the usual mining activities.

O. W. Evans, general manager of the Lynchburg Coal & Coke Co. and the Eureka Coal & Coke Co., operating in the Pocahontas district, succeeded W. A. Wilson as general superintendent of the fuel mines of the Norfolk & Western Ry. Co., Jan. 1. Mr. Wilson recently moved to Florida. Mr. Evans will have general charge of the Howard Collieries at Chattaroy, Pond Creek Colliery, at South Williamson and Vulcan Colliery at Vulcan. All of these mines are being operated by the railway company as a cource of fuel supply and ship approximately one million tons of coal per year.

Work on the electrification of the Virginian Ry. from Elmore, to Roanoke, Va., 134 miles, will be resumed. The line was completed as far as Princeton, a distance of 36 miles, when Gibbs & Hill, the contracting company, was ordered to suspend operations temporarily. When the project is completed eastern coal shipments will be brought to Roanoke for classification and weighing instead of to Princeton, as is now the case. Operation of electric locomotives between Elmore and Princeton began Sept. 21.

The will of the late Dr. C. B. Lee, of Glen Jean, head of several coal companies in the Loop Creek section of Fayette County, which has been probated in the county clerk's office, disposes of an estate amounting to about half a million dollars.

W. H. Green, of the W. H. Green Coal Co. which completed the mining of coal at Adrian, last summer, has purchased the plant of the Greenmar Coal Co. at Strader on the Charleston division of the Baltimore & Ohio R.R. Mr. Green will operate the mine as an individual as soon as the lease can be transferred. H. B. Martin, president of the Greenmar company, will for the time being retire from active mining operations and devote his entire time to the coal brokerage business. Mr. Green at one time was interested in the Greenmar company.

All employees and officials of the E. E. White Coal Co. attended a farewell banquet at Glen White, Dec. 29, to E. E. White, the retiring president. The affair was not only a tribute to the retiring president but also was a welcoming to the new owners of the property, the Massachusetts Gas Co., of Boston.

After investigating the $40,000 fire which destroyed the tipple of the West Virginia - Pittsburgh Coal Co. near Wellsburgh, deputy fire marshals and state police say that the fire was of incendiary origin. Lon Scott, who had been discharged by the company several days prior to the fire, is being held by the authorities. The company is rebuilding the tipple.

The Detroit Mining Co. is loading coal at its mine on the Little Coal River branch of the Chesapeake & Ohio Ry., after several months of preparation. The Detroit Mining Co. is a subsidiary of the Essex Mining Co. which about six months ago began operating its mines in the Pomeroy field on a non-union basis. Interests in control of the Essex and the Detroit companies heretofore have operated only in the Pomeroy and Hocking fields of Ohio. The Detroit company has 3,200 acres of coal in one block in the Little Coal River section. This coal is in the Winifrede vein and is 5½ ft. thick. As the seam is 500 ft. up the mountain a button conveyor is employed. The mine is electrically equipped for cutting and haulage. Automatic mine doors have been installed and loading machines will be used. Next spring the company plans to open another mine in this vicinity. R. T. West will be general superintendent at the mines in southern West Virginia as well as over those in Ohio.

Five union miners are in jail at Philippi, awaiting trial on the charge of having violated an injunction issued to eight coal companies of the Bear Valley mining region by Judge Warren B. Kittle of Barbour County. It was alleged the men trespassed on coal company premises and "dogged" non-union workmen. The injunction order was issued to the Brown Coal Co., Blocky Pittsburgh Coal Co., Cambria Coal Co., Greer Gas Coal Co., Tressler Coal Co., Bear Valley Coal Co. and the Bear Mountain Coal Co., all of which are operating on a non-union basis.

WYOMING

M. O. Carlson, who has been superintendent of the Blazon Coal Co. at Blazon during the past year, has been transferred to Rains, Utah, to serve in similar capacity at that point, being succeeded by James Hackett, who has been working in the Rock Springs district of late. Mr. Hackett, who took over the superintendency at Blazon, is well known in the local district, having been employed by the Kemmerer Coal Co. for several years.

CANADA

A communication received by the Ontario government from Sir Henry Thornton, president of the Canadian National Rys., states that within two weeks from Dec. 29 the remainder of the Alberta coal which the railway agreed to haul to Ontario would be moved. The original agreement was to transport 25,000 tons. Some 18,000 tons of this allotment had been delivered when the movement was stopped to make way for the grain shipment.

Importation of bituminous coal into Canada continued to rise in October, amounting to 1,347,965 gross tons which was the largest in any month since March, 1924. Imports of anthracite decreased still further, and the quantity imported in the month was only 149,371 tons. The decrease was, however, in importation from the United States, shipments from Great Britain increased and amounted to almost 60 per cent of the month's total.

Production of coke in Canada during November totaled 156,182 tons, a decrease of 3 per cent as compared with the October output of 161,414 tons. Coke produced in the Eastern provinces rose to 60,089 tons from the 56,714 tons produced in October, the output of the Western provinces of 19,220 tons was about the same as in October, while the Ontario production of 76,873 showed a drop of 10 per cent. The consumption of Canadian coal for coke-making remained about the same as in the preceding month at 84,190 tons, but imported coal had declined to 153,033 tons from 163,660 tons in October. Producers of pig iron being the principal users of coke, a decline of 7 per cent in pig iron production in November led to a drop in the coke output,

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McGraw-Hill Company Buys Keystone Catalogs

The McGraw-Hill Co., Inc., has bought the Keystone Consolidated Publishing Co., of Pittsburgh, Pa., and thereby acquires the *Keystone Mining Catalog*, the *Coal Catalog*, the mining and quarrying directories and the list services published and conducted by the Keystone company.

There is thus brought into one organization the outstanding publishing interests serving the mining field—the McGraw-Hill Co., with its magazines, *Coal Age* and *Engineering and Mining Journal-Press*, and the Keystone company with its catalogs, directories and lists. *Coal Age* and *Engineering and Mining Journal-Press* have served the mining industries for more than two generations and the purchase of the Keystone property will enable them to broaden and intensify that service and assist, even more than in the past, in the solution of the problems of these industries. At the same time there is offered to the manufacturers who make the machinery, tools and supplies with which the industry does its work, a co-ordinated advertising service, consisting of educational and creative advertising in the magazines, efficient catalog distribution through the Keystone catalogs and direct-by-mail effort through the list service.

The Keystone catalogs, published annually, are condensed and consolidated catalogs of manufacturers selling to the mining and quarrying fields and give in convenient form the essential facts regarding the machinery and supplies made by these manufacturers. There are two editions, one for coal mining, the other for the metallic and non-metallic mining and quarrying fields. Both editions, besides the condensed manufacturers' catalogs, contain extensive information regarding mining and quarrying methods and serve as handbooks of mining and quarrying practice.

The *Coal Catalog* is a handbook of the coal seams and coal mines of the country, giving the geology of the seams, the analysis and characteristics of the coal taken from them, and the advertisements of companies mining and selling coal. It forms an indispensable guide to economy in buying coal for fuel or processing purposes.

The Keystone company also publishes directories of the mining and quarrying fields and furnishes a list-addressing service for mailing circulars and other advertising matter for manufacturers.

The catalogs in no sense replace or interfere with the educational function of *Coal Age* and *Engineering and Mining Journal-Press*. Each volume furnishes the mining man in convenient form, information that would otherwise have to be sought in a file of individual manufacturers' catalogs, inconvenient to keep and seldom complete. The Keystone catalogs, by bringing the essential data together in condensed form and thoroughly indexed make it instantly available.

That the Keystone service has been sound is attested by the growth and present size of the catalogs. The coal mining edition, in its last issue, contains 1,204 pages; the metal-quarry edition, 928 pages; the *Coal Catalog*, 1,293 pages. All of the volumes are of 9 x 12-in. page size.

From the standpoint of the manufacturer selling to the mining fields, the concentration of *Coal Age*, *Engineering and Mining Journal-Press*, the Keystone catalogs, the Keystone directories and the list service under one management offers the opportunity to obtain from one organization a complete promotion and publicity plan, embracing educational and creative advertising, through the advertising pages of *Coal Age* and *Engineering and Mining Journal-Press*, reference advertising through the Keystone catalogs, and direct-by-mail list service through mailing lists kept up-to-date week by week and rendered highly efficient through the manifold and direct sources of information of the magazines and catalogs. Such list sources could not, on account of the high cost, be duplicated by the manufacturer. These lists, which must be obtained by McGraw-Hill for its magazines and for the Keystone directories, and must be kept up currently, will now be available to manufacturers for their circular mail work at a cost negligible compared with the cost of compiling and maintaining their own lists.

Joseph J. Vigneau, the founder of the Keystone company and until now its president, will continue in charge of the Keystone business for the McGraw-Hill Co. with offices in Pittsburgh, while Ralph C. Becker, hitherto vice-president of the Keystone company, will continue in charge of sales with headquarters in New York. Except for the retirement of Edward B. Day, New York representative, who leaves to devote his entire time to his company, the Hydrotator Co. of New York, there will be no changes in the staff of the Keystone organization, but the service of the organization will be augmented by all the editorial and advertising resources and strength of the McGraw-Hill Co. All communications should continue to be addressed to the Keystone Consolidated Publishing Co., 800 Penn Ave., Pittsburgh, Pa.

CANADA

(Continued from page 33)

but this was partly offset by increased demands for domestic use. Imports of coke in November declined to 81,609 tons from 94,213 tons in October, while exports fell 1 per cent to 2,432 tons. The apparent consumption was 235,359 tons, as compared with 251,475 tons in October.

A mass meeting of coal miners at Glace Bay, N. S., adopted a resolution, moved by Attorney General John C. Douglass of Nova Scotia, to the effect that the provincial government petition the federal administration for the purpose of obtaining a Canadian National Rys. coal contract for the British Empire Steel Corp., as a means of alleviating unemployment in collieries Nos. 2 and 4 in the Glace Bay area.

Obituary

M. S. Kemmerer, for many years head of the coal firm of Whitney & Kemmerer and widely known in the industry as a pioneer in the hard-coal producing field and the owner of important coal properties in Virginia, Wyoming and Colorado, died at Atlantic City, N. J., Dec. 29 at the age of 82. The firm of Whitney, McCreery & Kemmerer was organized in 1871, the name being changed to Whitney & Kemmerer when George McCreery retired on being elected City Treasurer of Philadelphia. Mr. Kemmerer became head of the firm about 20 yeras ago, when W. B. Whitney died. At first his interest was exclusively in hard coal, but he soon branched out and his interests spread to Virginia, Wyoming and Colorado, as well as to central and western Pennsylvania. He was one of the pioneers in the industry in Wyoming, the mining town of Kemmerer having been named after him.

Robert Drummond, M.P.P., 86, of Stellarton, N. S., died recently. He was regarded as an authority on coal mining in Nova Scotia and for many years was proprietor and editor of the *Maritime Mining Record*, published at Stellarton.

Edward J. Nied, prominent in the coal industry in Cambria and Somerset Counties, Pennsylvania, died at the home of his brother-in-law, Wilson W. Shaver, in Johnstown, Pa., on Dec. 26, aged 58 years. Mr. Nied was born in Danville, Pa. He came to Somerset County in 1897 as private secretary of Simon Krebs, pioneer coal operator, who established a coal mine at Listie. This was the first mine to be opened in Somerset County in the low-vein coal. Mr. Ried remained at Listie until 1904, when the Krebs operations were sold to the Somerset Coal Co., which later was merged with the Consolidation Coal Co. In 1904 Mr. Nied removed to Somerset and had charge of the payroll department of the Consolidation Coal Co., until 1913, when he was transferred to Jenkins, Ky., where he was superintendent of supplies. His health failed about a year ago.

Douglass B. Dunsmore, 77, a mine superintendent in central Pennsylvania for many years, died at the home of his son, James Dunsmore, in Portage, Cambria County, Dec. 30. He was a member of a family which was closely associated with the development of the coal industry in Pennsylvania. His health failed following an injury he sustained a year ago.

William Henry Sanford, prominent banker and coal operator and a director of the Cosgrove-Meehan Coal Co., of Johnstown, Pa., and Illinois, died in Philadelphia on Dec. 24, aged 74. Mr. Sanford was born in England, and was brought to America when an infant by his parents, who settled in Phillipsburg, Pa. When he grew to manhood he became cashier of the old Moshannon Bank. Thirty years ago he went to Patton, Cambria County, where he organized the First National Bank, with which he had been affiliated during the remainder of his life.

Traffic

Adjust Rates on Burlington

The Chicago, Burlington & Quincy R.R. will place in effect Jan. 12 a new schedule of rates on coal shipments from various Illinois coal fields to Burlington, Fort Madison and Keokuk, Iowa, as well as to points in that general vicinity. It had been shown to the Interstate Commerce Commission that freight rates to Burlington and adjacent points had been higher than to Galesburg, Aurora, Joliet and other industrial cities in Illinois.

Cut Coke Rate on N. Y. Central

The New York Public Service Commission has approved new rates of the New York Central (West) on coke, coke breeze, coke dust and coke screenings, from Buffalo and East Buffalo to Falconer and to Fredonia, $1.39 per net ton. This is a reduction and becomes effective Jan. 22, 1926.

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Coming Meetings

Engineering Council. Annual meeting Jan. 13-15, at Washington, D. C.

The Engineers Society of Northeastern Pennsylvania. Annual banquet at Hotel Sterling, Wilkes-Barre, Pa., 6:30 p.m. Thursday, Jan. 21. Secretary, T. F. McKenna, Scranton, Pa.

Hazard Coal Operators' Exchange. Annual meeting Jan. 22, at Lexington, Ky. Secretary, J. E. Johnson, Lexington, Ky.

American Wood Preservers' Association. Annual meeting, Jan. 26-28, 1926, at Cleveland, Ohio. Secretary, B. J. Stocking, Chicago, Ill.

Coal Club of Philadelphia. Annual meeting, Jan. 28, 1926, at the Bellevue-Stratford Hotel, Philadelphia, Pa. Secretary, C. K. Scull, Philadelphia, Pa.

Northeast Kentucky Coal Association. Annual meeting, Jan. 28, 1926, at Ventura Hotel, Ashland, Ky. Secretary, C. J. Neekamp, Ashland, Ky.

American Institute of Electrical Engineers. Annual convention, Feb. 8-12, 1926, at Engineering Societies Bldg., New York City. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

American Institute of Mining and Metallurgical Engineers. Annual meeting, Feb. 15-17, 1926, at Engineering Societies' Building, New York City. Secretary, Dr. H. Foster Bain, 29 West 39th St., New York.

The Rocky Mountain Mining Institute. Winter meeting, Feb. 23-25, 1926, at Albany Hotel, Denver, Colo. Secretary, Benedict Shubart, Boston Building, Denver, Colo.

New Companies

The Powhatan Mining Co., Beechwood, Ohio, has been incorporated with a capital of 500 shares of stock, no par value designated, to mine and sell coal. Incorporators are: C. N. Fiscus, M. E. Balcom, H. M. Bruening, M. K. Appleby and J. Q. T. Ford.

The S. Doyel Coal Co., Henryetta, Okla., with a capital of $20,000, has been incorporated by M. A. Doyel and Hugh Kerr.

The Sandlick Coal Co., Whitesburg, Ky., capital $140,000, has been chartered by W. M. Pursifull, P. G. Gorman and James P. Lewis. The same general interests have operated other companies in the section and are well-known operators, Pursifull and Gorman having been in the section for years.

Among the new coal companies organized in West Virginia in October were the following: Queen Coal Co., of St. Albans, with a capital stock of $10,000; Hager Coal Co., of Logan, $75,000; Samples Coal Co., of Thurmond, $5,000; Elkland Mining Co. of Elkhurst, $50,000; Paul Logan Coal Co., of Huntington, $100,000; Superior Central Mining Co., of Charleston, $500,000 and Packs Smokeless Fuel Co., of Charleston, whose capital consists of 1,000 shares of no par value.

The Midland Number Four Mining Co. has been organized at Cass, Ind., with a capital stock of $75,000 to do a general mining and prospecting business. Of the capital stock one-third is common and the other preferred. The incorporators are Nelson Houpt, Bert Houpt and Lex Usrey.

The Captina Coal Co., of Bellaire, Ohio, has been incorporated with a capital of $20,000 to operate a mining business. The incorporators are J. F. O'Conner, Mary E. O'Connor, Thomas Long, Slater Long and M. L. Davis.

Trade Literature

The Rome Wire Co., Rome, N. Y., recently issued the third in its series of catalogs dealing with wire. This last one is on **Bare Wire** and contains useful data and tables regarding constructions, sizes, weights, current-carrying capacities, etc. The first two catalogs dealt with **Magnet Wire and Super Service Cord.**

Automatic Switching Equipment. General Electric Co., Schenectady, N. Y. Bulletin No. GEA-295. Pp. 23; 8 x 10½ in.; illustrated. Describes the application of this service to mining and industrial service, railway service, hydro-electric generators, central station service, etc.

New Equipment

Self-Contained Threader Can Be Made Portable

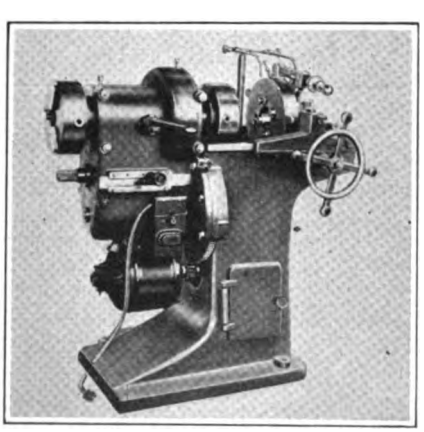
In order to meet the demand for a pipe and bolt threader that can be used either as a portable or production machine, the Chicago Pipe Threading Machinery Co., of Racine, Wis., has perfected and placed on the market the machine shown in the accompanying illustration. This is capable of threading pipe from ¼ in. to 2 in. in diameter or bolts from ½ in. to 1½ in. By the addition of a universal drive shaft it may be fitted to drive hand stocks of any size up to and including 12 in. in diameter.

Although this machine is designed to meet all the requirements of one for portable use it is also a production and precision threader. The motor driving it through direct gear connection is protected from all oil and chips as well as from the work being handled. An extension cord is provided, fitted with a plug that will fit any light socket, so that power may be drawn from any convenient point. Three speeds, which well cover the range of the machine, are obtained by means of sliding gears operated by a conveniently placed lever. A clutch for starting and stopping the machine is located on the spindle and gives perfect control without reference to the motor or gears.

At the rear of the die head is placed the extra heavy cut-off attachment. All sliding parts are carefully machined and gibbed to compensate wear. Absence of vibration in this particular part saves many knives and other parts from breakage. The reaming tool is mounted on the cut-off block and is operated by turning the handle toward the center of the machine after the cut has been made. This is accomplished without changing the location of the die head.

In general design this machine is modern in every particular, yet presents a more or less radical departure from conventional practice. The pedestal base is fitted with both an oil reservoir and a tool cabinet where dies, wrenches and the like can be stored. The entire machine may be mounted on wheels when it is desired to use it as a portable unit.

Charles Rasmussen and R. T. Ingalls, owners of the Wisconsin Machinery Co. of Racine, Wis., together with L. H. Taylor, formerly of the Greenfield Tap & Die Co., of Greenfield, Mass., and the Williams Tool Corp., of Erie, Pa., and Clifford Peterson of the Clifford Peterson Tool Co., of Chicago, are the incorporators and owners of the company manufacturing this new machine.



Side View of Semi-Portable Machine

This combined pipe and bolt threader represents a more or less radical departure from conventional design. It is a self-contained unit that may be mounted on wheels for ready transportation over short distances. The pedestal base contains both an oil reservoir and a tool cabinet where dies, wrenches and the like may be stored.

Triple Inclosed Fuse Keeps Locomotive in Operation

Adaptability to practice is the keynote in the design of a three-point, permissible fuse recently introduced by the Mancha Storage Battery Locomotive Co., of St. Louis, Mo. This fuse insures continuity of operation of a locomotive or power truck in a gaseous mine. Safety dictates that no current-carrying part shall be exposed in a gaseous portion of a mine. Formerly, when a fuse was blown, the locomotive had to be hauled to the bottom before it could be replaced. Equipped with this new device, the locomotive is instantly restored to service by simply operating a lever. A new fuse is thus placed in the circuit, while a third fuse is still in reserve. The blown fuse may be renewed when the locomotive reaches the barn. In addition to the continuous service which this device effects, it injects a further element of safety into storage battery locomotive operation. The fuse lever is located convenient to the motorman and may be thrown as a switch should the controller stick or an accident be imminent.

This three-point fuse has been approved by the Bureau of Mines and is standard equipment on all permissible locomotives and power trucks furnished by its manufacturer. The housing consists of three parts. First, there is a cylindrical shell of cast bronze, the upper face of which is accurately machined. The end of this shell is also threaded, the cover consisting of a cast bronze plate with raised faces on each side at the circumference. These faces are also machined, one to fit flush with the end of the shell, and the other to fit a similar face on the inside of the retainer ring. This latter is of cast bronze and is threaded inside. When it is in place, the housing presents a rugged exterior and forms an absolutely flame proof unit.

Two asbestos packed stuffing boxes in the bottom of the shell permit the leads to reach the terminal posts mounted on a fibre block. On this block are also located two laminated

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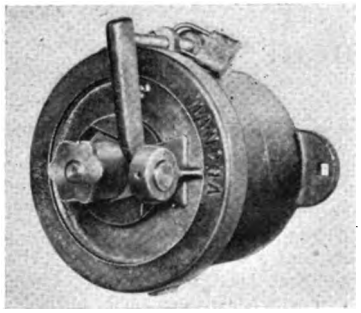
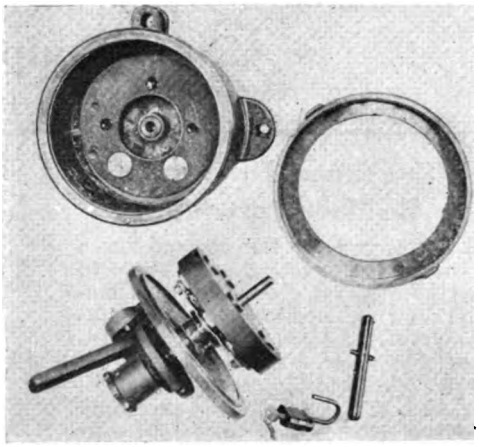




Fuses Easily Changed

In case of a burnout fuses may be changed without opening the case. To accomplish this it is merely necessary to properly manipulate the lever and knob.

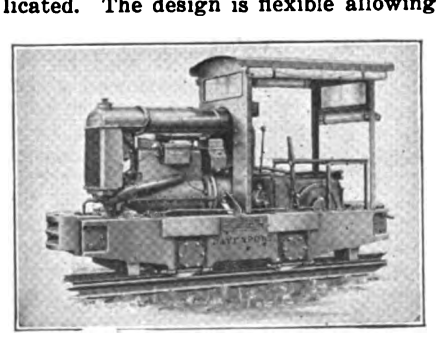
copper contacts, 90 deg. from each other. The working parts are carried on a stem which extends through a bushing in the cover and is supported at its lower end by a bushing forming an integral part of the shell casting. This stem carries a round, fibre block, on the top of which the fuse links are mounted. Four solid copper contacts placed at 90 deg. from each other protrude from its under side. These contacts are in series with one another through the three fuse links. The absence of the fourth link prevents a continuous circuit. In other words, when the external lever which operates the stem is in the closed position, only two adjacent solid contacts make connection with the two permanent, laminated contacts. There is, therefore, but one fuse in the circuit, the others being on open ends. The shift from one fuse to another is made by simply releasing the lever, which allows the stem to be withdrawn a short distance, next turning the stem through 90 deg. by means of the knob on the outside of the housing, and then closing the circuit again by throwing the lever. By means of a spring, opening of the circuit becomes instantaneous. This is highly desirable for breaking the circuit without drawing an arc, in case the device is used as a switch. The housing and all working parts on the inside are substantially lined and bushed with several thicknesses of mica so as to avoid all possibility of short circuits. Burned out fuses may be replaced in a moment's time, the only tool necessary to the accomplishment of this operation being a small wrench.

New 4-Ton "Gas" Locomotive Has Fordson Power Plant

A new 4-ton gasoline locomotive incorporating the Fordson engine and transmission parts recently was announced by the Davenport Locomotive Works, Davenport, Iowa. The dependability of the Fordson power plant with the advantages of using highly standardized engine and transmission parts for quick replacement and repair, help to fit this locomotive for all-around service in outdoor mine-track yards.

The design of the locomotive is simple, parts are accessible and the rugged, balanced construction found in the larger Davenports has been duplicated. The design is flexible allowing the use of a canopy cab, a fully inclosed steel cab, or the removal of the cab altogether. The operating levers are placed within easy reach at the right hand side of the cab and clear vision is provided in all directions.

The locomotive has a speed range of 3 to 14 m.p.h. and a maximum tractive power of 2,125 lb. Its operation is highly economical for it starts on gasoline and runs on kerosene.



Good for Outdoor Service

This new 4-ton gasoline locomotive using a Fordson engine, starts on gasoline runs on kerosene and is rugged enough for hard work.

Industrial Notes

The Link-Belt Co., of Chicago, announces the opening of a branch office in the First Wisconsin National Bank Bldg., Milwaukee, Wis., with R. C. Kendall in charge.

The electrical supply business carried on by the Western Electric Co. has been set apart from the telephone manufacturing business and incorporated under the name of Graybar Electric Co., with capital stock of $15,000,000, all owned by the Western Electric Co. This gives to the supply department a separate identity which is made necessary by its importance as the largest merchandiser of electrical apparatus and related equipment in the world. Since it came into existence in 1869 as the partnership of Gray & Barton, the name which it now resumes in modified form, the supply business has grown steadily until it now serves more than 35,000 customers through fifty-five distributing houses in important cities. Albert Lincoln Salt is president of the new company.

The Lapeer Trailer Corporation, manufacturers of automatic semi-trailers, announces the appointment of J. B. Beattie as Eastern sales manager, with headquarters in New York City. Mr. Beattie formerly was connected with the Autocar Co.

Association Activities

Directors of the **Cincinnati Coal Exchange** on Dec. 22 elected the following officers to serve for 1926: President, Nolan Mahan, General Coal Co.; Vice-President, John Glaser, Midland Coal Sales Co.; Secretary, Armour A. Sizer, Flat Top Fuel Co.; Treasurer, William Heitzman, Central Pocahontas Coal Co.

T. K. Maher, president of the Maher Collieries Co., (chairman), J. L. Good, of the National Coal Co., and Joseph Nelms, of the Ohio & Pennsylvania Coal Co., are members of a committee appointed by the **Pittsburgh Vein Operators' Association of Ohio** on trade extension. It is said that newspaper advertising will be used to help move Ohio coal.

Freight rates, recent court rulings and Interstate Commerce Commission decisions were freely discussed at the December meeting of directors of the **Central Pennsylvania Coal Producers' Association**, held in the headquarters in Altoona Dec. 15. The meeting was in charge of the president, B. M. Clark, of Indiana, the others present including M. J. Bracken, Rembrandt Peale, Sr.; J. W. Searles, C. Law Watkins, William Lamont, E. W. Robertson, S. J. Wills, J. R. Caseley, H. B. Scott, J. William Wetter, Rembrandt Peale, Jr., C. B. Maxwell, James McCook, A. M. Liveright, of Clearfield, solicitor for the association; Charles O'Neill, secretary, and W. A. Jones, statistician. Representatives of the National Coal Association also attended. Harry L. Gandy, executive secretary of the National Coal Association, gave much valuable information relative to the industry throughout the country and strongly appealed to the association to renew its membership in the national association. This matter was taken under advisement and a committee composed of B. M. Clark, Rembrandt Peale and Secretary Charles O'Neill was appointed to make a canvass of the members and make a report at the January meeting.

Recent Patents

Mine Car; 1,555,982. Warren V. Johnson, Bloomsburg, Pa., assignor to American Car & Foundry Co., New York City. Oct. 6, 1925. Filed Aug. 8, 1923; serial No. 656,372.

Flotation Machine; 1,556,083. Arthur C. Daman, Denver, Colo. Oct. 6, 1925. Filed Oct. 18, 1923; serial No. 669,326.

Steel Mine Car; 1,556,140. James B. Wolf, Glen Ridge, N. J., assignor to American Car & Foundry Co., New York City. Oct. 6, 1925. Filed Jan. 24, 1925; serial No. 4,515.

Pivoted Bucket Conveyor; 1,556,343. William E. Phillips, Cleveland, Ohio, assignor to The Stearns Conveyor Co., Cleveland, Ohio. Oct. 6, 1925. Filed Aug. 29, 1921; serial No. 496,318.

Safety Catch for Mine Gates; 1,556,690. Gustave E. Huttle, Scottdale, Pa. Oct. 13, 1925. Filed Feb. 29, 1924; serial No. 696,074.

Method for Dusting Coal Mines; 1,556,879. William J. Reid, Wattis, Utah. Oct. 13, 1925. Filed July 3, 1924; serial No. 724,014.

Fuel Briquet and Process of Making; 1,557,320. John F. O'Donnell, Morris Run, Pa. Oct. 13, 1925. Filed April 12, 1924; serial No. 706,172.

Two-Way Tramcar Skip-Hoist Apparatus; 1,557,965. Robert H. Beaumont, Radnor, Pa., assignor to R. H. Beaumont Co., Philadelphia, Pa. Oct. 20, 1925. Filed May 9, 1925; serial No. 29,059.

Automatic Skip-Loading Gate; 1,558,121. George N. Simpson, Chicago, Ill. Oct. 20, 1925. Filed June 25, 1924; serial No. 722,291.

Conveyor; 1,558,550. Joseph E. Joy, Franklin, Pa., assignor to Joy Machine Co., Pittsburgh, Pa. Oct. 27, 1925. Filed April 15, 1925; serial No. 706,656.

Fuel Pulverizing Apparatus; 1,558,663. John E. Bell, Brooklyn, N. Y., and Henry Kreisinger, Pittsburgh, Pa., assignors to the Combustion Engineering Corp., New York City. Oct. 27, 1925. Filed Sept. 16, 1922; serial No. 588,532.

Safety Device for Hoists; 1,558,955. Clarence R. Welch, Denver, Colo. Oct. 27, 1925. Filed May 10, 1924; serial No. 712,497.

Mine Drilling Machine; 1,559,175. Isaiah S. Marshall, Des Moines, Iowa. Oct. 27, 1925. Filed Jan. 21, 1925; serial No. 3,744.

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"Cooling With Coal" Widens Summer Fuel Market—Page 39

C652
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COAL AGE

The World's Accepted Authority on Coal Mining

McGraw-Hill Co., Inc., **January 14, 1926** 20 Cents per Copy

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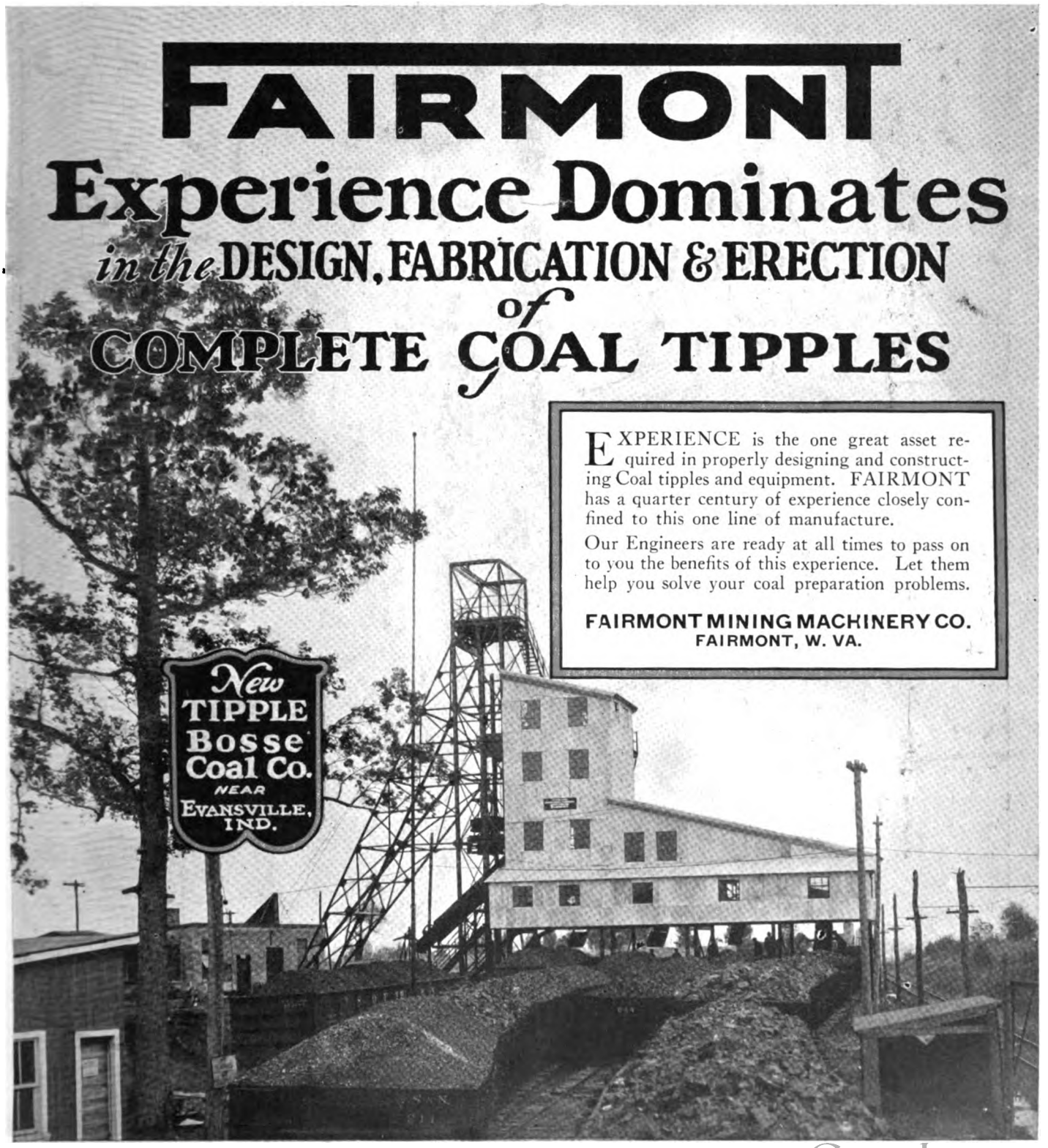

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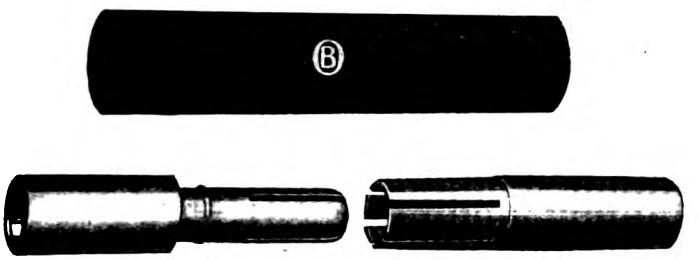

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 29 New York, January 14, 1926 *Number 2*

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With which is consolidated "The Colliery Engineer" and "Mines and Minerals"
R. DAWSON HALL, *Engineering Editor*

"Cooling with Coal" Widens Market 39
BY R. DAWSON HALL.

New Mexico Has Anthracite Mines but No Strike 43
BY JOHN A. HOLMES.

Union Succumbs with Violence in West Virginia and Quietly in Central Pennsylvania 45
BY SYDNEY A. HALE.

New French Nitrate Industry Centers Upon Coal 49
BY VICTOR TRUANT.

Union Pacific Coal Co.'s Code of Standards—V 50

Hard-Coal Peace Parley Breaks Up 52

Pittsburgh Coal Producers' Association Dissolved 54
Miner Is Willed $500,000; Wants New Overalls! 54
Bull Movement Falls Flat 54
Idle Nova Scotia Miners Loot Provision Stores 54
John Cleveland Osgood Dies; Founded C. F. & I. 54
Vote to Move Union Offices in Kansas Indecisive 54
Shots and Dynamite Usher in New Year in W. Va. Strike Zone 55
Mill Creek and Elkhorn Cos. in Smokeless Merger 55
Lemuel Burrows Dead at 54; Had Recently Retired 55
To Extend Alaska R.R. Rights 55
"Hands Off" Policy in Coal Situation Spreads to Congress 56
Small Firms Safeguarded by Trade Associations 56
Fires at Non-Union Mines near Evansville, Ind. 56
Governor Smith Recommends Permanent Coal Agency 56
Mr. Turner Takes the Reins 56

Editorials 37
Practical Pointers 57
Weekly Review and the Market 58
Foreign Market and Export News 63
News Items from Field and Trade 64
Traffic 67
New Equipment 68

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The Story of 1925

NEARLY EIGHT MILLION tons of coal loaded underground by machine—five million more by conveyor—many mines rehabilitated—the use of electric power expanded—more mine boiler plants equipped to burn low-grade fuel—the market for coal widened by new industrial demands—these are some of the high lights out of the 1925 story of coal that will be told in next week's issue of *Coal Age*.

THE ANNUAL REVIEW NUMBER will contain market reviews of the world and production statistics showing that the United States mines produced the satisfying total of 523,072,000 tons of bituminous coal and sold almost that much. It will show that 1925 was the "safest year in history," excepting only 1920 when the death rate per million tons was down to 3.45 as compared with last year's 3.68.

The issue will summarize and review many of the problems of both anthracite and bituminous coal producers and distributors, developing a great deal of interesting material that will go down in coal's history as a permanent part of the record.

Advertising Index—Alphabetical, 44; Classified, 41; Consulting Engineers, 36; Searchlight Section, 38 and 39

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COAL AGE

McGRAW-HILL COMPANY, INC.
JAMES H. McGRAW, *President*
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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 29 | NEW YORK, JANUARY 14, 1926 | Number 2

Signs Favorable to the Coal Industry

DESPITE the welter of coal overproduction, despite the continued threat that economies will cause a further contraction in coal demands, despite the assurance that oil is going to make further inroads on the sea and, in places, for transportation by land, one can, nevertheless, see signs ahead that are reassuring for the coal industry. These signs include the activity of the public utilities, and the ousting of oil by coal in large steam-boiler and locomotive-boiler practice. Power companies, also, are organized for expansion, and are reaching out for new power uses, such as for better illumination.

The safety of highways, both for passengers and for vehicles, will be increased by better lighting, a development which is rapidly taking place. Furthermore, illumination is proving a great aid to merchandising. Stores which in earlier days were dimly lighted are now ablaze with high-candlepower lamps, and new electric signs add constantly to the demand for power. In factories, also, the value of illumination to safe operation and a better product is causing rapid increase of the demand for electric energy.

In modern dwelling houses, besides better lights, all kinds of equipment are being installed, to reduce the drudgery of housekeeping. Electric washers, sweepers, mangles and irons are being introduced; and even electrically cooled refrigerators and radiators. Farms are being equipped with electric feed cutters, separators, churns and milking devices. Electrically operated pumps are providing water under pressure, for domestic purposes; and perhaps we may look for the extensive use of electricity for the sprinkling of crops and for irrigation in times of drought; extending the practice already long in use in southern California and other semi-arid agricultural regions.

"Eventually—Why Not Now?"

UNION OFFICIALS who insist day after day that arbitration shall not be the solution of the anthracite deadlock give an exposition more remarkable for its pertinacity than its wisdom. The public that pays the final bill is plainly out of patience with the position of the mine workers and as plainly in sympathy with the stand of the operators. When we remember the century-old epidemic of "anthracite-phobia" and the easy appeal to passions and prejudices which the advocates of labor have time and again so successfully invoked against capital, the swing in the public attitude has a significance which should impress even the irreconciliables among the executives of the United Mine Workers of America.

Mr. Lewis, leading a forlorn hope with all the vigor of a victorious commander, speaks feelingly of the unwillingness of the miners to permit a third person to fix "their wages and decide what kind of food they shall eat, the clothes they shall wear" and other living conditions. It is an understandable unwillingness. But, if the mine workers are to escape this dictation, they must do one of two things. They must either surrender their conception of an inherent right to the jobs they have deserted, and make no protest against the employment of others in the places they have vacated, or offer an acceptable substitute for arbitration—a substitute which will protect the public's right to an uninterrupted supply of fuel. No one at this time seriously suggests the first surrender. The union, on the other hand, offers no peaceful substitute for arbitration.

Until Mr. Lewis and his associates prove wiser than the wisdom of ages and come forward with such a workable alternative, the public is going to believe that arbitration is the ideal solution. The public is going to be cold to demands for sympathetic consideration of claims which the union has declined to press before an impartial tribunal. The public is going to be suspicious of the merits of contentions which can be established only through inconvenience, discomfort, exhaustion and suffering. If union leaders persist in their determination to war on peace, the public may acquire a belligerency of its own.

Sooner or later—lacking that superwisdom—the union will have to reaccept the principle of arbitration. It has acknowledged as much in its adherence to the one-sided third party judgment incorporated in the discredited Pinchot plan. It has admitted it again in its Sunday attempt to foist the Governor's plan upon the country cloaked as a "revision" of the Markle plan. To prolong its opposition to bona fide, unrestricted arbitration in the desperate hope that something may happen to rescue the organization from its plight shows consideration neither for the public nor for its own loyal members who face want and privation.

Bigger Recovery by Shearing

DESPITE its demonstrated and potential merits, the shearing machine has not received the consideration which it deserves. It should be a material assistance in increasing the percentage of lump coal as it provides an additional free face for each shearing cut. Though this advantage obviously is partly or entirely lost by the increase in the quantity of bugdust yet two advantages remain that have no countervailing disadvantages.

One of these is that shearing prevents the undue shattering of the roof in shooting. Not only can the holes be more lightly loaded but the pressure created by the explosive acts horizontally as well as vertically and thereby damages both roof and coal less severely. Though by this means the roof is not protected as well as by the top cut of the turret machine the advantage is nevertheless appreciable, a fact which does not seem to be widely realized.

The last and probably the most important advantage of the shearing machine, is also not appreciated by many mine owners. It enables a more complete re-

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covery of coal from mined-out areas by facilitating the lifting of that coal which lies below the kerf formed by an undercutting machine. This it does by channeling to the bottom of the seam, through the bench of coal which is left by the undercutter. Any man who has been a miner appreciates the difficulty with which many bottoms are lifted by pick and may even wink at the practice which is so prevalent, of abandoning the bottom coal when not forced by management to remove it.

The shearing machine is particularly beneficial in this respect in rolling seams. Under this condition the bar of the undercutting machine cannot be so nicely regulated as to stay on the bottom, with the result that some, and often much, coal is left under the cut. An almost imperceptible rise of the floor of the cut, or dip of the bottom, may cause a considerable thickness of unmined coal to be left on the floor of the mine. One of the largest producers in the country estimates a loss of coal in its mines of about one ton in thirty through the inability of the undercutting machine to cut on the bottom, and the failure of the efforts of the management to compel miners to lift coal which the machine over-rides. The shearing machine should stop this unprofitable waste of bottom coal, and at the same time improve roof conditions and perhaps increase the percentage of large sizes.

The Bureau of Mines Director In Spitzbergen

AN INTERESTING story of a difficult coal enterprise is interwoven with a glimpse of the personality of the new director of the Bureau of Mines in a bulletin sent out by the Bureau on Dec. 9. It goes without saying that this bulletin was issued without the knowledge and consent of the new director, who is winding up his personal affairs in Ottawa; the acting director, Dr. D. A. Lyon, assumes responsibility in a note accompanying the publication, indicating that it is in the spirit of good-will on his part that the entertaining document is sent out. Indeed, the document is not, strictly speaking, addressed to the public, but is specifically sent to the far-flung employees of the Bureau. The bulletin describes the picturesque mining adventure of Scott Turner as general manager for the Spitzbergen mines of the Longyear interests.

If there is anything in the theory that Nature tries to provide for the wants of humanity, then there would seem to be sense in placing abundant coal at Spitzbergen,—not very far from the North Pole, between latitudes 76 deg. and 82 deg. And to judge from the obstacles she has interposed to mining and shipping the coal, she seems to be doing her best to keep it there till Arctic inhabitants may need it.

The enterprise of J. M. Longyear, of Marquette, Mich., and Frederick Ayer, of Boston, in coal mining in Spitzbergen began in 1905. Due to the inclement situation of this considerable group of Arctic Islands, no nation has established unqualified sovereignty, so that the keeping of order was entirely a function of the operating company. Installation of equipment, mining, and the development of markets continued to 1911, at which time Mr. Turner became general manager, replacing the general manager who was resigning. Why he resigned becomes increasingly easy to imagine as the narrative proceeds. At that time (in 1911) the production was 26,000 tons.

The problems with which Mr. Turner grappled courageously and, on the whole, successfully are interestingly detailed. These included Arctic climate, poor and unwilling labor, no government, inadequate shipping facilities, and the determination of markets. There is plenty of coal in Spitzbergen, it is clear: the problem is to get it out economically. A single seam investigated thoroughly showed bituminous coal amounting to 11,000,000 positive, 13,000,000 probable, and 43,000,000 possible tons. In 1913 the output of the mines had been brought up to near 38,000 tons.

The national sovereignty of the Islands is not yet determined, a conference of the powers in 1914 to decide this having broken up without coming to an agreement. The beginning of the war distracted attention from this question; and also changed all plans regarding the operation of the mines. In 1916 the rights of the American company (Ayer and Longyear) were sold to a Norwegian syndicate, and Mr. Turner ceased to have any part in the enterprise.

No Facts Withheld

ONE BITUMINOUS coal producer, the Union Pacific Coal Co., realizes that the truth told does less harm than all the surmises that follow the truth withheld. It has issued orders that if, owing to some untoward circumstance, it has an explosion in its mines and reporters throng around the plant they are to be received with all the courtesy possible under the circumstances and to be given a statement every three hours or oftener if need be. Many a wild story, many an unfortunate misrepresentation would be avoided if this practice, quite common in the railroad service, were followed. Of course, the company has undertaken with the utmost diligence to make its mines safe. It has workings which are models of safety in every way and a system of inspection that makes the prospect of a large loss of life unlikely, but should the unforeseen happen there will be full disclosure of the facts.

Improving Trite Advice

"TAKE an interest in your work," "Love your work" or something to this effect usually is included among the "five," "ten," or "fourteen" points of advice given to the young man going into the coal industry or any other field of activity. But does not this point of admonition have a rather hollow sound? The very words "love" and "interest" have to do with the inner feelings of an individual and are not voluntarily controlled.

Would it not be much better to tell the beginner that if he is not interested in his work, he should attempt to find out why; and remember that with increased knowledge and proficiency comes greater interest. This may offer to him a solution instead of discouragement.

Mine Ventilation

THE PRACTICE of ventilation suffers much from the popular notion that one aircourse should be as large, as smooth and unencumbered as another, whereas only where the volume of air to be transmitted is large need the aircourses be wide, high, with rounded lines and no interference. That is why particular solicitude should be felt for the passages that have to carry the full unsplit current.

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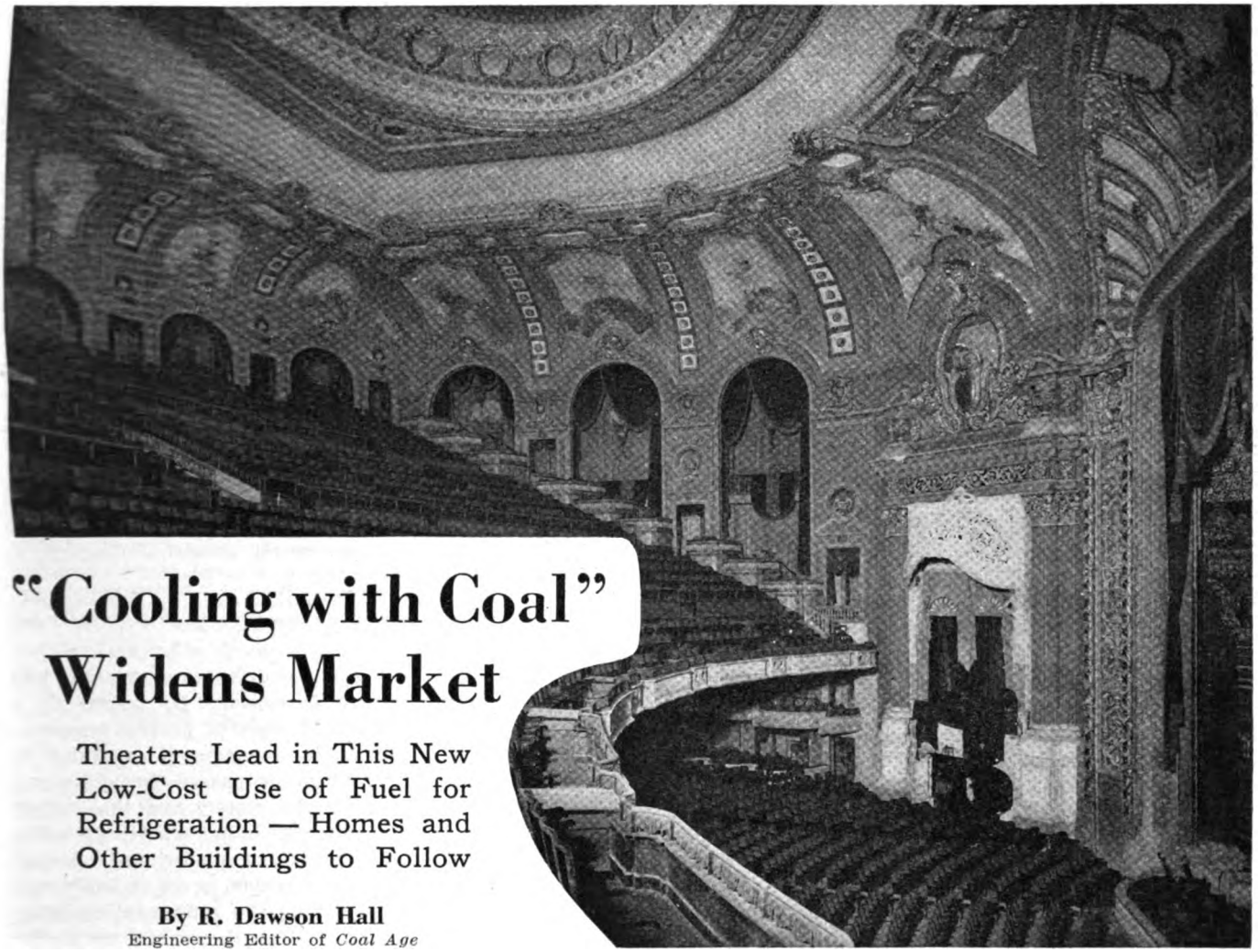

"Cooling with Coal" Widens Market

Theaters Lead in This New Low-Cost Use of Fuel for Refrigeration — Homes and Other Buildings to Follow

By R. Dawson Hall
Engineering Editor of *Coal Age*

ECONOMY in the use of coal by railroads, public utilities, metallurgical plants, industries and domestic consumers has changed the steady progress in the production of that mineral so that now it is difficult to tell whether consumption is increasing or decreasing. What is more, the last word in economy has not been said. The railroads have made only a start in electrification. The public utilities have set standards which only a few are reaching. Metallurgical economies are still progressing and have not been universally adopted. More industries every year close down their inefficient power plants and turn to purchased power producing energy with economical equipment, and domestic consumers are trying out new composition roofing and sheathing boards that prevent leakage of air and loss of heat. The anxiety of the gas manufacturers to get into the heating business is causing them to advocate houses almost hermetically sealed because a leaky house takes so much heat that to warm it with gas would bankrupt the householder.

Operators must face the inevitable restriction in market due to economy. It cannot be stemmed. He would be exceedingly ill-advised and unpopular who would attempt it.

In the headpiece is shown the interior of the Chicago Theater. This great moving-picture house seating about 5,000 is cooled to 74 deg. in summer by a 300-ton plant, the daily operating charge of which is about 1c. per seat. This cost is approximately half a cent lower than that estimated for the average theater but even the average is low enough to have proved the "cool-with-coal" idea a profitable one. Increased theater patronage in hot weather repays not only the operating cost but also, within two or three years, the original investment charge.

However, there are always new uses for coal. One of these which has been almost unknown until today, but which has large possibilities for the future, is the cooling of the air in theaters, offices, factories, stores, restaurants, hotels, hospitals and homes by refrigeration plants the electric power for which is generated with coal. Sufficient advance has been made in the refrigeration of moving-picture houses to prove the case. There, summer patronage has been increased enough to more than offset the original plant investment and the daily operating cost which averages only 1.5c. per seat.

Among the other new uses for coal is the manufacture of what have been hitherto regarded as mere byproducts of its distillation, but at present it is questionable whether these can be sold at a price justifying such treatment. Where the coal is distilled, the gain is in the better fuel rather than in the byproducts. There are possibilities in coal distillation and gasification but even if pushed to present limits and even somewhat beyond them, they would add but little to the coal consumption. Hope from this course seems somewhat remote.

So the main solution is by the use of more coal for domestic heating and in developments in the use of power. There is quite a possibility that the average farmer and country laboring man might be induced by advertising to heat his house more completely and to use wood less in so doing. This advance would be in the direction of the use of coal of the larger sizes

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and the market would be likely to be badly unbalanced by that additional demand, for some farmers like to buy their coal when they can haul it in sleds and so are disposed to leave the work of hauling and therefore their buying till the winter.

At best, it is not a large use, and the operator, if he is going to use his strength to develop his market, must lay his stress on those opportunities which are largest. The biggest are those where the producer helps the consumer to get more business, thereby aiding the former to increase his sales. These opportunities are in the increased sale of electrical power.

Hitherto the public utility has not been a generous purchaser of coal. It has largely bought the smaller sizes of the product at cost below that of production, but that was because the quantity of coal desired was usually such that, unless he was buying the unsized low-volatile, there was plenty of slack available as the outcome of preparing screened sizes.

The economies of the public utility have enabled it to make this advantageous bargain. Had its demands been larger it would have had to crush some run of mine all the time, and it does part of the time even today. The utility, if it needs more coal, will have to pay a bigger price for all of it or will have to produce enough coal for the supply of its own needs. It cannot continue to steal a ride behind the domestic consumer. In consequence it would be wise for the operator to see if it is not possible to find ways in which more power would be used.

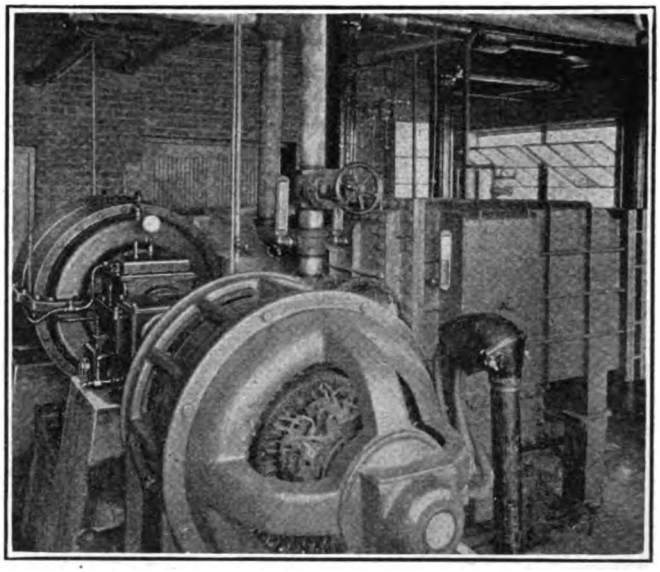
Here, some will say, "Surely the electric companies, having this as a direct interest, will have been lying awake nights figuring on means of selling more power and what can the operator who knows the game less well do to aid them?" That is an old manner of arguing and usually not a safe one. No one uses it as regards the coal industry which every one feels they could steer to better advantage than its present captains.

ORGANIZATIONS PROMOTE PROGRESS

The public utilities have formed a Society of Electrical Development with which operators should be acquainted and with which they might advantageously co-operate. This society has been quite active in developing small uses of power in the home. It is working on electrical refrigeration by which it understands the keeping of an "ice box" cool. This is an admirable project and in a way important to the backers of the Society as the current used for this refrigeration is sold at a high figure to small users. It helps to bear the heavy burden entailed in the domestic installations of electricity. As an aggregate it promises little to the coal operator, whatever it may mean to the public utilities. The Commercial Department of the National Electric Light Association is another interest that is seeking new outlets for the sale of electric power. Progress in the use of refrigeration can be advanced through that association also.

The cooling of air in public buildings and homes, however, promises to be a leading use of electric power. The public has desired to obtain the benefits of this development for centuries and would have had it years ago had it realized that it would not be too costly. Enough has been done to show that when applied to large numbers of people assembled together it is well within the compass of any pocket book.

In general the principle is as follows: A suitable gas is compressed by a motor-driven compressor. In so doing its temperature is raised. By means of a condenser the gas is brought back to normal temperature. It is then allowed to expand and in doing so becomes chilled. The cold gas is passed through pipes under water, thus cooling the water, and this water is sprayed on the air which is being admitted to the building, the air of which is to be conditioned. Sometimes the air to be used is purified in an ordinary air washer and then passed among the refrigerating coils, sufficient water being sprayed on the coils from flushing pipes or spray troughs to increase the efficiency of the cooling surface and to prevent the formation of ice on the surfaces of the coils.



Weather-Making Machine for Theater Cooling

This plant uses "dieline" or, more scientifically, "dichloroethylene" as the refrigerating fluid. This liquid is heavier than water, boils at atmospheric pressure at a temperature about 120 deg. F. It is flammable but only with relative difficulty. This 75 to 90-ton plant is a model of compactness.

During the administration of President Taft efforts were made to keep the Presidential offices in the White House cool by the use of ice but the quantity needed, several tons daily, soon convinced the Department of Public Buildings that the work was excessively costly.

As far back as 1907, Kuhn, Loeb & Co. arranged with A. M. Feldman, an architect of New York City, for the cooling of its bank on William and Pine Streets, New York City, the cooling being provided by the use of ammonia refrigeration. Mr. Feldman is an advocate of conservatism in cooling. He believes that "dwellings should never be cooled more than eight or ten degrees below outdoor temperature in the hottest weather nor below 73 deg. F. It appears that the human body has the faculty to adjust itself to atmospheric conditions and obtains comforts with only slight differences of temperature, especially if some of the excess absolute humidity has been removed from the air."

Mr. Feldman declares that Kuhn, Loeb & Co. was well satisfied when the outdoor temperature was 91 deg. F. and the outdoor relative humidity 53 per cent if the temperature admitted to the banking office was 71 deg. F., the average temperature in the office being 81 deg. F. and the relative humidity 63 per cent.

Certain it is that Kuhn, Loeb & Co. must have been satisfied, for four years ago the same architect using the same system reconstructed the plant to take care of three floors in the same bank. It will be observed that the air after being freed by mechanical methods

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of the water it carries at about 71 deg. F. is introduced into the banking room where it becomes heated to 81 deg. F. In this process it gains a capacity to take up more moisture, so that its saturation falls to 63 per cent. This is what makes the air refreshing. If it were saturated it would not be comfortable because it would not assist in the removal of moisture from the surface of the body.

The general disposition of refrigerating engineers is to cool the air still more. It is not quite clear that this is necessary. It may well be that the people who are adopting refrigeration for the popularizing of their places of resort desire to advertise the fact that their buildings are cooled and so prefer to refrigerate them excessively in order to prove their claims. They may later choose to cool their buildings as little as will produce comfort, thus saving money and avoiding the risk of their patrons getting pneumonia or colds. It has been stated that some patrons of cooled motion-picture houses have left their seats and returned to the outside air rather than subject themselves to the possibility of contracting colds. At present, however, the tendency is in favor of greater refrigeration despite the increased cost.

Installation in 1907 Still Working

An early installation was that made in 1907 for the Pompeian Room of the Congress Hotel in Chicago. This room is still cooled by this installation and since then the French and Gold Rooms have been similarly cooled. Another early installation was the Café of the Ritz-Carlton in New York City which has a machine capable of freezing 75 tons of ice daily.

In Chicago the following theaters have been refrigerated: the Chicago, State-Lake, McVickers, Pantheon, Tower, Senate, Harding, Madison Street, Diversey, United Masonic Temple, Uptown, Woods, Riviera, Palace Music, Annette, Central Park, Trianon, Laurence, Tivoli and Capitol. Chicago has led in the work of refrigerating buildings though there are many cities where the need for cooling is greater. The Woods Theater is the only one which houses the legitimate drama. The play which ran in this theater last summer had left New York where it had played to crowded houses and had come to Chicago to take advantage of the cooled air of the Woods Theater. It played to full houses, the seats being taken six weeks in advance. Today it is back in New York, the temperature in the city no longer needing improvement by refrigerating processes.

Opportunity in New York City

In New York the Capitol Theater and the Rivoli have refrigeration. So far little has been done in that city of many first-class theaters to keep such places cool. In Pittsburgh two theaters have recently been cooled by refrigerated air, the Davis and the Grand. In Philadelphia, the Fox is thus cooled and in Buffalo, Shea's Theater.

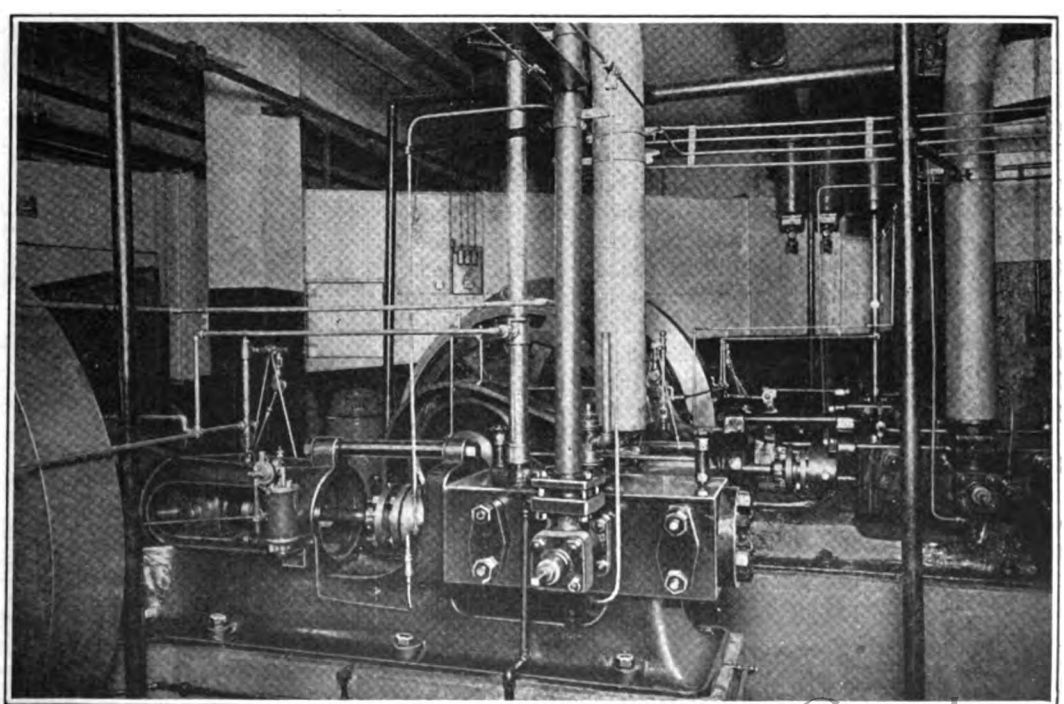
The South is plentifully supplied. Thus at St. Louis, Mo., is Loew's, the Grand Opera House, Delmonte and the Masonic; in New Orleans, La., is the Orpheum and Loew's State Theater, in Kansas City, Mo., is the Orpheum, Main Street and Newman theaters; in Dallas Tex., is the Palace, the Melba and the Majestic; in Houston, Tex., the Texan and the Majestic; in Fort Worth, Tex., the Majestic; in Tulsa and Oklahoma City, Okla., two Orpheum theaters. In San Antonio, Tex., also the Majestic Theater is refrigerated. The Palace Theater at Peoria, Ill., the Capitol theaters at Des Moines, Ia., and Cincinnati, Ohio, respectively, are other examples.

Other theaters where refrigeration is being installed are the Belmont, Ascher, Marks, Howard, Highland, Grove and Wasson in Chicago, the Hammond at Hammond, Ind., the New State at Detroit (209 tons), the Rialto at Joliet, Ill., the Lyric at Indianapolis, Ind., the Keith, at Atlanta, Ga., and the Miami at Miami, Fla. Keith's theater in Washington is to have an installation. These are only a few of the projected plants. The work of preparing for the coming summer is exceeding the capacity of the architects and manufacturers to fill the demand.

The cost of these installations is considerable and

Cools Seats at a Cent Apiece

Machinery of the 300-ton carbonic anhydride refrigeration plant which cools the big 5,000-seat Chicago Theater in the Mid-West metropolis. It has two duplicate units each of 150 tons refrigerating capacity. The variation in the theater from roof to orchestra pit has never exceeded 2 deg. in any place since the system was put in. Cooling is attained by direct expansion, the coils for this purpose being placed within the air washer. Examples like this suggest how much coal will be used when we temper our air to suit our bodily comfort.



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is made more difficult by the fact that such plants require much room which is not always available. What space has been found is already pre-empted by the heating equipment. One authority said that a 400-ton plant which would supply a house with about 6,000 seats would cost, including air washers, $100,000. With current at 1½c. a kilowatt-hour the refrigeration plant could be run for $6 an hour. The ventilating fan by which the cooled air is circulated would cost another $2 per hour for operating charges, but that unit must be kept running whether the air is cooled or drawn direct from the street.

COST FIGURED AT 1½C. PER PATRON

Ventilation is necessary in any event so the cost is only 0.1c. per seat per hour. Just how often the seats are filled is doubtful. Throughout the industry perhaps it may be only 1½ times per day. One authority, speaking of a New York theater of modest size, says that "it is a safe estimate to say that the seats have never been filled less than 1½ times a day and the average is more nearly twice that. On some occasions the seats have been filled 3.9 times during the day." This same authority said that the rate of 1½c. per kilowatt-hour was unusually low and that the cost of a 400-ton plant would be nearer $150,000. Making the rate 3c. per kilowatt-hour the cost would be $30 per day per 1,000 seats for twelve hours' operation. Assuming the seats were filled twice a day as an average, the cost per patron would be 1½c. This, he assumed, would be a fair average for the season.

It is easy to see that this would not be a figure that would deter theater managers from making the investment. Dr. E. Leonard Hill, a ventilating engineer, said that the McVickers Theater in Chicago had spent $69,000 in cooling equipment and found that the increased profit in showing to large houses was such that in two years they hoped to have their expenditures back in those increased profits alone.

CHICAGO THEATER'S 300-TON PLANT

At the Chicago Theater, a 300-ton refrigerating plant cools the outside air from 95 deg. to 74 deg. The theater which houses from 4,000 to 5,000 people is kept cool by a plant that is said to be run for $50 a day or a cent a seat and for less than that therefore per patron. The plant has two units so that one only can be used if full refrigeration is not needed. R. A. Kroeschell said that 15 deg. of a drop between outside and auditorium was all that should be attempted. Dr. Hill said that the air could be profitably cooled to 50 deg. and then heated by radiators to reduce moisture or it could be passed through ducts that would add to the temperature or again it could be mixed with bypassed air. He advocated that when the air was 90 deg. outside it should be cooled so as to keep the temperature of the auditorium 75 deg. with 60 per cent relative humidity. Mr. Wittenmeier said that if anything 72 deg. was too low and that 75 deg. was better. With the air passing along the floor the women would complain that their ankles were cold and would wrap them in newspapers to avoid that discomfort and to allay their fears of catching cold. Mr. Wittenmeier thought that if the temperature was 90 deg. outside, it should be about 15 deg. lower inside the building for comfort.

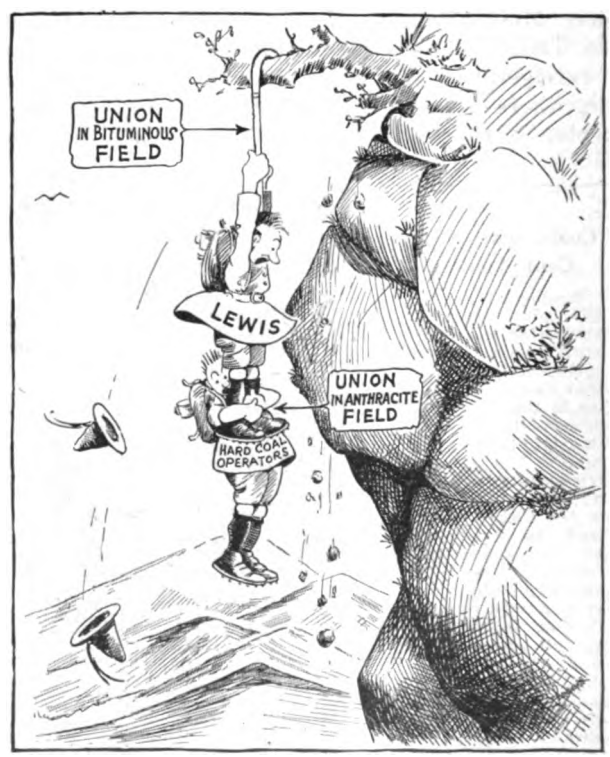
It has been estimated that there are about 1,000 Class A motion-picture theaters which could immediately afford modern cooling plants. Each of them would require an average of 400 hp. including ventilation. Here is a total potential summer demand of 400,000 hp. to which should be added the demands of the legitimate drama which, though not nearly so great, is nevertheless considerable.

In other articles I desire to detail more developments in the art of cooling which show how rapidly it is spreading. Something also should be said of the various systems in use.

If all the motion-picture theaters, large and small, were cooled they would use almost a million tons of coal a year for cooling. Suppose they used on an average two-thirds of a million horsepower for twelve hours a day for six months and that each kilowatt-hour required 1½ lb. of coal, the "movie" industry would absorb the quantity of coal stated. The cooling of motion-picture houses is only a small part of the whole program which will not be reached till home cooling is introduced. Thus the importance of refrigeration as an outlet for more coal can readily be appreciated.

A Correction

On page 771 of our issue of Dec. 10 it was stated concerning the Chance process of coal preparation that: "These two agencies (paddles and water jets) serve to counteract each other and result in a tendency, toward whirlpools, eddies and boiling." Whirlpools, eddies and boiling are actions that would be detrimental to the operation of this equipment and the apparatus was specifically designed to avoid them. The passage quoted should have read: "These two agencies serve to counteract each other and check any tendency toward whirlpools, eddies and boiling."



But If He Strikes—!

Lewis: "Let loose of my feet or I'll strike with this stick!"

(With apologies to Sondaysnisse-Strix, of Stockholm, whose cartoonist could not have guessed that C. P. Daniel, of Knoxville, Tenn., would reinterpret and retitle his work.)

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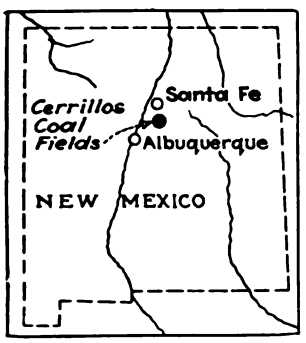
New Mexico
Has Anthracite Mines but No Strike

By John A. Holmes
Madrid, N. M.



PENNSYLVANIA, now strike-bound, does not mine quite all the anthracite that is normally produced in America. There are a few other small hard-coal regions. New Mexico has one of these, a little field containing scarcely six square miles, lying 50 miles east of Albuquerque on the Santa Fe railroad. In this territory both anthracite and bituminous coal are mined from a single bed—the White Ash—and there are soft-coal mines also in another seam—the Cook and White.

The field has eight mines all of which belong to the Albuquerque & Cerillos Coal Co. Five are now producing coal. Three of the five—Nos. 4, 8 and 9—are anthracite operations all delivering their coal to a single breaker. Two of these produce less than 100 tons a day. No. 4 is the main anthracite mine of the field, yielding about 300 tons daily. In it the company has experimented with various systems of mining within the last several years but is now using only standard methods.

Geologically this small field is exceptionally interesting. Coal is found solely in the Mesa Verde formation of the Upper Cretaceous area. It occurs only on the Mesita de Juan Lopez and a part of the Ortiz mine grants. This coal tract is surrounded by a vast mineral-bearing region producing gold, silver, lead and copper. This peculiar condition is accounted for by the fact that on both north and south of the coal area lie volcanic upheavals which have thrown out two major igneous sheets, each about 800 to 1,000 ft. thick. These intrusions of andesite porphyry, cut by many dykes, have forced their way between the sedimentary formations.

The first bed of coal to be developed years ago was the White Ash, the product from which soon gained prominence in the Southwest as a low-ash, non-coking fuel. This bed dipped to the southeast on a 15 per cent slope and averaged 6 ft. in thickness. As this mine was developed southward, the coal gradually changed from a bituminous to an anthracite, the thickness simultaneously decreasing to 4 ft. and even less. Later this operation caught fire and had to be abandoned. Several years afterward, however, a breaker was built and work started on the development of the anthracite.

The largest mine so far developed is the No. 4, whose main slope has been driven in more than a mile. This passage was projected on the dip and entries turned off every 1,000 ft. on the strike. When these entries have advanced far enough, dips are turned parallel to the main slope, rooms are necked off on either side and driven on the strike. All cars are delivered to the room neck by a hoist, whence they are pushed to the face by the miners. As the coal is only 2 to 3 ft. thick, rooms are driven wide and double tracked, the brushings being gobbed in the middle of the room. As soon as these rooms have been driven in their full distance, the pillars are drawn on the retreat. So far, several acres of coal have been removed and there has been no break in the igneous sheet which lies approximately 25 ft. above. Experiments have been made with longwall and the V-system of mining, but because of the many dykes and faults encountered, these methods have not proved practical.

Efficient Ventilation Essential

This mine is ventilated by a high-speed reversible fan delivering 90,000 cu.ft. of air per minute, driven by a 50-hp., 2,300-volt synchronous motor. As the workings are gaseous, all blasting is done at night by a shotfirer. Canvas brattice is carried to the face of all entries, but in spite of this it frequently becomes necessary to employ a booster or blower fan to clear the face especially if the passage is being driven to the rise. The main return normally carries about ½ per cent methane; air samples are collected and analyzed periodically.

The accompanying table shows the proximate analysis of coal taken from various beds and at various places in this coal field.

The breaker which prepares all the anthracite produced is located about a mile from the nearest of the

The headpiece accompanying this article shows, at the left, the slope mouth at No. 4 mine, the principal anthracite producer of the Albuquerque & Cerillos Coal Co.'s several anthracite and bituminous operations in the Madrid (N. M.) region. In the center is a distant view of the mine town, the power plant and the company's breaker serving all of its anthracite mines, Nos. 4, 8 and 9. No less than nine sizes of coal are prepared. At the right are the approach tracks to the breaker. At present about 400 tons a day from three mines normally is handled through this breaker.

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Fig. 1—Section Through Los Cerrillos Coal Field

The three coal measures here appearing lie between the igneous intrusions that have forced their way between the sedimentary formations. The coal beds thus have not only been subjected to heat from these igneous measures but are broken by numerous dykes. These latter have precluded the adoption of longwall and V-mining methods, though these systems have been tried.

three mines tributary to it, the cars being hauled over this distance by a gasoline locomotive. First the coal is dumped into a bin and thence fed to the large main crusher by a horizontal apron conveyor. From the crusher the product passes to a shaking screen which removes the No. 1 size, or that passing over 4-in. circular perforations. The coal that drops through this screen goes to another shaker where the duff is removed, this passing direct to the duff bin. Everything coming over this $\frac{7}{8}$-in. screen goes to the main sizing shaker where grades Nos. 2, 3, 4, 5, 6, 7 and 8 are separated; each of these respective sizes goes to its own bin from which it is elevated to the spirals. After the different sizes have been spiraled and respiraled, each grade is lowered to the railroad loading bins by means of spiral chutes. As the coal is loaded into the railroad cars, it traverses a screen intended to remove any small pieces or degradation that may have chipped or broken off the larger ones in handling. These undersizes are delivered by a screw conveyor to a bucket elevator that feeds the material back to the main sizing screen.

The No. 1 size is hand picked after it has left the screen but before it reaches the spiral, and any pieces to which slate adheres are thus separated from the main body of the coal. These pieces are carried back to a small recrusher by a belt conveyor and after being broken down are discharged onto the main screen.

The following sizes are prepared:

No. 1—over a 4-in. circular opening,
No. 2—through a 4-in. and over a 3½-in. circular opening,
No. 3—through a 3½-in. and over a 2½-in. opening,
No. 4—through a 2½-in. and over a 1¾-in. opening,
No. 5—through a 1¾-in. and over a 1-in. opening,
No. 6—through a 1-in. and over a ½-in. opening,
No. 7—through a ½-in. and over a ¼-in. opening,
No. 8—through a ¼-in. and over a $\frac{7}{16}$-in. opening,
Duff—through a $\frac{7}{16}$-in. circular opening.

Sizes Nos. 4 and 5 are combined and sold as brooder No. 4. Sizes 5 and 6 are likewise combined and sold as base burner. At one time it was extremely difficult to dispose of the duff, but at present the Santa Fe railroad is using it in its shops at Albuquerque.

Generates Its Own Power

As no public utility plant is near this field, the company generates its own power. It now has a power house equipped with two 221-hp., and one 418-hp. Babcock & Wilcox boilers which are hand fired with duff and No. 8. A powdered fuel furnace under the 418-hp. boiler is contemplated for the near future. As this region is arid, tank cars are employed to haul all water for domestic use. Enough water, however, accumulates in the mine to assure the power house of an ample supply except in especially dry seasons when it becomes necessary to use city, that is, tank-car water. All boiler feed is treated before use.

This plant is also equipped with two 300-kw., and one 1,000-kw. condensing turbines, which are operated on a steam pressure of 150 lb. and exhaust to 21 in. of vacuum. The larger machine has been in operation only a short time, but a considerable reduction in water consumption has been obtained by it.

All power is transmitted to 2,300 volts, alternating current. In the mines, this is stepped down to 440 volts. Each circuit, of which there are eight, has its own individual feeder panel in the power house, on which watt-hour meters are mounted, giving the management of this operation an excellent check on the power distribution.

Proximate Analysis of Coals Produced

Bed	Grade of Coal	Moisture, per Cent	Volatile Matter, per Cent	Fixed Carbon, per Cent	Ash, per Cent	Heat Content, B.t.u.	Sulphur per Cent
Cook & White	Bituminous	0.43	35.91	52.45	11.21	13,760	0.82
White Ash	Bituminous	1.36	37.39	53.18	8.07	13,700	0.82
White Ash	Anthracite	1.78	14.14	78.58	5.50	14,091	0.73
White Ash	Anthracite	2.84	7.73	81.24	8.19	13,390	0.55

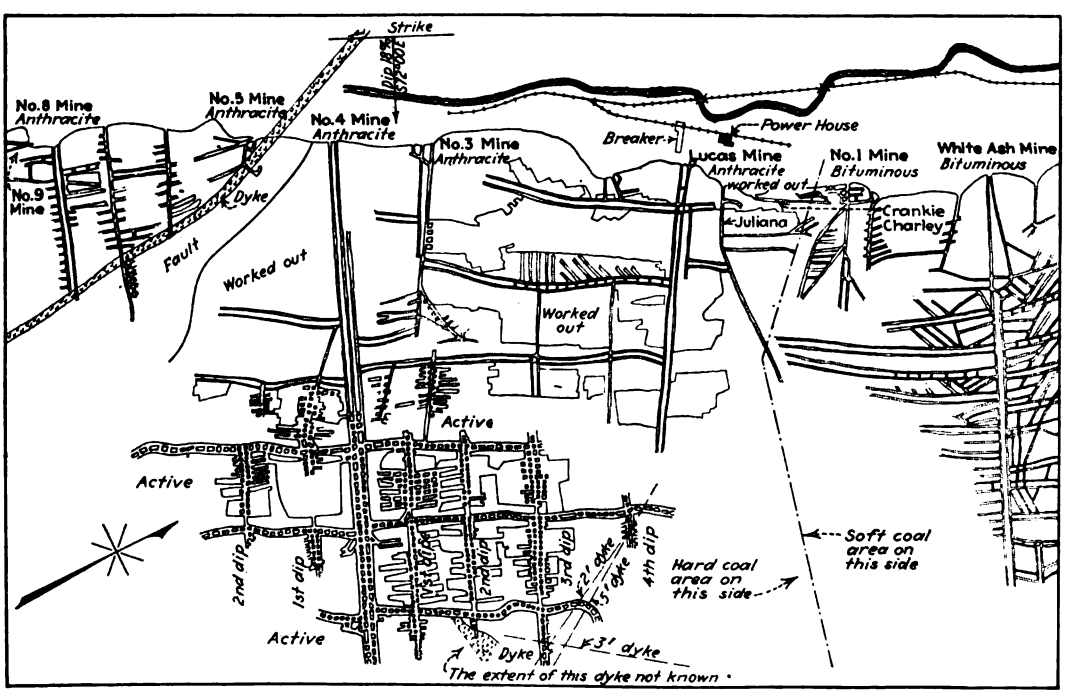

FIG. 2

Many Mines Work This Bed

The map shows the greater part of the coal region near Madrid, N. M., where the White Ash bed yields both bituminous coal and anthracite. Mines operating north of the dividing line shown on the drawing are in the bituminous territory and those south of it produce anthracite. At present the only anthracite operations working are Nos. 4, 8 and 9.

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Union Succumbs with Violence in West Virginia And Quietly in Central Pennsylvania

By Sydney A. Hale
Special Contributor, *Coal Age*,
New York City

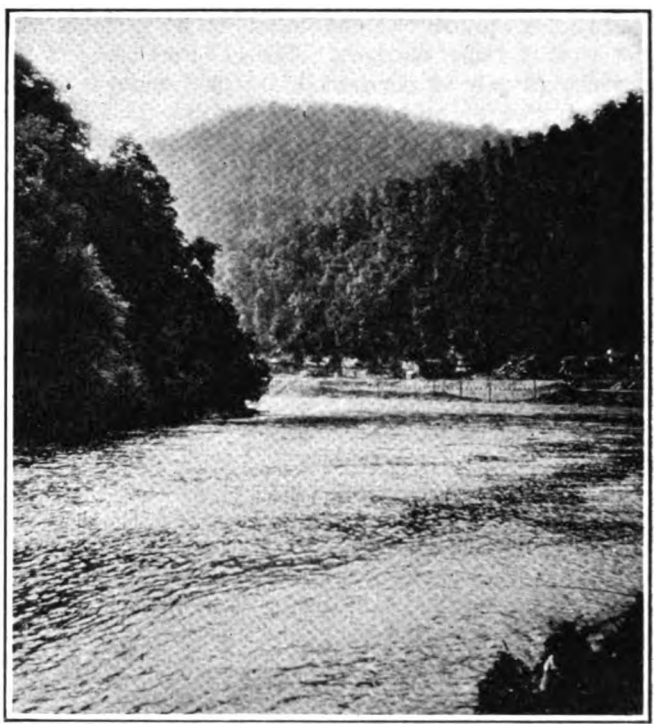
MORE EPITHETS have been hurled and more epitaphs wasted over the fate of organized labor in West Virginia than in all the rest of the coal producing states combined. The history of the United Mine Workers' failure to hold central Pennsylvania, covered in this article, is colorless by comparison with the violent drama of the Panhandle state. There have been struggles equally intense, equally bitter, elsewhere, but the picturesqueness of the West Virginia background has been so well advertised in recent years that that state is treated as the keystone in the arch of anti-unionism. Few commentators can resist the temptation to discuss the situation there in detail and to tinge an already colorful picture with their own individual sympathies and prejudices.

Undoubtedly the temptation is great. Armed marches with all the panoply of a miniature war, the lonely sniper in the wooded hills, riot and fatal gunplay in the village streets, an armored car dealing death as it careens through a beautiful valley, injunctions without end, charges and counter-charges of the abuse and the denial of civil liberties, distrust of the protection of the courts, men accused of treason against the state, plain and fancy slaughter carried to the threshold of the temples of justice, feudalistic conceptions clashing with "mobocracy," a whole commonwealth embittered by the jibes of the outside world—this is the stuff of which the story of the United Mine Workers in West Virginia is fashioned.

An elaboration of the incidents massed above would serve no good purpose in the present discussion. They are the byproducts of passions and prejudices to be weighed in an examination of the larger question of the public's responsibility in enforcing constitutional guarantees and in upholding American ideals in industrial warfare.

There is, however, another factor which gives West Virginia its commanding position in the labor situation. This cannot be ignored in any recital of the history of the labor movement in coal. One out of every four tons of soft coal mined in the United States is produced in West Virginia. Coal from that state shares with Pennsylvania anthracite the distinction of having the widest distribution. Moreover, little of the West Virginia product is consumed within the borders of that state. The lurid trimmings to the tale create a widespread popular interest in the situation, but the competitive power of West Virginia coal gives it a compelling influence in the coal set-up of every producing district east of the Mississippi River.

The idea of organizing the mine workers of the state is no recent development. There were union representatives from West Virginia at the historic Columbus conference of 1886 when the members of the National Federation of Miners and Mine Workers and the Central Competitive Field operators signed the first joint interstate agreement in coal labor history. Because the operating interests of the state declined to attend, however, the miner delegates were denied a vote in the conference. The same bar was raised against them twelve years later when they sent delegates to the Chicago meeting which firmly established the Central Competitive Field as the controlling factor in wage negotiations between the United Mine Workers and the operators. As in 1886, the West Virginia miners were excluded in 1898 because their employers scorned participation in the deliberations between the union and their fellow producers.



Some Coal Mining Country Is Idyllic

This coal "camp," of a variety that would bring gladness and song to the heart of a writer of advertising for summer resorts, is on the Guyandotte River close to the city of Logan, W. Va.

Despite this hostile attitude toward union recognition, organizers made considerable headway in establishing locals in West Virginia and the operators interposed no serious objection until 1902. In April of that year there was a union meeting at Huntington which voted a statewide strike. Operators felt that that action was taken, not because of any real grievance, but to help the striking anthracite miners. Against this southern West Virginia producers bitterly rebelled and, when the strike was broken, the union retained a strong foothold only in the Kanawha district. Two years later there was a split between the union and the Cabin Creek section of the Kanawha field over the open-shop. The Cabin Creek producers accused the

Seventh of a series of articles describing the changes in the labor status of the different bituminous coal producing districts of the United States in recent years. Preceding articles in this series appeared in *Coal Age* Sept. 25, Oct. 1, 8, 29, Nov. 19 and Dec. 31, 1925. The concluding article will be published next week.

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union of calling a strike in violation of its contract and declared for non-union operation.

The status quo was maintained in the rest of the field until 1912 when the Paint Creek section refused to renew its contract with the union. A strike was called, and spread to Cabin Creek with the usual quota of rioting and disorder. In July, 1913, the entente was restored in Paint Creek by the negotiation of contracts granting the check-off, but naming a lower wage scale than that in other parts of the district. A separate agreement in the Cabin Creek section made no provision for the check-off. The following year the check-off was made the issue of a strike in the Kanawha region. This ended in a three-year contract nominally permitting open-shop operation, but pledging the employeers to check off dues on request. In 1917 the union won the closed-shop and the compulsory check-off.

There was no further break until the nationwide strike of 1922. When that strike was called thirteen companies decided to continue operations. By the middle of August the number had increased to 126. At that time a minority signed individual agreements with the United Mine Workers. These defections left the union with only 35 per cent of the field under contract. With the beginning of the coal year 1924-25, there was a complete severance of union relations. The United Mine Workers has put forth strenuous efforts to recover its influence, but without success.

EARLY GAINS LOST IN 1902 STRIKE

The gains which the union was able to make in the other high-volatile fields of southern West Virginia in the early days were sacrificed in the 1902 strike. In the case of some of the newer developments, notably the Logan field, even the shadowy toleration of union activity has been absent. And that refusal to treat with or to recognize the United Mine Workers in any way was hardened by the campaigns of organization launched against the Williamson field in 1920 and 1921 and by the 1919 drive on Logan County. In both cases, union sympathizers started armed marches against the non-union fields and the campaigns culminated in guerilla warfare and the call for federal troops.

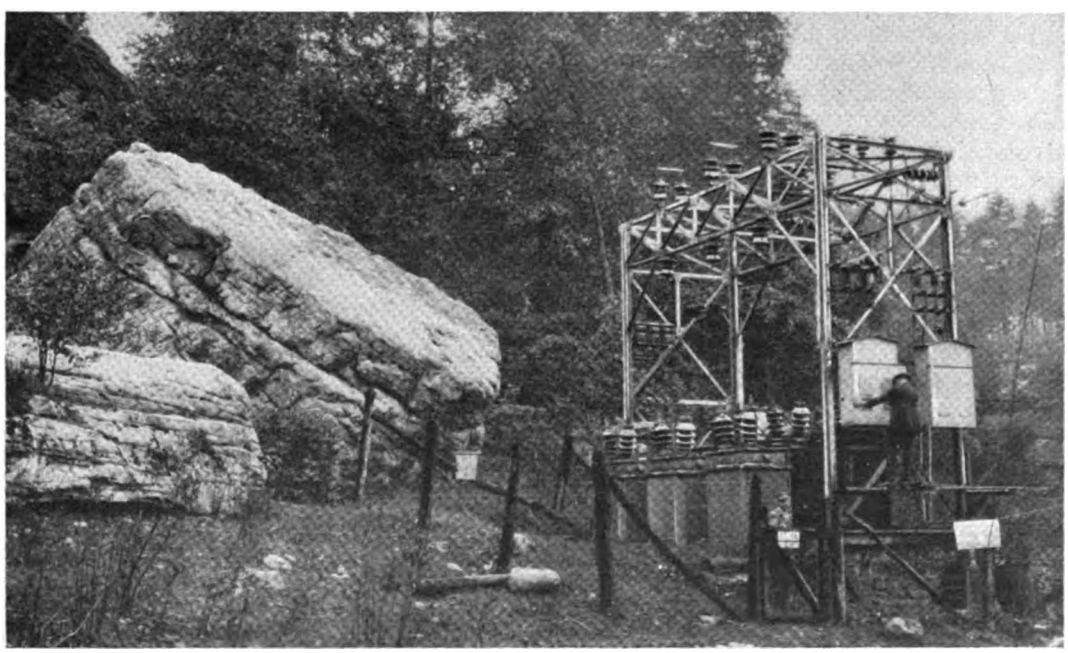
Except in the New River field, the United Mine Workers has at no time been a real factor in the low-volatile districts of West Virginia. For a few years preceding the 1902 strike there was no special antagonism shown toward union activity in the Pocahontas field, but since that strike the counties in that section have been closed territory to organized labor. The Winding Gulf district, opened in 1909, also has been non-union.

UNION LOSES NEW RIVER FIELD

Following the surrender of the Cabin Creek and Paint Creek sections to the union, New River operators agreed to collective bargaining with a committee of union miners in 1913 and during the war recognized the union itself. This recognition carried with it neither the check-off nor the closed shop, but these two demands were granted by a majority of the operators in 1919. A small group, including the Willis Branch mine, held out and a strike was declared. Intermittent violence marked the struggle which closed in May, 1921, when the Willis Branch tipple was burned. A suit for damages against the United Mine Workers was later settled out of court. With the depression of 1921, one by one the larger mines closed down to reopen later at the 1917 scale, without union recognition.

The early success of the United Mine Workers in securing closed-shop contracts in the Panhandle field in northern West Virginia was later marred by the revolt of some of the operators in that section. These revolters, seeking to escape union domination in a union territory, inaugurated another kind of closed-shop by compelling employees to agree not to become members of the United Mine Workers. Although these contracts have been denounced in opprobrious terms by the union, their validity was upheld by the Supreme Court of the United States in *Hitchman Coal & Coke Co. v. John Mitchell*, 245 U. S. 229. In that decision the court said:

"That the plaintiff was acting within the lawful rights in employing its men only upon terms of continuing non-membership in the United Mine Workers of America is not open to question. Plaintiff's repeated costly experiences of strikes and other interferences while attempting to 'run union' were a sufficient explanation of its resolve to 'run non-union', if any were needed. But neither explanation nor justification is needed. Whatever may be the advantages



Rugged Beauty

This 600-kw. transformer substation of the Virginian Power Co. supplies power for the Nuttallburg mine of the Fordson Coal Co. and the Brown mine of the Stover Coal Co., which mines are opposite each other on New River in Fayette County, W. Va. The beauty of the scenery in this section is hard to equal. Reposing on flat spots on the mountain side, and in the river, are numerous rocks, as large as houses, which have broken away and rolled to a new resting place. Mountain laurel, rhododendron and evergreen trees preserve the beauty through the winter.

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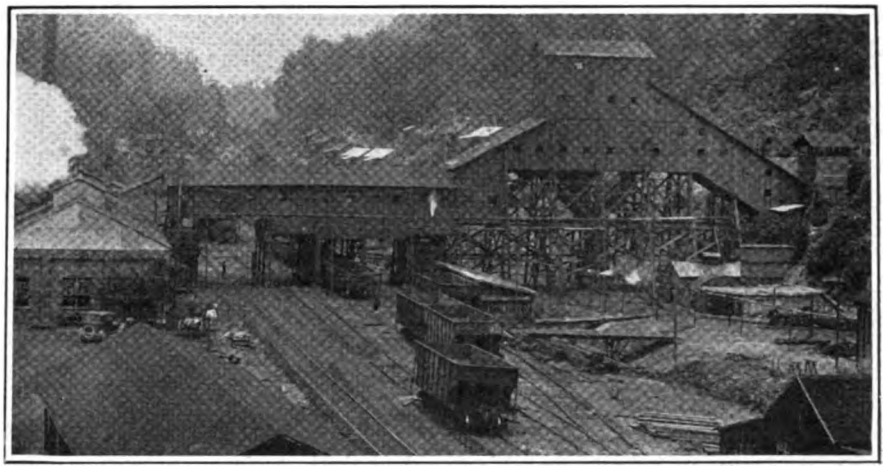
Where Smokeless Coal Comes From

This is the tipple and power house of the Winding Gulf Colliery Co., of Winding Gulf, W. Va., in the heart of non-unionism. Seldom has the United Mine Workers been able to set foot in the smokeless region, so that today this section of southeastern West Virginia represents probably the most outstanding non-union field in the country.



of 'collective bargaining' it is not bargaining at all, in any just sense, unless it is voluntary on both sides. The same liberty which enables men to form unions, and through the union to enter into agreements with employers willing to agree, entitles other men to remain independent of the union and other employers to agree with them to employ no man who owes any allegiance or obligation to the union. In the latter case, as in the former, the parties are entitled to be protected by the law in the enjoyment of the benefits of any lawful agreement they may make."

The *Hitchman* decision, which was the outgrowth of a campaign against non-union operations in the Panhandle in 1907, proved no barrier to union activities. The United Mine Workers was unremitting in its efforts to force all mines to enter into contractual relations with it and by 1920 only three companies were outside the fold. Resistance upon the part of those companies was stiffened by events in 1922 when an attack was made upon the Cliftonville mine, a former union operation leased and reopened as a non-union property by the Richland Mining Co. For this attack, in which a deputy sheriff was killed, 230 were indicted and a number of union members in Pennsylvania were convicted. The most recent development was a strike order issued in April, 1925, to end non-union operations. This strike, to date, has been a complete failure. Not only have the companies which were non-union retained that status, but their number has been augmented.

FAIRMONT SICKENS OF UNION RULE

The Fairmont district had its first brush with the United Mine Workers in 1892. In that year local strikes, unsanctioned by the international officers of the union, were called. The operators won out, discharged the strike leaders and refused to recognize the union. In 1902, another attempt, this time engineered by the international headquarters, was made to extend the power of the union over northern West Virginia. This strike soon collapsed, but wages were increased after peace was restored. The union was unable to gain another foothold until 1917. In August, 1918, the majority of the operators agreed to the closed-shop and the check-off and the union was in control of the field until the beginning of the 1922 strike. At that time a number of companies broke away and in 1923 there were 156 out of 395 companies in northern West Virginia operating non-union.

A more serious blow was dealt union prestige, however, in the next two years. Under protest against the conditions imposed, many companies signed the Baltimore agreement of March, 1924, which was the northern West Virginia counterpart of the Jacksonville agreement. At that time, according to George I. Brackett, former executive vice-president of the Northern West Virginia Coal Operators' Association, there were 79 union and 74 non-union companies running and 242 not operating. The union mines were producing 70 per cent of the tonnage. In a month the number of union companies working had dropped to 49 and the union percentage of production to 60. By January, 1925, the number of union companies in operation had been reduced to 24 and the number of non-union companies operating had increased to 129.

The United Mine Workers made a vain attempt to check this drift by issuing a strike appeal to workers in the non-union mines to come out April 1, 1925. This gesture was repeated in September, but the percentage of non-union tonnage has been steadily increasing and many of the largest producers have negotiated individual agreements with their men, paying scales of wages more in keeping with existing competitive conditions. Aside from a few operations, this great field has thrown off the union yoke.

The story of the unionized section of western Pennsylvania and the recent breaks from union control in that region was told in preceding articles in this series describing the situation in the Central Competitive Field. Despite the temporary successes achieved by the United Mine Workers in 1922, the other major districts in the western part of the state have remained strongly non-union. Recent attempts to stir up trouble in the Connellsville district have failed and Westmoreland is quiet. There has been nothing in recent developments to indicate that Connellsville workers will repeat their bitter fights of 1877 and 1891 or that Westmoreland miners will renew their heart-breaking battle of 1910-11.

Nowhere, perhaps, is the process of gradual disintegration of union influence better illustrated than in central Pennsylvania. Certain districts in that region, it is true, have been so persistently non-union for so many years that the situation has come to be accepted as a matter of course. That, however, is not true of the greater part of the region. Labor organizations existed in central Pennsylvania before the Civil War and most, if not all, of the predecessors in interest of the United Mine Workers had some influence in that field during their brief days of power.

Central Pennsylvania was among the first to extend recognition to the United Mine Workers. Operators in

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that region signed their first agreement with the United Mine Workers, District No. 2, on May 1, 1899. In 1900 the union producers there conceded the check-off and union membership jumped from between 8,000 and 10,000 to approximately 30,000. By 1920 the membership had grown to 46,000 out of a total of 55,000 to 69,000 workers—dependent upon season and demand—in the field as a whole.

The United Mine Workers won an early recognition in Somerset County and also lost it early in the history of the organization. On Dec. 1, 1903, the majority of the operators declined to renew their contracts with the union and a strike started which lasted until April, 1904. The only large producer that did not join in this movement was the Brothers Valley Coal Co., which continued union recognition until April 1, 1921. Cambria and Indiana counties also developed non-union tendencies, but not to the extent shown in the Somerset area. Wage rates and working conditions in these non-union fields, however, have been controlled by the rates and conditions prevailing in the organized parts of the region.

Despite these losses and the inability of the union to make counterbalancing gains, central Pennsylvania remained predominatingly union until after the war and in the 1920 wage scale, which later was rewritten into the Jacksonville agreement. This is clear from the division between union and non-union workers shown in Table XI. The 1920 figures used were compiled by the Central Pennsylvania Coal Producers' Association. The 1900 figures inserted for comparative purposes are those of the United States Geological Survey.

Notwithstanding an increasing number of petty and local strikes, the general strikes of 1919 and 1922 and the persistent refusal of union officials to consider negotiations with central Pennsylvania before contracts were signed with the Central Competitive Field, the process of disintegration was not accelerated to a marked degree until after the signing of the Jacksonville agreement. Following that, the union operators in central Pennsylvania protested that the act would be suicidal, but consented to the three-year extension of the contract in their district, because it was impossible to induce the union officials to agree to any downward revision. Later attempts to persuade the union to take such action were rebuffed.

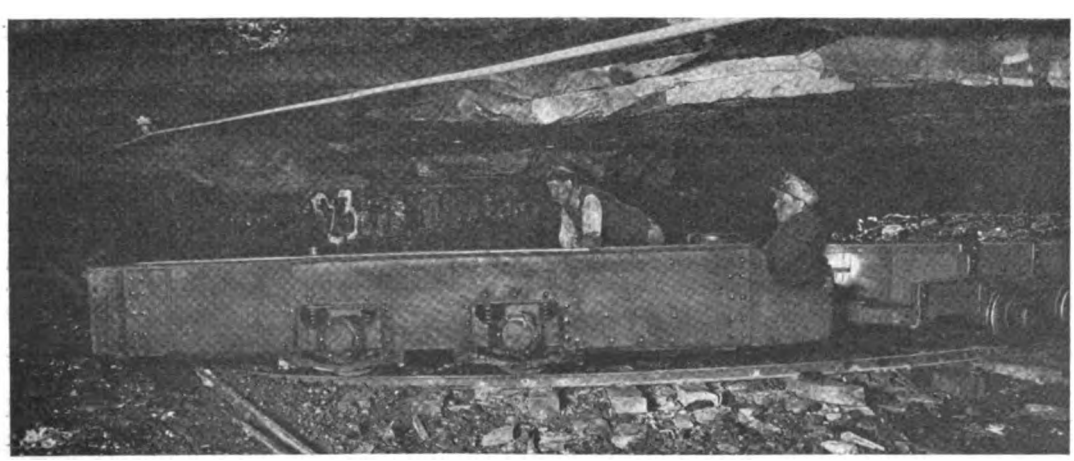
That these forecasters of woe were true prophets has been fully demonstrated by the subsequent march of events. Union mine after mine was closed down. Some of these properties were later leased to friendly interests who reopened them at the 1917 wage scale. In a number of other cases, the operations were reopened by their owners on the condition that workers accept less than the Jacksonville basis. Reports of evasion of strict letter of the agreement have been too common to ignore. Although union officials have stoutly maintained that many of the smaller operations, some of which were forced into contracts in 1922 before the union would permit the resumption of work at other mines controlled by the same interests in closed-shop territory, pay the straight union scale, it is insisted by others who claim to be conversant with the facts that the union rate has been more honored in the breach than in the observance.

The net result of the union's "no backward step" policy in this field has been to reduce the percentage of union-mined coal to 30 per cent of the output of the field. Three of the largest producers in central Pennsylvania—one of which is railroad-controlled—have struggled along under union conditions, but in the case of the commercial companies the financial toll has been heavy. Many companies less favorably situated financially have found it impossible to meet competitive prices and pay the 1920-27 wage scales. These have either retired from the field or shifted to the non-union column. Even with the increased general demand for coal, hundreds of mines in central Pennsylvania have been idle for weeks and months. Broad Top alone remains solidly union—a fitting complement to union Blossburg in the north.

Table XI—Labor Status of Central Pennsylvania: 1900-1920

County	1900 Total Number Workers	1920 Total Number Workers	1920 Union Workers	1920 Non-union Workers
Armstrong	2,000	4,782	4,430	352
Bedford	1,002	1,486	1,385	101
Blair	773	454	246	208
Cambria	10,634	21,022	14,190	6,832
Center	1,314	2,401	2,401	.....
Clarion	706	2,634	2,634	.....
Clearfield	8,994	11,882	6,699	5,183
Clinton	.....	264	264	.....
Elk	1,375	1,165	1,131	34
Huntingdon	599	1,340	1,249	91
Indiana	1,354	12,233	7,184	5,049
Jefferson	5,913	5,815	3,486	2,329
Lycoming	.....	21	.....	21
Somerset	5,369	2,899	288	2,611
Tioga	1,975	1,187	1,187	.....
Totals	42,008	69,585	46,774	22,811
Percentage of Union Workers	71*	67	...	.....

*Based on estimated membership of 39,000.



Feeding the Main Line

This storage-battery locomotive is used in gathering cars in the mine of the Black Star Coal Co., Inc., at Alva, Harlan County, Ky. Here the locomotive is shown about to swing onto the main line with a loaded trip.

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New French Nitrate Industry Centers Upon Coal

Plants Capable of Producing 100,000 Tons of Ammonia Annually Are Now Operating or Are Under Construction Near Mines

By Victor Truant
Paris, France

NITROGEN is basic in the life of any nation. It is vital to the prosperity of agriculture—as a main constituent of fertilizer—and also in the production of explosives, dyes and chemicals. In order not to be at the mercy of nations that have it in plenty, France is fast learning how to produce it herself. Today, at her collieries, she is manufacturing approximately 100,000 tons of sulphate of ammonia every year. This activity is an important adjunct to the French coal industry.

Formerly, France produced little nitrogen, though her consumption was large, and she had to import sulphate of ammonia and nitrates. In 1900 that country consumed only 48,000 tons of nitrogen. From 49,000 tons of sulphate of ammonia (9,800 tons of nitrogen) and from 260,000 tons of nitrate of sodium (39,000 tons of nitrogen) she produced only 37,000 tons of sulphate of ammonia, yielding 7,400 tons of nitrogen.

In 1913, French consumption of nitrogen had increased by 50 per cent compared with that of 1900 to 72,000 tons, of which the country produced only 17,000 tons.

France Forced to Increase Output

It was absolutely necessary for France to increase her production as soon as the termination of the war would permit it. She made this effort and in 1924 produced 30,000 tons of nitrogen, from 98,000 tons of sulphate of ammonia and from 50,000 tons of cyanamide. But the French consumption rose at the same time to 91,000 tons and to make up the shortage the nation had to import in 1924, 63,000 tons of nitrogen, yielded by the following products:

	Tons	Yield in Nitrogen Tons
Nitrate of sodium	264,000	39,000
Sulphate of ammonia	102,000	20,400
Cyanamide	10,000	1,800
Nitrate of calcium	11,000	1,400
Sundries	3,000	690
Total	390,000	63,890

These figures clearly show what a future growth is necessary in the French nitrogen industry before it can satisfy the requirements of a consumption that is steadily increasing. It is striving along two lines to do so: (1) The development of the present production of sulphate of ammonia from the operation of byproduct ovens (92,000 tons, yielding 18,500 tons of nitrogen) and from the cyanamide process (increased from 12,000 tons, in 1913, to 50,000 tons, in 1924); (2) the creation of new works for the production of synthetic ammonia from atmospheric nitrogen.

While taking an important part in the rapid increase of the production of sulphate of ammonia at their coke-oven plants, the French collieries also have deliberately entered the business of producing synthetic ammonia. Both methods can be worked jointly as the various processes of production of synthetic ammonia are based upon the recovery of hydrogen from the gases of coke-ovens, which contain about 50 per cent of that gas.

Six coal-mining companies among the most important of the Nord and Pas-de-Calais, three companies of the Center coal field and one company of the Lorraine coal field have synthetic plants either in course of erection or working already.

Four Plants Use Claudé Process

The Compagnie des Mines de Béthune is producing 870 tons of synthetic ammonia per month. The Société des Houillères de Saint-Etienne began at the end of 1923 the construction of a plant for the production of 5 tons of synthetic ammonia every 24 hr. This plant was started Dec. 13, 1924, and since then the output has increased until it reached 3.5 tons of anhydrous ammonia in July last. The plant is expected eventually to produce 10 tons per day. The Société Ammoniaque Synthétique, which is a creation of the Société des Mines d'Aniche (Nord), has constructed its plant, which is to be started soon, close to the coke ovens. The Decazeville plant, established by the Société de Commentry-Fourchainbault, is also close to coke ovens.

These four enterprises are utilizing the Georges Claudé process, in which the synthesis of ammonia is brought about by burning hydrogen in dosed air, the reaction taking place afterward by catalysis under the influence of a considerable pressure (900 kg.) and of a high temperature (600 deg. C.).

The other collieries employ the Casale process, the French license of which is in the possession of the Compagnie d'Alais, Forges et Camargue. This process is derived from the same principles as Claudé's process, but has some peculiarities of its own.

The Société Ammonia is now erecting one plant at Lens and one plant at Roche-la-Molière, in which the two coal-mining companies of the same name have a strong interest. The Lens plant is designed for a yearly production of 22,500 tons of ammonia and the Roche-la-Molière plant for 5,000 tons.

New Concerns Will Start Soon

The Dourges plant and the Drocourt plant to have an annual capacity of 5,000 tons of ammonia will be ready to work within a few months. The Compagnie des Mines d'Anzin, in co-operation with the Kuhlmann group (chemicals), is having a plant built at Anzin to produce 7,500 tons per annum. As to the Société de Sarre et Moselle, its plants, which have certain peculiarities, will soon be completed and a part of the Merlebach Works is to be started immediately. Prospects for the utilization of one or the other of the two processes mentioned are now under the consideration of various other French collieries.

Considering only the collieries named in this article, it is estimated that, once their synthetic plants are in full working order, France will be able to make 60,000 tons of ammonia per annum, or about 100,000 tons of sulphate of ammonia. This is about the tonnage of sulphate of ammonia the country now is importing. But there is a wider scope for development, as France still imports from Chile 264,000 tons of nitrates each year. Nitrates can very well be replaced by sulphate of ammonia, as happened in Germany, where, by producing every year 325,000 to 350,000 tons of nitrogen, chiefly by the Haber process, the country has achieved "nitrate independence."

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Union Pacific Coal Co.'s Code of Standards—V*

Safety Standards (Continued)

32. No employee, unless in the course of duty, will be permitted to travel slopes or haulageways where manways are provided, and any violation of this rule will subject the person so offending to discharge.

33. Sec. 3,510, Wyoming Compiled Statutes.—"Control of Fire Damp—Penalty. It shall be unlawful for any miner, fire boss, employee in any mine, or other person, to brush fire damp from any place in a coal mine by means of a coat, sack, sail cloth, or any like article or material; or by any other means, or to use water for the removal of fire damp, and any person so offending shall be deemed guilty of a disdemeanor, and upon conviction shall be imprisoned for a term not exceeding six months, and fined in any sum not to exceed $100. And any owner or superintendent, mine boss or fire boss, who shall knowingly permit the same to be done, shall be deemed guilty of a misdemeanor, and subject to the same penalties as heretofore described."

(a) In case gas (methane, CH_4) is discovered at any point within the mine, it shall be the duty of the person making the discovery to report the same to the fire boss or mine foreman who shall arrange for its removal.

(b) No body of gas shall be moved by anyone unless the mine foreman, his assistant or fire boss is present.

(c) No person or electrical apparatus, between the gas and return, is to be permitted to work or operate while the gas is being moved. (See ventilation section.)

34. No explosive except one designated as "permissible" by the U. S. Bureau of Mines shall be used.

35. Any explosives (permissible powder) in the possession of the miner must be stored in a suitable locked box which shall have the approval of the safety engineer. This box shall be kept at least 100 ft. from the working face, preferably in a crosscut, and not in direct line with the working face.

36. No man shall have in his possession at any one time, more powder than will be sufficient for one day's blasting.

37. Detonators must be kept at least 10 ft. distant from powder and placed in a recess in the solid coal. (It is suggested that several drill holes having a depth of from 8 to 10 in. be placed safely in solid coal for the storage of detonators).

38. The storing of powder and detonators together, or both or either of these with spikes, nails, tools, or other metallic substances is positively prohibited and subjects the person responsible for such storage to discharge.

39. Sec. 3,656, Wyoming Compiled Statutes.—"No person shall, whether working for himself or in the employ of any person, company, or corporation, while loading or charging a hole with nitro-glycerine, powder or other explosive, use or employ any steel or iron tamping bar; nor shall any mine manager, superintendent, foreman or shift boss, or other person having the management or direction of mine labor, allow or permit the use of such steel, iron or other metal tamping bar by employees under his management or direction, unless such steel bar be tipped with at least 6 in. of copper or be tipped with wood, and when needles are used, they shall be made of copper only. All holes shall be tamped with clay or other incombustible material and when incombustible material cannot be obtained in the vicinity of the working place, then it shall be the duty of the employer to furnish such material for tamping at some accessible point near such employee's working places."

Electrical Safety Precautions

1. An insulated platform shall be provided at all stations where it may be necessary to handle live parts, or those that are suspected of being alive or capable of giving shock.

2. Supply lines extending to remote parts of the mine where current is not required after the working shift shall be disconnected by a person delegated to perform such work.

3. Working on live lines is prohibited.

4. Before working on 2,300-volt lines all wires of the circuit shall be short-circuited and grounded.

5. Cables and wires carrying 2,200 volts (nominal) shall be painted yellow at intervals of 50 ft., except at terminals where intervals of 25 ft. shall be maintained. This will distinguish the high- from the low-voltage lines.

6. Standard caution notices shall be posted at such points as will render them most effective in reducing the likelihood of accidental contact with live electrical equipment and conductors.

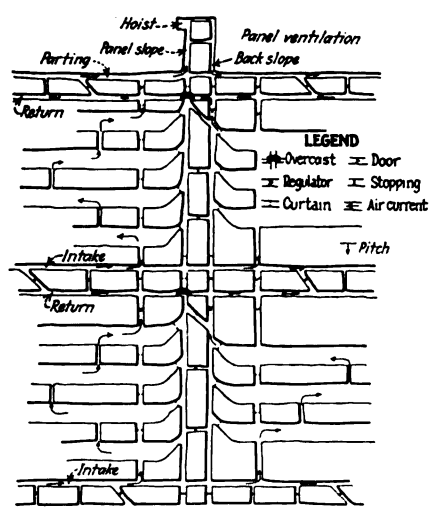

Fig. 27—Ventilation Plans Approved By an Engineer

Each panel is on its own split and no air is permitted to pass over two or more panels continuously.

7. At each pump, hoist, fan or motor-generator set, there shall be at least one Pyrene fire extinguisher or its equivalent. This shall be conspicuously marked that it can be used on live parts. Buckets of shale dust shall also be kept at these places, the aggregate volume of which shall not be less than 2 cu. ft.

8. No one but authorized persons shall be permitted to operate pumps, motor-generator sets, hoists or fans, and standard prohibitory notices to this effect shall be posted.

9. No person shall be allowed to work on or with electrical equipment of any kind unless authorized by the mine foreman or mine electrician.

10. Trolley wires that are less than 6½ ft. above the top of the rail shall be protected at all points where men are regularly required to work or pass under them and at all other points where men may come in contact with the wires.

11. Trolleys are to be carried on the opposite side of headings from the travelingways.

12. Light circuits shall not be installed in places known to generate gas.

13. Electric lamps shall not be installed where they can come in contact with combustible material.

Some Safety Don'ts

Don't:

—leave tools where men and mules will have to walk over them.
—drive spikes, nails, files or other tools into props.
—leave nails sticking up in boards—bend them over.
—neglect to report what you consider unsafe conditions.
—work under loose coal or rock.
—be careless with powder and detonators.
—use too much powder.
—drill beyond the depth of cutting, where mining machines are used.
—tamper with electrical equipment.
—take unnecessary chances.
—violate any safety rules.
—leave doors or curtains open when they are supposed to be closed and vice versa.
—countenance unsafe practices by others.
—fail to mark and report broken bonds (it may save a life).
—fail to provide proper clearance between props and track—(viz. 2 ft. 6 in.).
—neglect to sprinkle.
—think that a shovel is your only necessary tool. Get a good saw, ax and bar, keep them in good condition and use them.
—take chances with gas (CH_4).
—delay in reporting the discovery of gas to your foreman.
—try to move gas without authority from the foreman or fire boss.
—enter the mine without your life check.
—fail to warn the new employee of the dangers incident to his work and working place.
—ride on loaded or empty trips without permission.

*This is the fifth of a series of articles giving the Code of Standards put into effect by the Union Pacific Coal Co., at its operations in Wyoming. The first four articles appeared in the issues of Dec. 17, 24, 31 and Jan. 7, and the remainder of the code will be published in future issues in this form that permits of easy filing.

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—enter old workings. (Stay in your own working place.)
—take strangers into the mine without permission.
—travel slopes or planes.
—fail to report faulty equipment or apparatus not properly safeguarded.
—litter the floor of your working place with mining refuse. (Keep your gob in neat and orderly shape.)
—congregate on partings or haulageways.
—carry tools with you on a man trip.
—stand in the bight of a rope or chain in tension.
—sit on the same side as the trolley when riding a trip.

Mine Ventilation

Sec. 3,508, Wyoming Coal Mining Law—"The owners, lessee or agent of any coal mine, whether shaft, slope or drift, shall provide and maintain for every such mine, ample means of ventilation affording not less than 150 cu.ft. of pure air per minute for each and every person employed in said mine, and as much more as the circumstances may require, which shall be circulated around main headings and cross headings and working places, to an extent that will dilute, carry off and render harmless the noxious or dangerous gases generated therein; the main current of air shall be so split, or subdivided as to give a separate current of reasonably pure air to every 50 men at work, and the inspector shall have authority to order separate currents for smaller groups of men, if, in his judgment, special conditions make it necessary; and the air current for ventilating the stable shall not pass into the intake air current for ventilating the working parts of the mine.

"In mines generating fire damp, worked out or abandoned parts thereof shall be kept free of standing gas, or be properly walled off and the entrance thereto properly closed, and cautionary notice posted on the stopping to warn persons from danger, and every working place where gas is known or supposed to exist shall be carefully examined by the fire boss within two hours immediately before each shift, and all accessible abandoned places shall be examined twice each week with a safety lamp (flame), and in making said examination the inspector shall leave at the face of every place examined, evidence of his presence, with the exception that when special conditions warrant the state mine inspector may designate a place or places in the mine, where the fire boss can meet the men and pass them to their respective working places. The fire boss shall make a daily written report on a form approved by the state mine inspector. The report shall be made before the fire boss goes off duty for the day and this report shall be kept as a permanent record. And it shall not be lawful for any miner to enter any mine or any part of a mine generating fire damp until it has been examined by the fire boss aforesaid, and by him reported to be safe. No room shall be driven more than 50 ft. in advance of a break-through or airway:

"Provided, however, that entries may be driven 100 ft. ahead of the last crosscut, but in this event proper brattice or other means must be used to carry the air to the working face, the same to be approved by the state mine inspector. All crosscuts in rooms and entries, except the one nearest to the working face, shall be sealed in such manner that the air current shall be directed across the working face."

Penalties for violation of the above act are provided in Sec. 3,509.

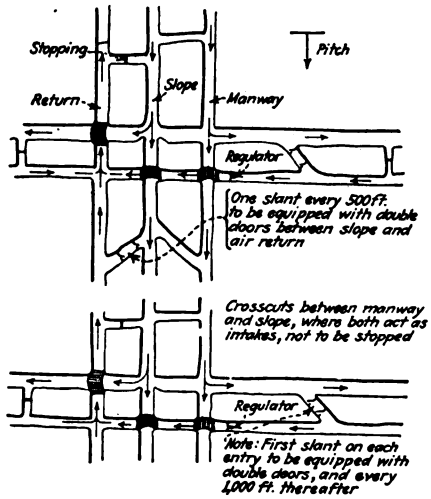

Fig. 28—No Doors Are Located In Overcasts

Overcasts do not include doors. Instead, inbye of the entry the first slant is equipped with double doors forming an air lock which can be used as an entrance to the air course.

Regulations Are Complete

1. In no case shall the amount of air passing through the last break-through on any split be less than that set forth in the law.

2. The short circuiting or loss of air through leaks must not in any case exceed 35 per cent of the total air entering any split and, as stated, the quantity set forth by law shall pass through the last break-through.

3. Panels shall be ventilated as shown in Fig. 27 wherever it is possible. In any event each panel shall be on its own split. Do not pass air continuously over two or more panels.

4. The quantity of air passed through any split shall be subject to the approval of the ventilation engineer.

5. In panels or entries not working, that is, standing, the quantity of air passed shall be in accordance with the recommendation of the ventilation engineer.

6. The fan housing and airdrift shall be of fireproof construction.

7. All fans shall be equipped with automatic starters, open-phase relay, and pressure recording gage. Motor to be equipped with sliding base take up and endless belt. In no case is the distance between pulley centers to be less than three times the sum of the diameters of the two pulley wheels.

8. Motor house to be of ample size to give clearance around machinery to permit oiling without stoppage of the fan.

9. Belts shall be properly guarded by pipe-rails or other suitable means to prevent persons from coming in contact with them.

10. Abandoned rooms (rooms standing, in which the pillars have not been drawn) shall be walled off, confining the circulation of air to the entries and working places.

11. Regulators shall be of substantial fire-proof construction with the door one-half the width of the entry and made of steel plate.

12. Permanent stoppings between main intake and main return shall be of concrete construction and set into the rib 12 in. Thickness of wall shall be 6 in.

13. The cross-sectional area of an overcast shall in no case be less than the area of the air course upon which the overcast is located.

14. Side walls and top of overcast shall be made of concrete, the top reinforced with steel.

15. No doors shall be placed in overcasts. Instead, inbye of the entry upon which the overcast is placed at the first slant shall be placed double doors forming an air lock that may be used as an entrance to the air course. (See Fig. 28.)

In entry stoppings a small door shall be placed every 500 ft. to allow rock dusting in back entries.

16. The roof above each overcast shall be sloped, eliminating sharp breaks and corners and the end walls of the overcast are to be banked or graded forming an approach or easement for the air. Drainage under overcasts to be by pipes and not by ditches, the pipe to extend far enough back from the end wall so that the end banking will not cover it. Ends of pipe to be left open and accessible for rodding in case the pipe becomes plugged.

17. Sec. 4,436, Wyoming State Law— . . . "And in all mines the doors used in assisting or directing the ventilation of a mine shall be so hung and adjusted that they will close themselves, or be supplied with springs or pulleys, so that they cannot be left standing open." In addition to this, every door is to have a clearance of 8 in. from the floor so that loose coal or other material that might be on the floor will not hold a door open. Doors to have sills to fill up this 8-in. space and on haulageways the bottom of door is to carry heavy canvas. The use of doors for the directing or diverting of air is absolutely prohibited within the mine where this can be accomplished by overcasts or other means.

No Sharp Turns in Air Courses

18. Air courses must be properly driven, of uniform cross sectional area, avoiding sharp breaks and turns. They must be thoroughly cleared before pulling the track, and where the roof has a tendency to cave or slough all back entries and main returns are to be center propped.

19. When a mine is ventilated by having a main return on either side of the slope these main returns are to be connected by means of overcasts at every third cross entry. New mines must be opened with separate returns on each side of the slope.

20. In all mines having two parallel main intakes the crosscuts between these intakes must not be blocked. (See Fig. 28.)

21. For the handling of gas (CH.) see Safety Standards.

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News Of the Industry



Hard-Coal Wage Parley Breaks Up; Inglis Decries Lewis' "Rule or Ruin" Policy

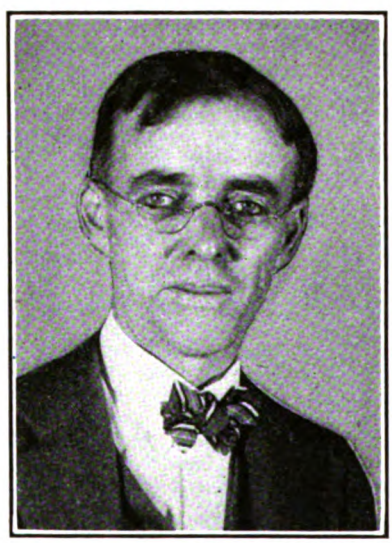
The anthracite wage conference, resumed at the Union League Club, New York City, on Dec. 29, was adjourned *sine die* at noon on Tuesday of this week. This is the second time such action has been taken in the history of the present negotiations. The first break came on Aug. 4 at Atlantic City. In both cases arbitration was the rock upon which the conference split.

Each side blames the other for the rupture of negotiations. "As predicted in my statement yesterday," said John L. Lewis, president of the United Mine Workers, after the break, "the operators were determined to break up this conference without an agreement. After a period of fruitless discussion this morning (Jan. 12), the operators moved an adjournment without delay and demanded that the mine workers second the motion. Conscious of our responsibilities and still imbued with the hope that an agreement might be reached through the operators abandoning arbitration, the mine workers refused to do so. The operators later seconded their own motion and the chairman put the question. Under such circumstances, the mine workers recognized that they could not then through their own efforts keep the conference in session with the operators present, and reluctantly voted for the motion.

"The mine workers profoundly regret the operators maintaining throughout the sessions the same unyielding attitude which they evidenced when negotiations began six months ago at Atlantic City and which they have maintained ever since. The responsibility for the failure to agree and a continuance of the strike rests entirely with the anthracite operating interests, who thus arrogantly refuse to make any contribution toward industrial peace. The mine workers are prepared to continue this struggle for any period necessary to induce the operators to make a lasting peace which will preserve for our people the rights of free men."

Mr. Lewis, not the operators, retorted the latter, must bear the onus of prolonging the strike. "After many days of conference," declared a statement issued by Major W. W. Inglis, chairman of the operator members of the negotiating committee, and his associates, "we find there is no change whatever in Mr. Lewis' attitude. He absolutely refuses to consider any constructive policy. In a few words, his position is that he will rule or ruin. He has informed us in no uncertain terms that he cares nothing for the opinion of the public or public officials, chambers of commerce, religious organizations or the press. He will have his own way or nothing.

"The operators' proposals, the Luzerne legislators' plan, the Markle plan, the engineers' and economists' plan—



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James A. Gorman

Secretary of the joint conference of hard-coal miners and operators recently in session at the Union League Club, New York City, in an effort to arrange a settlement of the hard-coal strike. Mr. Gorman also is a member of the anthracite conciliation board.

all were discussed at length, only to be summarily rejected by the miners' spokesman because they 'smelled of arbitration.'

"While the operators were pressing for practical measures to end the strike and put the industry on a permanent basis. Mr. Lewis dragged in unconstitutional proposals for federal price-fixing and wage-fixing. Such proposals are neither workable nor practicable, and while consuming time did not form a basis for any serious discussion. Their insincerity was further shown by Mr. Lewis' statement to us that we might raise the price of anthracite $5 a ton so long as he got what he wanted.

"The operators have had but one object in view—maintaining production at a fair wage and a fair price. This requires some means of avoiding deadlocks and suspensions. They have offered to open the mines, pay the old wages and, while production is going on, submit every issue in dispute to arbitration. The utmost effort has been made to meet Mr. Lewis' views, but he will consent to no settlement on a basis on which the industry could reasonably expect to exist.

"On the record of the past four years, with three general strikes and constant threats of strike, and the menace of disturbance in the industry by reason of Mr. Lewis' policy, the operators have been forced to the conclusion that arbitration is the only safeguard. Without this means of assuring production, the industry cannot perform the only function for which it exists, namely, to supply coal.

Inglis Objects to Force

"The breaking up of the conference is due to just one cause—the refusal of Mr. Lewis to accept any form of settlement that would bring some assurance of peace to the industry. The operators have been trying to reach a sound settlement based on reason and justice. Mr. Lewis insists that force alone shall rule. Until his attitude changes, further discussion is useless."

The details of the negotiations leading up the break are summarized in the paragraphs following.

The operators again pressed the proposal for arbitration at a prolonged session on Jan. 6. The miners again rejected the idea and countered with a demand that the operators throw open their books to the union negotiating committee. The producers retorted that they would submit their records to an arbitration board, but not to the miners' committee. The union conferees then asked that the operators support them in promoting a bill to establish federal regulation and control of the industry. The operators retorted that they had been advised by counsel that a law fixing prices and wages would be clearly unconstitutional. The Pinchot plan was again dragged forth. Major Inglis and his associates would have nothing to do with it. When they offered the Markle plan as a substitute, the miners turned it down.

Asked what their next move would be, the operators replied that inasmuch as the miners had rejected arbitration there was nothing left but "to compose our differences by a continuation of negotiations." Mr. Lewis answered that that was satisfactory to the miners and that he would regard a break-up of the

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meetings without an agreement as a public calamity. Mr. Markle then moved an adjournment of the conference, which had lasted nearly twelve hours.

The next day observers were given no information as to the progress of the negotiations. "After an all-day discussion which did not result in any definite conclusion," read the brief official communiqué, "the anthracite coal conference adjourned at the suggestion of Chairman Markle to meet tomorrow at 11 o'clock." In response to sharp protest by the assembled newspaper correspondents, the statement issued on Jan. 8 was expanded to the point of admitting that various modifications of the various plans before the conference had been talked over without either side changing its position. A four-hour meeting Saturday afternoon was followed by the announcement that the conference would hold a Sunday session for the first time in the history of wage negotiations.

Miners Revise Markle Plan

Chairman Markle opened the Sunday meeting with the suggestion that the principal plans before the conference be submitted to Charles Evans Hughes, former Justice of the Supreme Court and counsel for the union in the check-off case before Judge A. B. Anderson at Indianapolis in 1919-20, for the purpose of formulating a plan that would be the basis of a contract. The miners voted this down. After the operators had refused to join in a night session, the miners then presented what they designated as "a revised Markle plan." The principal features of this plan are:

(1) A five-year contract, subject to a modification by a board consisting of two miners, two operators and three members to be suggested by Mr. Hughes.

(2) This board would have the power to investigate and determine whether the operators could pay an increase, and if so found, such increase would be retroactive. Records of both the miners and the operators would be thrown open to this board.

(3) The board would also investigate, determine and recommend means for avoiding future suspensions and methods for increasing efficiency and reducing the cost of operation.

(4) The establishment of a joint commission in each district consisting of one miner, one operator and a conciliator to strive for greater co-operation, harmony and efficiency in the industry.

(5) The establishment of the check-off, limited to $14 per year.

(6) Equalization of wages, as provided for in the 1923 contract, by the Board of Conciliation. The Board also would handle questions of working conditions.

Major Inglis opened the meeting Monday morning with the declaration that this "revised Markle plan" was really the Pinchot program and could not be considered. "In order to make our position entirely clear," he continued, "we now desire to place on the record a plan that is constructive and should meet all your objections to plans previously proposed. It establishes a way out in case of disagreements and represents the utmost concessions that can be made and still preserve the essentials of a workable contract."

The provisions of this plan were as follows:

(1) A five-year contract ending Aug. 31, 1930.

(2) The wages in effect under the last contract to be paid until Aug. 31, 1926, as a consideration for an immediate resumption of work; and to continue thereafter, subject to revision, when and as economic conditions may require, in the manner outlined herein.

(3) Either party may on June 1 in any year make request of the Board of Conciliation for a reconsideration of the wages paid.

(4) The Board shall meet forthwith, consider the facts presented and render a decision within thirty days.

(5) If the Board deadlocks, the questions at issue shall be referred to three persons to be appointed by Charles Evans Hughes, or, in the event of his inability to act, by some person of similar standing to be mutually agreed upon.

(6) The personnel of the appointees to consist of one man representative of labor but not affiliated with the United Mine Workers, one man representative of industry but not affiliated with the anthracite industry, and on man of eminent reputation and attainments.

(7) The three men thus appointed shall sit with the Board of Conciliation, hear the arguments, ask for and obtain any additional data they may consider essential and render a decision on the points in dispute before Sept. 1.

(8) The decision thus rendered shall be final and binding on both parties for the remaining term of the contract unless reopened as provided in paragraph three.

This plan was voted down by the miners after President Lewis had made his accusation that the operators were trying to break up the conference.

The operators, declared the miners' chief, "have made similar propositions a countless number of times since their first statement at Atlantic City on July 9. They have stubbornly resisted every suggestion of the mine workers that they arbitrate their profits upon the inflated capitalization of the industry and that they arbitrate the price which they charge the anthracite consuming public for coal. They have refused to reveal to this wage conference any of the records of the industry as proof of their unsupported allegations.

"The mine workers choose to refuse to accept the operators' brand of arbitration because it is obvious that it is not to the advantage of the mine workers to do so. The operators frankly desire arbitration as an instrument to effect wage reductions and to decrease the annual earning power of the anthracite mine workers. The mine workers believe they are within their rights in refusing to permit the operators the use of a weapon which would enable them to degrade the living standards of the mine workers and the people of the anthracite region.

Union Seeks Federal Action

"The mine workers have offered in this conference to make a contract for any period suitable to the anthracite operators, from a minimum of two to a maximum of five years. We have offered to set up the Anthracite Board of Conciliation, exclusive of the umpire, as a harmonizing, constructive and co-operating tribunal in the industry, designed to promote and establish a greater degree of confidence between employers and employees.

"In order to prove the insincerity of the anthracite operators, the mine workers suggested that they join in a petition to the federal Congress to establish complete regulation within the industry, both as to profits and prices of their commodity. This suggestion, without question, would offer to the public greater security and more fair treatment from the industry than any other of the numberless plans and theories which have been presented. The operators, of course, opposed the suggestion of governmental regulation of the industry for the same reason that they resent and oppose any suggestion that the mine workers be accorded fair treatment as to wages, conditions of employment and greater safety for human life in the industry. The operators occupy the hypocritical position of desiring the arbitration of human rights while resisting any suggestion that there be arbitration of property rights."

Real Earnings of Contract Miners In Anthracite Fields—V

(GLEN ALDEN COAL CO.)

Are contract miners in the anthracite fields underpaid?

John L. Lewis, international president of the United Mine Workers, insists that they are. He has repeatedly drawn upon the reports of the Coal Commission, with their misleading figures basing earnings upon the number of starts made, to support his assertion. In a statement published in the *United Mine Workers' Journal*, on Sept. 15, 1925, Mr. Lewis declared that the average was $1,700 per year, from which "there must be deducted over $200" for supplies.

Check of actual payrolls, however, tells a far different story.

In 1924 the breakers of the Glen Alden Coal Co. averaged 291.6 days and employed an average of 4,390 contract miners. Of this number, however, only 2,829 worked regularly enough to appear on each of the 24 semi-monthly payrolls of the year. Eighty-two men, or 2.9 per cent of this group, averaged $3,764 *net* for the year. The lowest paid section, 68 men, averaged $1,543.

The average earnings by $100 groups for the 2,829 contract miners were as follows:

Miners	Average Annual Earnings	Miners	Average Annual Earnings
82	$3,764	239	$2,549
41	3,433	236	2,450
39	3,346	228	2,351
72	3,251	261	2,252
72	3,145	193	2,152
118	3,049	177	2,050
133	2,952	141	1,956
154	2,852	90	1,861
202	2,730	58	1,749
225	2,649	68	1,543

The average earnings for the entire group was $2,516.09. The daily average ranged from $13.56 to $6.35. Nearly half (48.67 per cent) of the entire group averaged in excess of $2,500 for their year's labors and 87.36 per cent received over $2,000.

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Pittsburgh Coal Producers' Association Dissolved

Deplores Conditions in Industry Due to High Wages and Unfavorable Freight Rates

The Pittsburgh Coal Producers' Association, known nationally for its participation in labor negotiations as part of the Central Competitive Field, has been dissolved.

The following statement, issued by B. H. Canon, chairman of the executive committee, is self-explanatory.

"The Pittsburgh Coal Producers' Association, whose members were the principal commercial coal producers in the Pittsburgh district, was dissolved effective Dec. 31, 1925. The dissolution of the association was directly caused by the prostration of the coal business in the Pittsburgh district which has existed during the last two years and which may be traced to two principal causes, wages and freight rates.

"The wage scale being paid to coal-mine labor in the Pittsburgh district is the highest rate that ever was paid for such labor. Miners of the district have for many years been affiliated with the United Mine Workers of America. Their leaders, entirely unmindful of the changed conditions in the coal industry, have refused to consider modifications of the wage scale to meet in any degree the competition from other districts where the 1917 scale has prevailed for some time past.

"Efforts are being made by the Pittsburgh Coal Co. and some other producers to operate their mines independent of the United Mine Workers of America, on the 1917 scale, which, based upon the experience of those who are working under it, provides a very fair measure of miners' wages.

Rates from Pittsburgh Are High

"The freight rates on coal in the eastern part of the country have for many years been made almost entirely with the idea of permitting other coal-producing districts to compete successfully with Pittsburgh. The rates from the Pittsburgh district to practically all consuming markets are on a basis higher than from almost any district that produces and ships bituminous coal.

"An outstanding instance of this situation is in the rates on lake cargo coal to the ports on the south shore of Lake Erie, where the Pittsburgh district pays $1.66 per ton for a haul of 166 miles, while competing districts in southern West Virginia and eastern Kentucky pay only 25c. additional rate for additional hauls amounting to as high as 290 miles. This situation is now before the Interstate Commerce Commission on a complaint from the local operators and will be fought through to a final conclusion.

"While these efforts are being made to improve the situation of the Pittsburgh coal industry from the standpoint of wages and freight rates, the industry in the meantime is in a deplorable condition. The Pittsburgh Coal Co. found it necessary to withdraw from the association early in December. The other companies who were members were forced to the conclusion that they could no longer sustain the expense of the organization and at a meeting held late in December resolved to dissolve the association."

The Pittsburgh Coal Producers' Association was an outgrowth of the Pittsburgh Coal Operators' Association. The original association was formed in 1914 and the name changed in 1917.

Miner Is Willed $500,000; Wants New Overalls!

E. A. Duke, a coal miner of McDowell County, W. Va., has been informed by the executors of the estate of the late James Duke, of North Carolina, that he is heir to something over half a million dollars. Mr. Duke is employed by the Monarch Coal Co. His comment when he received news of the legacy was: "Well, if I do get the money I may be able to buy a good dinner pail and some new overalls to work in."

Vote to Move Union Offices In Kansas Indecisive

The United Mine Workers of District 14 (Kansas) will have to hold a run-off election on the proposal to remove headquarters from Pittsburg, where they have been located more than 30 years, to either Arma or Frontenac. Practically complete returns from the referendum of Dec. 29 show 2,000 votes for Frontenac, 1,174 for remaining in Pittsburg and 1,084 for moving to Arma. A majority of votes cast is required to settle the question. Frontenac, which is so close to Pittsburg as to be practically a suburb, offers a building valued at $50,000, and Arma offers $10,000 in cash toward erecting a building.

Since the vote was taken there is increased talk by conservative miners that moving the headquarters would be a serious step. The Kansas office of the Southwestern Interstate Coal Operators' Association and the offices of the principal coal companies are within a block of the union district offices in Pittsburg. Should the union move its headquarters transaction of business would be slowed up, it is being argued by those opposing the move. Proponents of the move urge that the union should own its own building and that it should be located more centrally for what is now the most active part of the mining field. The date for holding the run-off election will not be selected until official canvass of the returns from the first election has been made.

Bull Movement Falls Flat

Some effort has been made to discredit the Bureau of Mines coal stock report on the ground that stocks were much larger than shown by the report. This criticism was not taken seriously, defenders of the report contend, as no break in prices followed its publication.

Idle Nova Scotia Miners Loot Provision Stores

Owing to lack of steady employment in collieries Nos. 2 and 4 of the British Empire Steel Corporation there has been a great deal of hardship and want affecting practically the entire communities of Glace Bay and New Aberdeen. The prevailing distress culminated on the night of Jan. 3 in raids on provision stores, the stocks of which were looted, one store at New Aberdeen being burned. A mass meeting had previously been held by the United Mine Workers to consider any reply that might have been made by the Nova Scotia government to appeals for relief, a resolution having been passed at a previous meeting to the effect that if no relief was afforded they would be forced to take whatever they needed.

Rioting and looting were renewed on the following night, when six stores at Stirling and Dominion were raided. In all sixteen stores were robbed. It is believed that much of the later disorders was the work of irresponsible characters taking advantage of the situation. Vigorous measures have been taken by the government and the civic authorities to afford immediate relief to those in want and to check further disturbances. Sixty-three special constables were sworn in and $8,000 provided for present necessities.

J. C. Douglas, Attorney General, provided that the government would guarantee any bonds of the municipality issued to provide funds for the relief of destitution and stated that rioters would be arrested and prosecuted. The curfew law has been put into force and at last accounts order had been restored and no further trouble was anticipated.

John Cleveland Osgood Dies; Founded C. F. & I.

John Cleveland Osgood, 74, president of the Victor American Fuel Co. and founder and former president of the Colorado Fuel & Iron Company, died at his home at Red Stone, Colo., Jan. 4.

Osgood started his business career as an office boy in a cotton manufacturer's office, later becoming a clerk for a commission firm. He was cashier of the First National Bank of Burlington, Iowa, from 1874 to 1877, and then entered coal mining. He made a thorough investigation of the coal resources of Colorado in 1882 and in 1887 organized the Colorado Fuel Co., later consolidated with the Colorado Coal & Iron Co., the merger being called the Colorado Fuel & Iron Co., which he organized in 1892, and of which he was president or chairman of the board until his resignation in 1903.

He was forced to relinquish control of Colorado Fuel & Iron in 1903, after being buffeted between the Rockefeller and John W. Gates interests, both of which sought control. He was invited to remain as chairman of the board after the Rockefeller interests gained control, but stepped out and organized the Victor company.

Colorado Fuel & Iron at the time Osgood was forced out had properties estimated at between $40,000,000 and $50,000,000 in value.

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Shots and Dynamite Usher in New Year In W. Va. Strike Zone

Trouble broke out anew in the northern West Virginia coal fields last week, when a non-union miner was shot and is likely to die. The trouble zone has now shifted to Galloway, in the Flemington section, near Grafton, where the Simpson Creek Collieries Co., composed of Youghiogheny & Ohio officials, is attempting to work non-union on the 1917 wage scale. The Galloway mine was operated union until several months ago, when, it was reported, the existing contract expired and the large plant then shut down.

The trouble at Galloway is reported to have had its beginning Jan. 4, when union pickets are alleged to have stopped non-union miners on the way to work. The next morning two state troopers went to the home of Pasquale Floria, in Galloway, to serve a warrant, and upon receiving no response to their knocks proceeded to break down the door. The troopers charge that Floria brandished a revolver and fired a shot, whereupon one of the troopers returned the fire and Floria was shot through the back. Floria was removed to the Grafton Hospital and from last reports was in a serious condition.

Officials of the United Mine Workers allege that when Floria saw the state police coming he dropped his revolver, which was unloaded. C. Fremont Davis, international representative, accuses the state police of kicking and beating Floria, according to the statement made by the dying man.

Keen Interest in Politics

Interest was keen in the town elections at Monongah and Rivesville on Jan. 7, and from last reports the tickets supported in both towns by the coal companies won out. The results in Monongah are close, only 16 or 17 votes separating certain candidates, with a tie in another instance. The contest in Rivesville is overwhelmingly in favor of the coal interests. For some time there have been clashes between the town authorities and other officers of the law, and operators think that the election result will go a long way toward clarifying the general situation.

Bonds in the sum of $16,500 have been furnished by the United Mine Workers in a series of cases marked by violence. A number of men with high-powered rifles are alleged to have attacked the home of Frank H. Brooks, superintendent of the Ida May mine of the Consolidation Coal Co. Samuel Boykens and William Austin are charged with shooting Mr. Brooks and each has been released under bond of $4,000. E. W. Wilson and Henry Rosser, charged with conspiracy in the same offense, were released under bond of $2,000 each. Cosmo Amoroso and Walter Bruzzy, charged with dynamiting a vacant house in Monongah, were released on bond in the sum of $2,000 each.

Officials of the Western Maryland Railway Co. last week posted notices offering $1,000 reward for the arrest and conviction of the parties who dynamited the Bingamon bridge on Dec. 23.

Samuel L. Poole, superintendent of the Bingamon mine of the Bingamon Gas Coal Co., and Marion Shobe, a mine guard, have been held to await the action of the Marion County grand jury for shooting Robert Bostic, a union miner, after an altercation over moving automobiles from company property. Poole furnished bond in the sum of $2,000, but Shobe was committed for trial.

Coal production in the 12½ counties of northern West Virginia has shown signs of increase after the holidays. A return of cold weather may help the situation, operators think. In the first four days of last week the mines produced 8,806 cars of coal. Non-union mines loaded 7,801 cars compared to 6,505 cars in the corresponding period of the previous week. Union mines loaded 1,005 cars of coal in the first four days of last week compared to 978 cars in the first four days of the preceding week.



Lemuel Burrows

Mill Creek and Elkhorn Cos. In Smokeless Merger

Another consolidation of coal properties in the smokeless area was consummated on Jan. 2, when the Mill Creek Coal & Coke Co. took over the mines of the Elkhorn Coal & Coke Co. at Maybeury, W. Va. About four years ago the Elkhorn company acquired the properties and mines of the Coaldale Coal & Coke Co. These properties, which lie directly beneath the Flat Top Mountain, are among the best in the Pocahontas field. The seam of coal averages 8 to 8½ ft. thick. The Mill Creek mine has been in constant operation for more than 40 years. C. B. Smith will continue as general manager of the consolidated property, with his main office at Coopers. It is stated that a short tunnel will be driven on the line of the No. 2 seam connecting the Mill Creek mine with the Elkhorn tipple. When this has been done, the Elkhorn tipple will be rebuilt so as to accommodate the entire output and the Mill Creek tipple will then be abandoned.

Lemuel Burrows Dead at 54; Had Recently Retired

Lemuel Burrows, president of Castner, Curran & Bullitt, Inc., died Jan. 6, at his residence in Forest Hills, L. I., after a brief illness. Born in Brooklyn, N. Y., June 1, 1871, he attended the public schools in that city. In 1888 he entered the employ of Castner, Curran & Bullitt, Inc., at 1 Broadway, in the capacity of office boy and worked his way up through various positions until he was appointed manager of the New York office in 1902. At that time the New York office handled all of the export business and quite a lot of the bunkering of the large steamship lines, this business being under this care.

In 1910 Mr. Burrows was appointed general manager and filled this position until 1916, when he was elected president of the company, at which time the New York office became headquarters of the corporation. Mr. Burrows retired Jan. 2 when the company passed into the control of the Massachusetts Gas Companies, as announced in *Coal Age* last week.

At the time war was declared on Germany Mr. Burrows went to Washington and offered his services to the Council of National Defense, and was very active in matters that came before the Coal Committee of this council under Mr. Peabody.

During the severe winter of 1917-18, when a serious coal shortage threatened New England, Mr. Burrows offered all of the facilities of his company to the Fuel Administration, with the result that a large amount of coal was supplied to the Northeast over the wharves of the company, and a number of loading and discharging records were broken in the handling of the government colliers "Ulysses" and "Achilles," each of which carried 13,000 tons of coal per trip to the New England consumers. It was generally believed that the handling of this coal through the splendid facilities of the company at Boston prevented a grave situation.

Mr. Burrows also was requested by the Fuel Administration to use his best efforts in obtaining and supplying coal to the Italian Government during the war in order that that ally might not suffer for lack of navy fuel. This work was discharged with such satisfaction that he was decorated by the King of Italy with the order "Corona d'Italia."

It was said among shipping men of long standing in Norfolk that Mr. Burrows had done more than any other person or agency to make Hampton Roads one of the principal coal ports of the world.

Mr. Burrows is survived by his wife and three sisters.

To Extend Alaska R. R. Rights

The rights granted the Alaska Anthracite Railroad Co. in 1898, which have been extended from time to time, will be extended for three years from May 11, 1925, if Congress approves a bill introduced by Delegate Sutherland. The maps showing the definite location of the Stillwater Creek and Canyon Creek branch lines are to be filed within two years.

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"Hands Off" Policy In Coal Situation Spreads to Congress

By Paul Wooton
Washington Correspondent of *Coal Age*

Objection lodged by Senator Reed, of Pennsylvania, having been withdrawn, the Senate on Jan. 5 passed without debate the resolution by Senator La Follette, of Wisconsin, calling upon the Secretary of the Treasury "to furnish to the Senate a statement based on corporation income-tax returns covering the year 1924 showing for each corporation engaged in the mining of anthracite coal the amount of capital stock, the amount of invested capital, the amount of net income, the amount charged to depletion and depreciation accounts, and the amount of federal tax paid by each such corporation."

The Senate is in the habit of allowing most resolutions of this character to go through. Some Senators known to be out of sympathy with the revelation of legitimate business secrets are thought to have been influenced by the realization that in this instance the makers of the returns are likely to be benefited more than they are likely to be harmed.

If the Secretary of the Treasury decides that compliance will not be contrary to the public interest and divulges the tax returns made by the anthracite companies, it will emphasize the fact that earnings have decreased markedly since the report made by the Hammond Coal Commission. Senator LaFollette's real purpose probably would be served better by the Coal Commission data.

Congress with Administration

Congress apparently thinks well of the administration's coal policy. It is becoming increasingly clear that the majority is not disposed to interfere in the present strike. It will take some radical change in the situation and some unforeseen pressure from consumers to change this attitude. Thus the great effort of the United Mine Workers to make the situation a national issue is failing with Congress just as it failed with the administration. Congress is much more concerned with farm relief, a readjustment of taxes and other domestic issues, to say nothing of the world court, than it is with coal. No hearings are in prospect on the several bills introduced. The Interstate and Foreign Commerce Committee of the House, which is being importuned to investigate coal, is engrossed in the rubber situation and as this is written has no plan to inquire into the need for coal legislation.

Although wage negotiations have been broken off it is probable that Congress will await the action of the Pennsylvania Legislature.

The attitude of the administration seems not only to have been communicated to Congress but has influenced public sentiment as well. The policy of holding industries responsible for the settlement of their own affairs seems to have been accepted by the public. There is abundant evidence that the conscience of the country supports the principle of arbitration. It is believed by observers in Washington that the great majority of the people want no settlement that does not provide for the peaceful adjustment of all matters of controversy in the future.

Small Firms Safeguarded By Trade Associations

Trade associations rapidly are throwing a new defense around the small units of business, those who are watching their increasing activities declare. The statistical data which they gather greatly aid the small unit in its effort to compete with the large unit. It is one of the checks on consolidation in too large units. The big operation can afford to amass all of the figures it needs to conduct its business to the best advantage.

Membership in a trade association has become a factor in the determination of credit, it was revealed at a recent gathering of an association of credit men. The general conclusion seems to be that a business which is contributing to the stability of an industry is entitled to a higher rating.

The point also is made that business papers are in a position to render particularly valuable service by making available those statistics in which the time element is an important factor.

Governor Smith Recommends Permanent Coal Agency

Gov. Alfred E. Smith in his annual message delivered to the New York State Legislature Jan. 6, recommended among other things the establishment of a permanent coal agency as a part of the state government. Concerning this the Governor said:

"Closely related to marketing and transportation is coal supply. In order that the state might not find itself without any agency to protect its people in this period of coal shortage caused by the strike in the anthracite fields, I appointed a Fair Price Coal Commission which has served with considerable success as a volunteer agency of the state government. Entirely aside from the question of the merits of the contention of the conflicting parties, a strike that halts production of a necessity of life finds the greatest number of sufferers among the people who have no part in the quarrel.

"I recommend that the Public Service Commission be directed by law to be in continuous touch with this problem and be ready to represent the state and its needs when the occasion arises. In the last analysis this is a federal problem which must be solved by the authorities at Washington and in which the state is more or less helpless acting by itself. There should, however, be a continuing and well-informed state agency always ready in these emergencies."

Fires at Non-Union Mines Near Evansville, Ind.

Two fires of undetermined origin occurred last week at mines near Evansville, Ind., which were closed by union miners when they attempted to operate non-union. Flames destroyed the wash house of the Swanee Coal Co. at Yankeetown and the home of Grover Hogan, top foreman of the Korff mine, near Booneville.

John A. Riddle, general counsel for District No. 11, United Mine Workers, speaking at a meeting of union miners at Princeton, urged the miners to continue their persuasive methods in bringing non-union workers back into the union fold.

Non-union mines were forced to close Jan. 6 when a veritable army of union miners took peaceful possession and brought into the union the workers who had manned the non-union mines.

The operators of non-union mines in the district declare they will reopen their mines and trust to the state to give them protection. William Kershner, Adjutant General of Indiana, stated on Jan. 7 that every unit of the National Guard, many of them veteran outfits from the late war, could be mobilized in an hour and started for the district if necessary.

In the meantime, the organized forces hailed as a triumph the commencement of negotiations with James Moore, owner of the Crescent and Sunnyside mines, in Vanderburg County. Mr. Moore conferred with union leaders before a big mass meeting and agreed to return his properties to a union basis.

Walter Korff, general manager of the Bosse Coal Co., with holdings in Gibson and Warrick counties, ignored an invitation to attend the mass meeting and met with a group of operators in his office in Evansville. After the meeting he announced that his mines would open and expressed the belief that he would have sufficient workers to man the holdings. Plans also were made for reopening the Schimmell-Hampton mines.

Mr. Turner Takes the Reins

Scott Turner, the new director of the Bureau of Mines, has completed the task of winding up his personal work and has assumed active charge of the Bureau. The chief interest of the new director for the present will be centered on the organization of the economics branch of the Bureau. While some obstacles have arisen in connection with the transfer of appropriations, Mr. Turner expects to be able to get the new work under way in the near future on a basis whereby the economics branch will be a real handmaiden to the industry.

Another meeting of the advisory committee probably will be called for Jan. 26 and 27 in Washington. The board of directors and the government relations committee of the National Coal Association will meet on those dates and it is thought desirable to have some discussion at that time on the matter of co-operation with the coal producers.

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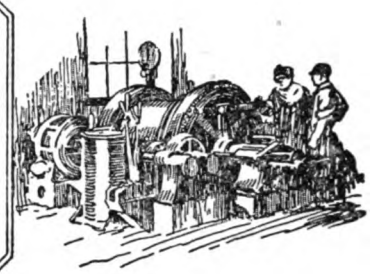
Practical Pointers For Electrical And Mechanical Men



Potentiometers Save Money and Labor In Hoist Signaling

Radio's leap to popularity has acquainted millions with the meaning of electrical terms such as condenser, rheostat, and potentiometer. Before the advent of radio the latter term was not commonly used or understood by many who are classed as electricians. A potentiometer has been aptly called a "direct-current transformer." It is by this name that such a device is spoken of at the mine of the Montevallo Coal Mining Co., located near Aldrich, Ala.

Here, potentiometers connected to the 250-volt power circuits have replaced primary batteries as energy sources for the low-voltage signal lines. The new method is saving the $100 per month formerly spent for repair and renewal parts of the primary signal batteries, and in addition is saving considerable labor and preventing a loss of time due to the failure of signals. Against these advantages there is, of course, a charge for the energy taken from the direct-current lines.

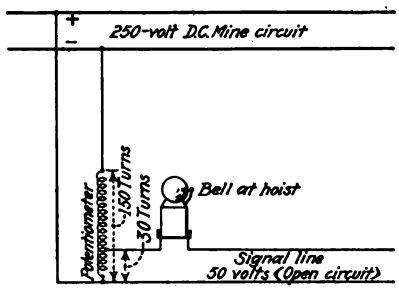


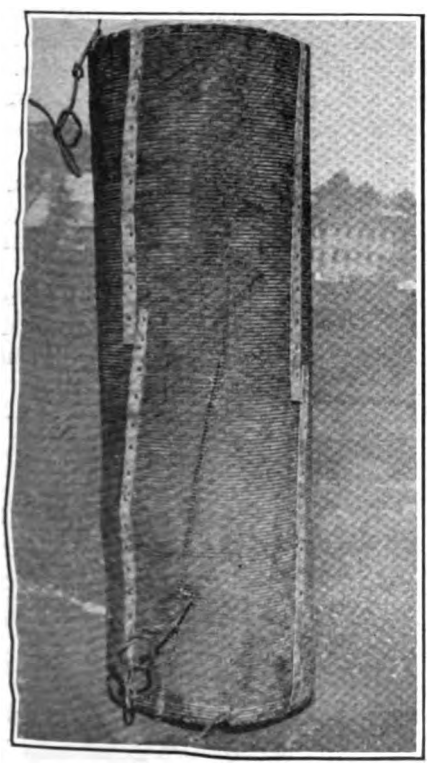
Diagram of Connections

Each potentiometer takes approximately 1.7 amp. from the 250-volt line. Assuming that they are used twenty-four hours per day, the cost at 2c. per kw.-hr. to operate the twelve at the Aldrich mine, is $74 per month.

Assuming that all of the twelve potentiometers are energized for twenty-four hours per day, the maximum energy cost at 2c. per kw.-hr. is approximately $74 per month.

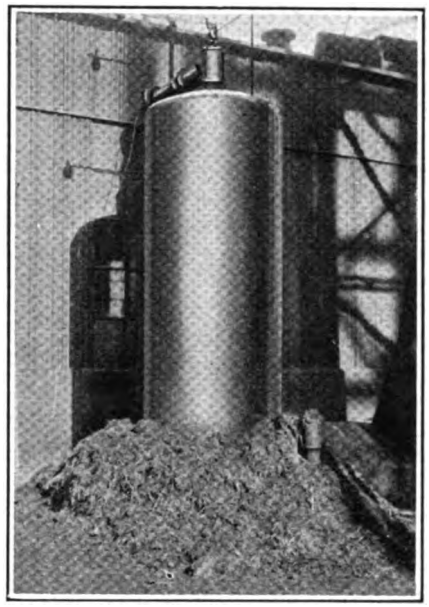
The potentiometers used at Aldrich are home-made because the company was unable to find a factory-made resistance of the proper characteristics and one having a tap at the desired point. The resistance wire ("Climax," No. 18 B. & S. gage 450 ft. long) is wound on a maple or cedar spool 29 in. long x 9¾ in. in diameter. On this is cut a thread, six turns to the inch, to maintain proper spacing. After the wire is wound on the spool, strips of fibre are nailed on longitudinally at four points to hold the turns in case the spool shrinks or a break occurs.

The wire used has sufficient resistance and carrying capacity to limit the current—and therefore the heating—to a temperature far below the charring point of wood. But in spite of this fact it must be admitted that the use of wood presents a hazard.



Resistance Removed from Box

The company could not locate a factory-made resistance of the desired type, so built up this one, using a wood spool. The two outside terminals are connected to the 250-volt line. The signal line is connected to the tap, and to the bottom terminal.



No Freezing in This Air Receiver

At the Harmar mine of the Consumers Mining Co., Harmarville, Pa., the dumping equipment at the bottom of the skip-hoisting shaft is air-operated and so are many of the gate controls in the tipple. The air compressors are located inside the hoist house while the air receiver is outside. To prevent water which collects in the receiver from freezing, manure is piled around the base of the receiver as shown. This scheme works satisfactorily.



This Danger Board Is Well Placed

Where gas is discovered at the face the particular place should be boarded off as here shown until the gas is removed. The board in this case rests in a rib niche at one end and is nailed to a prop at the other. It is not laid across the track, for in that position it would not be easily discernible. The danger sign conforms to the specifications of the Pennsylvania Compensation and Inspection Bureau. All supplies and tools are kept outside the inclosure of the fence. The canvas has been hung to remove the gas.

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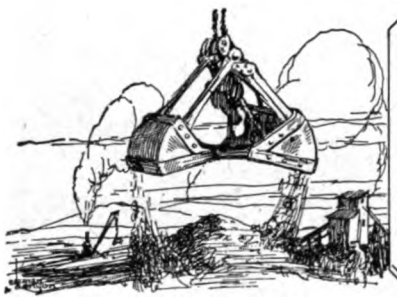
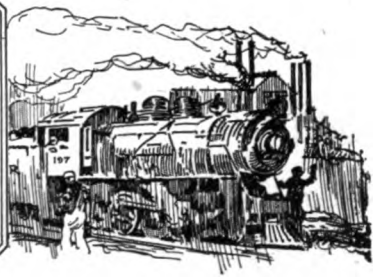


Production And the Market



Coal Market Remains Firm as Demand Eases; Hard-Coal Substitutes Slightly Stronger

Though the cold snap which stimulated the coal market pretty generally two weeks ago was short-lived in some localities a considerable degree of firmness still is in evidence right down the line. A noticeable slowing-up took place in the Middle West, where unseasonably warm weather followed close on the heels of the mercury's fall, but prices hold fairly well. Plenty of business in lump at circular prices is reported by producers in the more favored districts of Illinois, Indiana and western Kentucky, though the demand for egg and nut sizes is extremely unsteady. Business in high-volatile coals from West Virginia and eastern Kentucky has been very irregular with a wide range in prices.

West Virginia smokeless, which had been floundering somewhat since the close of lake navigation, has been steadied to a considerable extent by demand in the East, which is reflected by a stronger price line-up. Another important influence as a market stabilizer is the policy of Kentucky operators in holding a large amount of coal on track at mines rather than let it get into the distress classification. The foolish virgins are not all dead yet, though, for coal is still going into Chicago on consignment, and shippers are paying dearly for the practice.

Dullness persists in the New England market, practically all grades being in only fair demand. Except for a brief flurry early last week, the trade in the Middle Atlantic district has been fairly steady with no change in prices. Business has been in good volume since the holidays in the Northwest, and the dock operators are optimistic regarding prospects for the next few months. Demand in Alabama is steady and bookings are fully equal to moving output without difficulty.

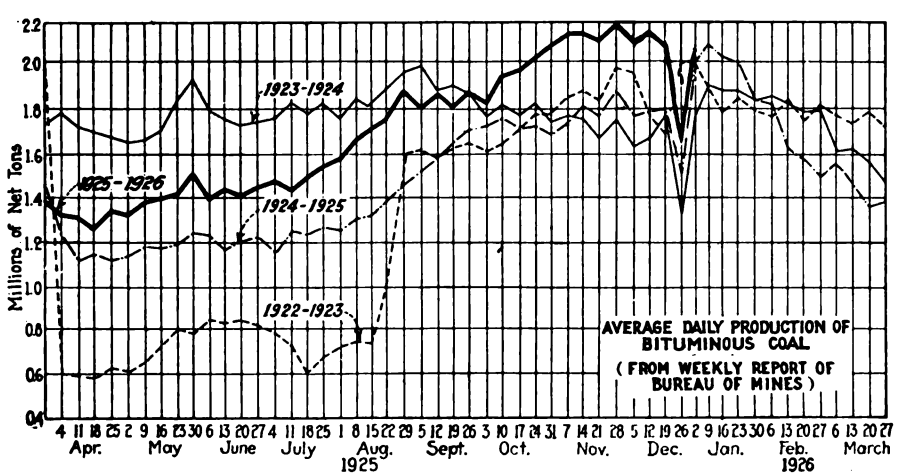
That portion of the trade catering to the usual consumers of anthracite have been somewhat "edgy" as peace negotiations dragged along. Buyers have displayed a disposition to be cautious, but cold weather and snow have quickened the demand for substitutes at least temporarily. The call for coke has been moderately heavy and prices have hardened.

Soft-Coal Output in 1925 Is 523,072,000 Tons

Output of bituminous coal during the week ended Jan. 2 is estimated by the Bureau of Mines at 10,796,000 net tons, an increase of 2,365,000 tons over the revised figure for the previous week but 10,000 tons less than in the corresponding week a year ago. Total production of soft coal during the calendar year 1925 is estimated at 523,072,000 net tons, compared with 483,687,000 tons in 1924 and 564,565,000 tons in 1923. Anthracite output during the week ended Jan. 2 was about 28,000 net tons, as against 32,000 tons in the preceding week. Total hard-coal production for the calendar year just closed is estimated at 62,120,000 net tons, a decline of 25,807,000 tons from the previous year and of 31,219,000 tons from 1923—the falling off being due, of course, to the strike. Output in the first eight months of last year—or until operation was suspended—was 61,621,000 tons, compared with 59,247,000 tons in the corresponding period of 1924 and 66,849,000 tons in the same months of 1923.

Coal Age Index of spot prices of bituminous coal stood on Jan. 11 at 180, the corresponding price being $2.18, compared with 181 and $2.19, respectively, on Jan. 4.

Dumpings of coal at Hampton Roads underwent a further decline during the week ended Jan. 7, the total being 339,761 net tons, compared with 355,126 tons in the preceding week.



Estimates of Production

(Net Tons)

	1924–1925	1925–1926
BITUMINOUS		
Dec. 19	10,814,000	12,689,000
Dec. 26 (*a*)	7,540,000	8,431,000
Jan. 2 (*b*)	10,806,000	10,796,000
Daily average	2,039,000	2,037,000
Cal. yr.	483,687,000	(*b*) 523,072,000
Daily av.	1,573,000	1,702,000
ANTHRACITE		
Dec. 19	1,867,000	55,000
Dec. 26	1,029,000	32,000
Jan. 2	1,255,000	28,000
Cal. yr.	87,926,000	(*b*) 62,120,000
BEEHIVE COKE		
Dec. 19 (*a*)	218,000	313,000
Dec. 26 (*b*)	189,000	261,000
Cal. yr.	(*c*) 9,464,000	10,518,000

(*a*) Revised since last report. (*b*) Subject to revision. (*c*) Adjusted to equalize number of days in the two years.

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Warm Wave Causes Midwest Market to Buckle

Unseasonably warm weather during the last week has slowed up the Midwest coal market to a great extent. Operators in the more favored districts of Illinois, Indiana and western Kentucky report that they have plenty of business on lump coal at circular prices, but that the demand for 6x3-in. egg, 3x2-in. small egg and cook-stove nut is extremely precarious. Prices are being held fairly well, although it was rumored, but not verified, that one of the large Franklin County operators had reduced his price on Franklin County 6-in. lump from $3.50 to $3.25.

The market on high-volatile coals from West Virginia and eastern Kentucky was very erratic, with a wide range of prices. Furthermore, it was noticed that some of the good coals were among the weakest when it came to prices. This was brought about by the fact that the operators did not expect a slump and did not book up as heavily as they could have during the last cold snap. Pocahontas prices are holding up fairly well, with lump moving at $3.50@ $4.50; egg $3.75 @ $4.50, and stove, $3.50@$4.25. Smokeless mine-run was offered freely at $2.25, with some coal on demurrage going as low as $1.75. Coal still comes into Chicago on consignment, and operators continue to pay heavily for shipping coal in this manner.

Steam coals have kept up well during the past week for two reasons: First, the warm weather has put a stop somewhat to production owing to the difficulty in moving the prepared sizes; and second, some labor difficulties in the southern districts of Indiana closed most of the mines in that district, with considerable doubt as to when they will reopen. This forced a number of buyers who have been in the habit of drawing on southern Indiana coal to place orders elsewhere, and this diversion of business has led to a general tightening up of the steam market all the way through.

The general tone of the Midwest market, on the whole, is fairly optimistic, as it is believed that cold weather will come along soon to offset the warm days of the past week.

A little seasonable weather in southern Illinois brought some activity in domestic sizes, principally lump. Egg and No. 1 nut are heavy and there is no unusual demand for steam, with the result that nearly all mines have "no bills" of various sizes on hand. In spite of this, good working time prevails at most mines—usually four and five days a week, with the usual exception. Railroad tonnage is fairly good from the shaft mines. Car supply likewise is good but the train movement is slow. Strip mines are working steady on account of good weather. Railroad tonnage here also is reported good and coal is moving on special prices. In the Duquoin field conditions are somewhat similar with no change in price except on railroad tonnage.

The Mt. Olive field shows an increased demand for domestic sizes and steam is slow with a lot of "no bills." Working time is five days a week. Prices are unchanged.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	Jan. 12, 1925	Dec. 28, 1925	Jan. 4, 1926	Jan. 11, 1926†
Smokeless lump	Columbus	$3.85	$3.50	$3.55	**$3.75@$4.00**
Smokeless mine run	Columbus	1.90	2.75	2.85	**2.85@ 3.10**
Smokeless screenings	Columbus	1.20	2.60	2.60	2.50@ 2.75
Smokeless lump	Chicago	4.00	3.35	4.00	*3.50@ 4.25*
Smokeless mine run	Chicago	2.00	2.10	2.10	2.00@ 2.25
Smokeless lump	Cincinnati	4.10	4.00	4.10	3.75@ 4.50
Smokeless mine run	Cincinnati	2.10	2.55	2.50	*2.25@ 2.50*
Smokeless screenings	Cincinnati	1.10	1.85	1.80	**1.75@ 2.25**
*Smokeless mine run	Boston	4.20	5.00	4.60	**4.75@ 5.00**
Clearfield mine run	Boston	2.00	1.90	2.00	*1.75@ 2.10*
Cambria mine run	Boston	2.30	2.30	2.30	*2.00@ 2.50*
Somerset mine run	Boston	2.10	2.05	2.10	*1.90@ 2.25*
Pool 1 (Navy Standard)	New York	2.75	2.95	2.95	2.75@ 3.15
Pool 1 (Navy Standard)	Philadelphia	2.80	2.95	2.95	2.80@ 3.10
Pool 1 (Navy Standard)	Baltimore	2.25	2.20	2.30	2.25@ 2.35
Pool 9 (Super. Low Vol.)	New York	2.10	2.30	2.30	2.15@ 2.45
Pool 9 (Super. Low Vol.)	Philadelphia	2.20	2.30	2.30	2.20@ 2.45
Pool 9 (Super. Low Vol.)	Baltimore	1.85	2.00	2.15	2.10@ 2.20
Pool 10 (H.Gr.Low Vol.)	New York	1.85	2.05	2.05	1.90@ 2.25
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.85	2.05	2.05	2.00@ 2.15
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.70	1.90	1.95	1.90@ 2.00
Pool 11 (Low Vol.)	New York	1.60	1.75	1.75	**1.70@ 1.95**
Pool 11 (Low Vol.)	Philadelphia	1.65	1.90	1.90	1.85@ 2.00
Pool 11 (Low Vol.)	Baltimore	1.50	1.65	1.70	1.70@ 1.75
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.50	1.60	1.60	1.50@ 1.70
Pool 54-64 (Gas and St.)	Philadelphia	1.50	1.60	1.60	1.55@ 1.70
Pool 54-64 (Gas and St.)	Baltimore	1.65	1.65	1.65	1.65@ 1.70
Pittsburgh scr'd gas	Pittsburgh	2.40	2.65	2.65	2.60@ 2.75
Pittsburgh gas mine run	Pittsburgh	2.10	2.10	2.10	2.00@ 2.25
Pittsburgh mine run (St.)	Pittsburgh	1.85	2.05	2.05	2.00@ 2.10
Pittsburgh slack (Gas)	Pittsburgh	1.60	1.55	1.55	1.50@ 1.60
Kanawha lump	Columbus	2.50	2.25	2.25	2.00@ 2.50
Kanawha mine run	Columbus	1.60	1.70	1.70	1.55@ 1.85
Kanawha screenings	Columbus	1.00	1.20	1.15	*1.00@ 1.10*
W. Va. lump	Cincinnati	2.30	2.35	2.75	**2.75@ 3.25**
W. Va. gas mine run	Cincinnati	1.30	1.60	1.60	1.50@ 1.75
W. Va. steam mine run	Cincinnati	1.30	1.55	1.60	*1.40@ 1.60*
W. Va. screenings	Cincinnati	.80	1.10	1.10	1.00@ 1.25
Hocking lump	Columbus	2.50	2.35	2.35	2.25@ 2.50
Hocking mine run	Columbus	1.60	1.85	1.85	1.75@ 2.00
Hocking screenings	Columbus	1.15	1.25	1.25	*1.15@ 1.25*
Pitts. No. 8 lump	Cleveland	2.40	2.35	2.30	*1.85@ 2.75*
Pitts. No. 8 mine run	Cleveland	1.85	1.85	1.80	1.80@ 1.85
Pitts. No. 8 screenings	Cleveland	1.45	1.55	1.50	*1.40@ 1.50*

Midwest	Market Quoted	Jan. 12, 1925	Dec. 28, 1925	Jan. 4, 1926	Jan. 11, 1926†
Franklin, Ill. lump	Chicago	$3.60	$3.35	$3.50	$3.50
Franklin, Ill. mine run	Chicago	2.35	2.50	2.50	2.35@ 2.65
Franklin, Ill. screenings	Chicago	1.95	1.85	1.85	1.75@ 2.00
Central, Ill. lump	Chicago	3.10	2.85	3.10	3.00@ 3.25
Central, Ill. mine run	Chicago	2.20	2.30	2.30	2.25@ 2.35
Central, Ill. screenings	Chicago	1.95	1.40	1.40	1.35@ 1.50
Ind. 4th Vein lump	Chicago	3.50	3.00	3.00	2.75@ 3.25
Ind. 4th Vein mine run	Chicago	2.35	2.30	2.30	2.25@ 2.35
Ind. 4th Vein screenings	Chicago	1.85	1.85	1.85	1.75@ 2.00
Ind. 5th Vein lump	Chicago	3.00	2.50	2.50	2.35@ 2.65
Ind. 5th Vein mine run	Chicago	2.10	1.95	1.95	1.85@ 2.10
Ind. 5th Vein screenings	Chicago	1.70	1.40	1.40	**1.35@ 1.65**
Mt. Olive lump	St. Louis	3.00	2.85	2.85	2.75@ 3.00
Mt. Olive mine run	St. Louis	2.35	2.00	2.00	2.00
Mt. Olive screenings	St. Louis	1.80	1.75	1.75	1.75
Standard lump	St. Louis	2.55	2.40	2.40	2.35@ 2.50
Standard mine run	St. Louis	1.95	1.80	1.80	1.75@ 1.90
Standard screenings	St. Louis	1.30	.85	.85	.75@ 1.00
West Ky. block	Louisville	2.60	2.00	2.00	1.85@ 2.15
West Ky. mine run	Louisville	1.55	1.35	1.35	1.25@ 1.50
West Ky. screenings	Louisville	1.25	1.00	.95	**.90@ 1.10**
West Ky. block	Chicago	2.60	2.00	2.25	2.00@ 2.50
West Ky. mine run	Chicago	1.50	1.25	1.50	1.25@ 1.75
South and Southwest					
Big Seam lump	Birmingham	2.85	2.75	2.75	2.50@ 3.00
Big Seam mine run	Birmingham	1.70	2.10	2.10	2.00@ 2.25
Big Seam (washed)	Birmingham	1.85	2.30	2.30	2.10@ 2.50
S. E. Ky. block	Chicago	2.50	3.00	3.10	3.00@ 3.25
S. E. Ky. mine run	Chicago	1.50	1.85	1.85	1.75@ 2.00
S. E. Ky. block	Louisville	3.00	2.85	3.00	2.75@ 3.25
S. E. Ky. mine run	Louisville	1.50	1.60	1.55	1.40@ 1.75
S. E. Ky. screenings	Louisville	1.00	1.15	1.20	*.90@ 1.10*
S. E. Ky. block	Cincinnati	2.50	2.85	3.10	2.75@ 3.50
S. E. Ky. mine run	Cincinnati	1.30	1.60	1.60	1.40@ 1.85
S. E. Ky. screenings	Cincinnati	.85	1.10	1.10	*.90@ 1.25*
Kansas lump	Kansas City	4.85	5.00	5.00	5.00
Kansas mine run	Kansas City	3.35	3.10	3.10	3.00@ 3.25
Kansas screenings	Kansas City	2.50	2.30	2.30	**2.25@ 2.50**

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**; declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Jan. 12, 1925 Independent	Jan. 12, 1925 Company	Jan. 4, 1926 Independent	Jan. 4, 1926 Company	Jan. 11, 1926† Independent	Jan. 11, 1926† Company
Broken	New York	$2.34	.....	$8.00@$9.25	.....	.....	.....	.....
Broken	Philadelphia	2.39	.....	9.15	.....	.....	.....	.....
Egg	New York	2.34	$8.50@$8.75	8.75@ 9.25	.....	.....	.....	.....
Egg	Philadelphia	2.39	9.45@ 9.75	8.80@ 9.25	.....	.....	.....	.....
Egg	Chicago*	5.06	8.17@ 8.40	8.08	$9.50@10.00	$8.03@ $8.25	$9.50@10.00	$8.03@$8.25
Stove	New York	2.34	9.75@ 10.25	9.00@ 9.50	.....	.....	.....	.....
Stove	Philadelphia	2.39	10.10@10.75	9.15@ 9.50	.....	.....	.....	.....
Stove	Chicago*	5.06	8.80@ 9.00	8.53@ 8.65	10.00@11.00	8.48@ 8.80	10.00@11.00	8.40@ 8.80
Chestnut	New York	2.34	9.75@10.25	8.75@ 9.40	.....	.....	.....	.....
Chestnut	Philadelphia	2.39	10.00@10.75	9.25@ 9.40	.....	.....	.....	.....
Chestnut	Chicago*	5.06	8.61@ 9.00	8.40@ 8.41	10.00@11.00	8.50@ 8.75	10.00@11.00	8.50@ 8.75
Pea	New York	2.22	4.75@ 5.50	5.50@ 6.00	.....	.....	.....	.....
Pea	Philadelphia	2.14	5.75@ 6.00	6.00	.....	.....	.....	.....
Pea	Chicago*	4.79	5.36@ 5.75	5.36@ 5.95	5.50@ 6.00	5.50@ 6.00	5.50@ 6.00	5.50@ 6.00
Buckwheat No. 1	New York	2.22	2.25@ 2.75	3.00@ 3.15	.....	.....	.....	.....
Buckwheat No. 1	Philadelphia	2.14	2.50@ 3.00	3.00	.....	2.50@ 3.00	.....	2.50@ 3.00
Rice	New York	2.22	1.90@ 2.25	2.00@ 2.25	.....	.....	.....	.....
Rice	Philadelphia	2.14	2.00@ 2.25	2.25	.....	.....	.....	.....
Barley	New York	2.22	1.40@ 1.65	1.50	.....	.....	.....	.....
Barley	Philadelphia	2.14	1.50	1.50	.....	.....	.....	.....
Birdseye	New York	2.22	1.40@ 1.65	1.60	.....	.....	.....	.....

*Net tons, f.o.b. mines. †Advances over previous week shown in **heavy type**; declines in *italics*.

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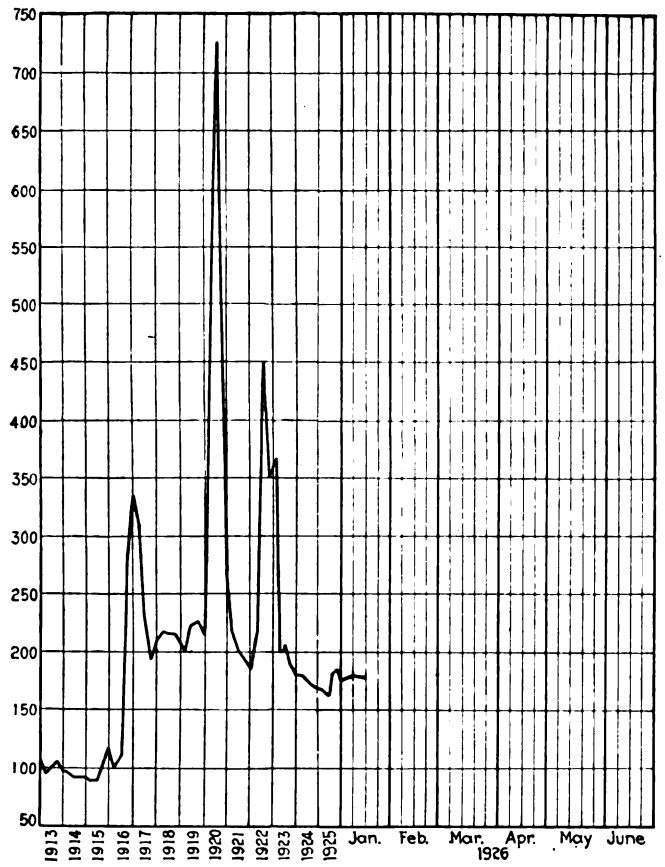

Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926		1925	
	Jan. 11	Jan. 4	Dec. 28	Jan. 12
Index	180	181	178	175
Weighted average price	$2.18	$2.19	$2.16	$2.12

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke; 1913-1918," published by the Geological Survey and the War Industries Board.

In the Standard field there is no change. Prices are about cost of production and, with a few exceptions, all mines have various sizes of "no bills" constantly. Railroad tonnage was reported good last week. Car supply is plentiful and working time ranges from three to five days a week.

Domestic trade in St. Louis reports movement of middle and Illinois high grade egg and a little spurt for smokeless. Anthracite is pretty well cleaned up on the smaller sizes and there is no demand. Coke showed an increased demand last week. There is some call for Standard from apartments and cheaper business houses, but not in the volume usual at this period of the year. Country domestic demand is fairly good for cheaper coals and unusually good for west Kentucky domestic sizes. Country steam is quiet. There has been no change in prices.

Demand Slumps in Kentucky

The slump over inventory period, along with mild weather last week flattened demand for both steam and domestic coal in Kentucky. Prices are holding firm, however, as operators are holding much coal on tracks at mines, instead of letting it get into the distress fuel classification. There hasn't been much trouble about car supply for some time, and the operators don't mind holding coal on track, as they did when cars were scarce and held cars were counted against their loading.

Steam coal demand is expected to pick up as industry gets back into the running. Cold weather would bring back the retailers, as many of them haven't much coal on hand.

The eastern Kentucky market on 4-in. block coal is $2.75@$3.25, in spite of absurd rumors of $2 block. There may be some off-grade and off-size stuff at $2.50, but 2-in. lump and egg are the only items offered as low as $2. The operator would rather keep his coal, especially in view of the fact that screenings are off. With a dollar and a half slack market the operator might sell some cheap prepared, but not on a 90c.@$1.10 slack market.

The slump in industrial demand hit eastern Kentucky screenings, which dropped below $1 for the first time in weeks, being quoted at 90c.@$1.10 for all grades. Western Kentucky screenings are firmer due to lower production of prepared, at 90c.@$1. Other western and eastern Kentucky prices are unchanged.

Year Starts with Promise in Northwest

Trade has been running in good volume in the Duluth-Superior market since the turn of the year, and dock operators are hopeful regarding the outlook for the first half of the year at least. What is regarded as especially satisfactory is the placing of orders by industrial companies over northern Wisconsin and Minnesota, with foundries and other iron and steel enterprises bulking up well in that connection. A revival of interest also is reported from over the northern Minnesota iron-range territory.

While retailers are still ordering coal on an immediate requirement basis it has been bulking up into good proportions. Utilities companies and municipalities over Minnesota and eastern North Dakota have been ordering good tonnages on contracts made last fall. Shortage of water supplies in storage dams is forcing some of those consumers to resort to operating steam power plants in the emergency.

Pocahontas and other smokeless coals are in heavy demand as substitutes for anthracite. Only two docks are carrying any anthracite stocks and they are taking only small orders from regular customers of their retail yards.

Shipments of coal from the docks during December totaled 25,735 cars, compared with 27,411 cars during November and 29,615 cars during December, 1924. The aggregate cars loaded during the year was 239,548, compared with 242,604 during 1924 and 199,503 cars in 1923.

Prices are steady and unchanged for both anthracite and bituminous coals. Domestic coke is selling freely at $8.50 and briquets at $9.

Milwaukee dock managers have nothing new to report as to the coal situation, which continues as it has been for weeks. There is an ample supply of bituminous coal, for which there is a fairly good demand, which fluctuates sharply with the weather. The only change in prices reported by retailers is an advance of $1 for nut coke, which now sells for $15 a ton.

Boreas Comes to Rescue of the West

Winter weather again has come to the relief of Kansas operators. While tracks are not cleared of "no bills," the surplus in the field has been much reduced, and the market, which had begun to soften, has stiffened. Shading was particularly evident in Kansas lump, on which the list price has been $5. At present there is a slight surplus of lump, but there is a shortage of nut, and screenings are even. Arkansas is still looking for business, with the expectation that the normal midwinter recovery from the November slump cannot be far off. Semi-anthracite lump is quoted at $6@$6.50, with many accepting less. Screenings are scarce at $2.

There has been no material change in the domestic trade for Colorado and New Mexico coals in the past week, but operators look for a substantial increase in the next month to six weeks, as the stocks in bins are about depleted and inquiries and orders are beginning to come in in large numbers. Colorado mines are working about 90 per cent.

Utah mines are working about three days a week, and some operators describe business at "rotten!" Retail trade is good, due to a light fall of snow. Lump coal is somewhat of a drug on the market, but slack is a little scarce, if anything. The metal industry is taking a large proportion of the coal used for industrial purposes.

Utah operators have more orders than usual from the Pacific Coast and Northwest, demand being largely for stove size. Business is only fair in Idaho and Nevada.

A few dealers have been trying to persuade the trade to increase the price of slack from $3.50 to $4, but the effort is not likely to succeed. The schedule price at the mine is $1.25, but for the past two or three months it has been 75c. Gossip has it that some of the smaller operators cut the price to unload surplus stocks of slack but would now like to raise them. The big operators are not inclined to make a change, however, feeling that it may prove a good lesson to those who reduced them.

Prices for coal other than slack remain firm.

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Wintry Spell Stimulates Cincinnati Market

At Cincinnati the feeling-out process, so common at this time of year and accentuated by the deliberations of the anthracite negotiators, went along merrily last week until Friday, when heavy snow falls and colder weather put fresh life in the market. While orders flowed in good volume few noticeable changes were made in values.

High volatile has been on a "brokers' market" since Christmas, as shown by the spreads in some of the makes. Mine-run has been variously priced from $1.40 to $1.85. Both steam and gas were obtainable at the low, these coals coming from mines that have had to look to the middleman for a sales outlet. On the other hand, byproduct and gas takers with an assured source of supply paid up to $1.85 for choice coals. Domestic has moved up to $2.75@$3.50, the top being for specialized and advertised product. Egg prices ranged $1.60@$2.25 and slack from 90c. for off-grade Kentuckys to $1.25 for the choice.

Better demand in the East has helped the smokeless market, which had been floundering since the close of navigation. Egg and stove sizings going to tide were around $4.50 with the inland from $4@$4.25; lump also picked up a little, with more selling around $4 than at the low of $3.75. Mine-run showed weakness in the fact that the spread between $2.25@$2.50 was softer than the mere figures indicate, and slack too was off 10c. with a spread between $1.75@$2, and it had to be standard stuff to bring this price.

Retail business is in practically the same position as it was last week. Buying has been a bit better, but this is a weather result. After a few days of open weather in which the river people were able to break through the ice the snow came along and has held them up again.

The report of the Cincinnati district of the American Railway Association places total coal loads interchanged last week at 9,161. This is a decrease of 2,883 compared to the previous week, and an increase of 320 compared to same week last year. It is expected that there will be an increase this week, as the demand for empties at the mines shows signs of improvement. All coal-loading roads have heavy surpluses on their lines.

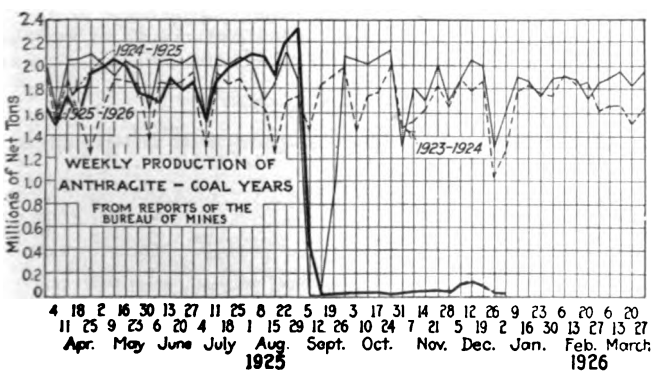
Warmer weather following the blizzard caused a slight recession in domestic demand in Columbus and vicinity. This was not as marked as might be expected, as dealers' stocks were not heavy and occasional buying to replenish stocks is reported. Smaller orders are expected from householders during the remainder of the winter anl dealers will be in the market not only for smokeless and splints but also for Ohio mined varieties. Retail prices are well maintained at previous levels. There is little distress coal on the Columbus market and bargain prices are few.

Steam business has shown little change outside of weakness in screenings, the declines having amounted to 15 to 25c. per ton in the past two weeks. One of the causes given is the closing of the lake trade. Steam plants are buying for current needs only as their fuel stocks are heavy. Utilities are taking their usual quota and iron and steel plants are good buyers. Some improvement in general industrial conditions is noted, and this, it is believed, will be reflected in the steam fuel business.

In eastern Ohio the market is in a somewhat chaotic state as demand has been at a low ebb for this time of the year. About a week or so ago retailers had quite a rush of orders, and were fairly busy, only to experience a warm spell and a dropping off in trade. During the holidays, however, many of the schools were putting in coal.

In the steam trade, orders are for current needs only, which are not heavy. The railroads are said to be taking full quotas on contracts.

During week ended Jan. 2 the eastern Ohio No. 8 field produced 217,000 tons, or about 37 per cent of potential capacity. This is 30,000 tons over the preceding week, but 38,000 tons under the corresponding week a year ago. Revised figures for the calendar year 1925 show a production of 13,237,000 tons, or around 37 per cent of capacity.



Pittsburgh Trade Stationary

The Pittsburgh district coal market presents no new features this week. Buying of domestic coal continues fairly good, but this does not represent a large part of the district's business.

Consumption by the industries has been running heavy and bids fair to continue so. There is practically no demand of any consequence from the East for Pittsburgh district coal. There is such a demand for nut and egg that the district is able to sell some in the East at $2 to $3, but its production of such sizes is small.

Competition continues very keen, both between producers in the district and between the district and non-union fields, and while prices are low they show no disposition to harden.

At Buffalo the demand in the regular soft-coal trade is more a matter of accepting what is urged on the consumer than anything more active on his part. There is often complaint that coal is bought that is not really wanted, but just to accommodate a friend who must make a showing of business or lose standing at headquarters. Slack, and especially gas slack, has not been as plentiful as sizes, but prices are about as usual.

New England Market Drags

So far, in New England there has been no reaction from the dullness usual during the holidays. The trade drags much as it did a week ago, with screened sizes about the only relieving feature. For run-of-mine in practically all directions there is only fair demand; there is no new buying of any moment, and the range of prices continues as low as during December. Contract shipments are coming through in usual volume, the seasonable weather having influenced rehandling factors and others to keep reserves on a prudent basis. With the anthracite strike not yet settled, all the retailers are sharing in the demand from a proportion of the consumers for run-of-mine for household heating. To the spot market generally, however, there is no snap, and the agencies are easing along in the hope that somehow more remunerative prices can be obtained.

No. 1 Navy standard Pocahontas and New River can be had in cargo lots at $4.75 f.o.b. vessel at Hampton Roads, and in special circumstances at an even lower figure. A few shippers more fortunately placed with respect to the volume of coal at and en route to the piers are able to get $4.90@$5. The quotations given are in gross tons.

For inland delivery there is a spasmodic demand from small users and from retailers. Varying with the individual situation of the rehandler the range on cars at Boston and Providence seesaws between $6 and $6.50. At retail the price runs from $8.50 to $10 per net ton delivered.

For Pennsylvania coals all-rail there is an improved request for egg and nut sizes, the quality grades commanding up to $5.25 per net ton at the mines. Pocahontas and New River are to be had on about the same delivered cost, although owing to difference in the through tariff $4 is about the top figure for smokeless prepared. A number of splint coals are being offered at from $3 up when shaker-screened. The bulk of the consumers who are in the market, however, are buying coke and such imports as Welsh anthracite and briquets when they can be had.

Passing Flurry in New York

Indications that the anthracite wage conference would fail to reach an agreement last week caused a flurry in the bituminous coal market at New York, and resulted in a few heavy sales of coal for delivery during the present month. There was no change in prices, however. With that exception the market was quiet. With the coal in reserve consumers are not inclined to increase their supplies, not wishing to end the coal year with large stocks on hand.

Movement of mine-run is the feature of the market, screened bituminous not showing much strength. Low-

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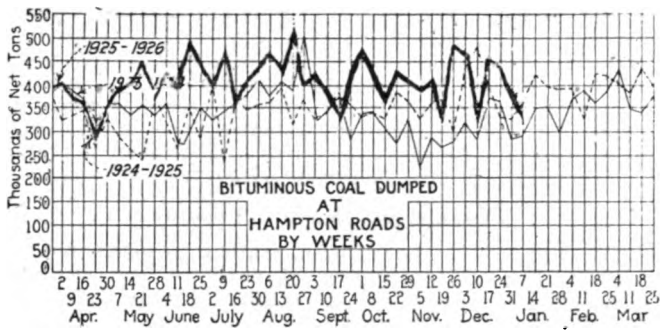

volatile egg from Pennsylvania is quoted at $4.50@$5, with lump bringing $3.50@$4. Prepared sizes of Broad Top coals are quoted by some houses at $5@$6. Screened sizes of smokeless coals were quoted at $4.25@$4.50, and high-volatile egg and nut coals $2.50@$3.

The Philadelphia market remains quiet. Consumers are still shy on contracting, relying on the spot market. There is a little better demand for screened coals, particularly sizes; as coke is almost sold up in the domestic market, there is a better chance for low-volatile screened coals. As a result there is a better supply of slack, although the market is a bit quiet on slack.

Beginning Jan. 1 coal from the New River and Pocahontas region is able to be delivered to buyers on the lines of the Reading Co. on the $3.94 rate. Heretofore this rate applied only to Pennsylvania R.R. delivery. The so-called emergency freight rates, effective from Jan. 1 to April 1, from distant regions also are in effect now, and business has been solicited on Kentucky coal on a freight rate a bit under $5.

The Baltimore soft-coal trade looks to 1926 with some rather mixed feelings, in which doubt is not absent. Industrial demand is not such as to give assurance that prices will be maintained at a fair level over the coming year. The business that has grown up in prepared sizes as a substitute for anthracite is somewhat dependent upon the resumption of mining in the anthracite fields—just what proportion of the business gained is to be held in prepared sizes of soft coal for the future is a real unanswered problem. At present there is no export business and bunker business also is below level. Warmer weather followed the recent cold snap, but the somewhat accelerated demand for soft coal, especially for prepared sizes, seems to hold. Prices remain about the same.

Demand for steam coal is considered exceptionally good in the Birmingham market so soon after the holidays. While business is not as brisk as it was just before the Christmas rush, inquiries are coming in in good numbers and ample business is being booked to move the output without delay. There are some little stocks in the hands of consumers yet, which is serving to hold back buying to some extent, but normal activity is expected soon. Contract coal is moving well to the railroads and large industrial users. The bunker tonnage being booked is larger than usual at this season.

Domestic demand in the spot market is good, and practically all the high-grade coals have been sold up through this month and the low and medium qualities are moving in a satisfactory way.

Quotations are unchanged from a week ago.

Coke demand also is good and local and foreign requirements are absorbing production; additional sales could be made were the product available. Foundry coke is quoted $6@$6.50 per ton; gas coke, $6@$6.50; egg, $5.25, and nut, $4.75@$5 per ton ovens.

Coal output for the week ended Jan. 2 is reported at 339,000 tons. Figures compiled by the Alabama Mining Institute show a total production for 1925 of 19,857,000 tons, which is approximately 240,000 tons more than in 1924.

Wage Parley Rules Hard-Coal Substitutes

The wage conferences are ruling the so-called anthracite market at New York. When the prospects for a settlement look bright wholesale dealers and retailers expect and do receive many cancellations of orders but when these reports prove groundless the effort made to reinstate the orders is just as strong. Because of such rumors the market changed rapidly last week. Meantime dealers and consumers are buying from hand to mouth, low temperatures causing many orders for small lots.

The demand for coke is increasing rapidly now that anthracite is practically out of the situation. Retail prices range all the way from $13.50 to $18 according to quality and manufacture. Crushed beehive coke was quoted on a range of $7@$8 at the ovens and byproduct coke at $9@$9.50. Mine-run bituminous coal also is being used where hard coal formerly was used, it being mixed with buckwheat for heating purposes with success.

Dealers felt convinced that even if an agreement on wages should be reached shortly not enough anthracite would arrive in this market this month to make a dent in the situation. A few retailers have small tonnages of domestic coals in their bins, but the demand is for either coke or mine-run bituminous coal.

The Philadelphia anthracite trade is pretty much on edge due to the various meetings of the miners and operators. With warmer weather there was a tendency to relax buying, but when the committee failed to reach an understanding last week, the ordering of substitutes became a bit stronger. Consumers are still calling for coke.

Some buckwheat was shipped last week by the P. & R. C. & I. to hospitals and the city water works. It is said this company has held back about 30,000 tons of steam sizes for emergencies such as these.

With the anthracite strike in its fifth month, Baltimore hard-coal dealers report that there is no situation, as far as they are concerned, as there is no hard coal in local yards. Dealers everywhere are pushing prepared sizes of bituminous and the public seems to take to these without any great effort. Prepared sizes of coke went up rather sharply in this market during the past week, the advance being about $2 per ton and the quotations to the trade at the ovens around $9. A mild winter, so far, except for a short sharp spell, has helped the situation very much.

Interest in the chances of an early settlement of the strike overshadows everything else in the entire Buffalo coal trade. While it will give the hard-coal people a prospect of full return to business as soon as the men go to work it is not so favorable to soft coal, for it will not help the regular trade and will force a readjustment of both the smokeless and the coke movement.

Connellsville Coke Market Hardens

Coke prices in the Connellsville market showed a decided softening tendency late last week, which was considered quite natural in view of the sharp advance before Christmas and the presumption that with the holidays out of the way production would be restored. Later on prices began to harden again. While production had increased, apparently it had not increased as much as expected, while demand from the East continued moderate'y heavy.

Run-of-oven coke, which was at $4.50@$4.75 on the last day of the old year, reached a level of $4.75@$5 by Tuesday of last week, while prepared coke, rather poorly defined at $5.50@$6.50, got up to a range of $7@$8, with the latter figure obtainable on any coke fairly well prepared.

There was practically no blast-furnace buying last week, though there was a little—rather unexpected—the week before. The furnaces in operation are covered by contracts for the quarter, on which deliveries probably will be adequate, while few if any idle furnaces are likely to come in at this time. Accordingly the Connellsville coke market bids fair to be purely a matter of Eastern buying.

Foundry coke has been very dull and hardly makes a market of its own. It may be quoted nominally at the usual dollar differential over furnace coke, or at $5.75@$6.

The *Courier* reports coke production in the Connellsville and lower Connellsville region in the week ended Jan. 2 at 114,600 tons by the furnace ovens, an increase of 18,800 tons, and 105,400 tons by the merchant ovens, an increase of 11,110 tons, making a total of 221,000 tons, an increase of 29,910 tons.

Car Loadings, Surplusages and Shortages

	Cars Loaded — All Cars	Coal Cars
Week ended Dec. 26, 1925	701,079	122,350
Previous week	967,886	187,398
Week ended Dec. 27, 1924	647,324	129,725

	Surplus Cars — All Cars	Coal Cars	Car Shortage	
Dec. 22, 1925	186,285	63,509	.....	.....
Dec. 14, 1925	172,577	60,245	.....	.....
Dec. 22, 1924	230,798	100,330	.....	.....

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Foreign Market And Export News

British Coal Market Improves Notably; Welsh Mines Reopen

Improvement has been marked in the British market, but, of course, the volume of trade is not up to the levels of former years. Some Welsh collieries have reopened in order to meet the recovery, and as colliery owners usually are well booked up for the beginning of the new year, it is expected that about another half a dozen pits will be restarted in the course of the next few weeks. This will still leave a large number idle, and in some cases no resumption of work will take place until questions regarding cutting prices and financial adjustments can be settled. Prices, however, are stationary.

At Newcastle-on-Tyne all classes of coal are very scarce and firm for prompt shipment, and the tendency of prices is upward in view of orders that have already been booked and the good inquiries now circulating. The outlook for the month is regarded very hopefully. In the forward market there are important railway, gas-works, and bunker coal contracts in negotiation for this year, though the business matures slowly owing to difficulty in quoting for delivery after next April. The Swedish State Railway authorities have contracted for about 32,000 tons of Northumberland steam coals (Broomhill classes) for shipment from January to April next.

Output by British collieries during the week ended Dec. 26, according to a special cable to *Coal Age*, totaled 3,965,000 gross tons, compared with a total production of 5,555,000 tons in the preceding week.

Prices Firm in Fair Market At Hampton Roads

Hampton Roads business was fair last week, foreign trade having slumped, but bunkers appeared to hold up well. Mines quite generally were back in operation after the holidays, and while demand was somewhat below normal, prices strengthened slightly.

The apparent deadlock in the anthracite situation was having only a moderate effect on the local market. In the domestic trade one or two dealers had good supplies of hard coal which they were holding for $20 a ton, and getting no inquiries. Many hard-coal users have turned to soft coal and find it meets the situation.

Belgian Domestic Coals Strong, Industrial Grades Dull

Industrial coals in the Belgian market continue inactive, as they have been for a long time. Domestic grades, on the contrary, are much sought and demand is expected to increase soon, as consumers' stocks are depleted.

Owing to the continued depreciation of the French franc, competing French coals are gaining headway in Belgium.

Free German coals (outside of indemnity coals) cannot for the present enter Belgium, except bunkering sorts at Antwerp. As in France, the admittance of such coals would be solved if Germany agreed that they be considered as "payments in kind" and paid for by the Agent of Payments of the Commission of Reparations.

The wage question has not been settled. The collieries maintain that wages should be conditioned not only by the index figure on living costs but also by the selling prices of fuels.

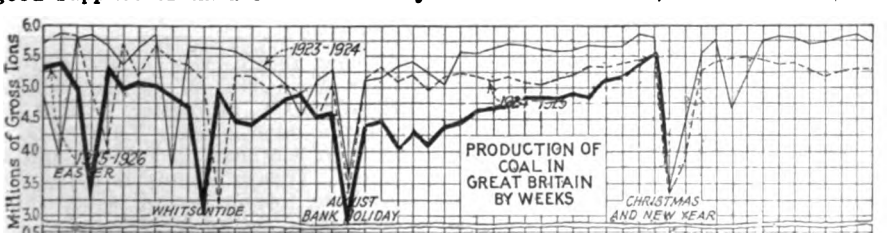
French Market More Active, British Imports Higher

The French coal market is becoming increasingly active; December production of both industrial and domestic coals was committed early and the collieries have been limiting themselves to the carrying out of contracts. Imports of British coals have shown some improvement, but arrivals at Rouen are still much restricted.

Negotiations with the Kohlensyndikat are still suspended. The Germans lay the responsibility on France, though they have put in question various points that had already been settled, such as agreeing not to compete with French coals and restricting sales to certain well defined areas.

The canal freight rate from Bethune to Paris has been raised 2 fr. to 30 fr.

Deliveries of indemnity fuels from the Ruhr from Dec. 1 to Dec. 5 included 68,700 tons of coal, 46,700 tons of coke and 5,500 tons of lignite briquets. During the first twenty days of December the O.R.C.A. received from the Ruhr 160,564 tons of coke.



As the price of the French coke will certainly be increased owing to the advance in transportation rates and taxes, it is almost certain that the decrease of 2.50 fr. applied last month to the price of indemnity coke will not be maintained.

French fuel exports in November included 419,051 metric tons of coal and lignite, 60,915 tons of coke and 20,605 tons of patent fuels, compared with October figures of 425,505 tons of coal and lignite, 49,322 tons of coke and 17,039 tons of patent fuels. Fuel imports to France in November consisted of 1,595,785 metric tons of coal and lignite, 416,117 tons of coke and 126,850 tons of patent fuels, against October totals of 2,040,952 metric tons of coal and lignite, 390,233 tons of coke and 110,113 tons of patent fuels.

U. S. Fuel Imports in November

(In Gross Tons)

	1924	1925
Anthracite	12,153	72,869
Bituminous	24,500	46,703
From:		
United Kingdom	.....	3,422
Canada	24,400	50,477
Japan	2,400	6,318
Australia	4,482	.....
Other countries	100	6
Coke	6,807	23,474

Export Clearances, Week Ended Jan. 9, 1926

FROM HAMPTON ROADS

	Tons
For Jamaica:	
Br. Str. Willowpark, for Kingston	2,235
For Virgin Islands:	
Dutch Str. Kellehaven, for St. Thomas	4,307
For Brazil:	
Br. Str. Cogandale, for Rio de Janeiro	7,417

Hampton Roads Coal Dumpings*

(In Gross Tons)

	Dec. 31	Jan. 7
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week	110,471	138,780
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	72,295	49,212
C. & O. Piers, Newport News:		
Tons dumped for week	134,311	115,366

*Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS

	Jan. 2	Jan. 9†
Pool 1, New York	$5.75@$6.00	$5.75@$6.00
Pool 9, New York	5.10@5.30	5.20@5.35
Pool 10, New York	4.80@5.15	4.90@5.20
Pool 11, New York	4.55@4.70	4.65@4.80
Pool 9, Philadelphia	5.05@5.30	5.05@5.30
Pool 10, Philadelphia	4.80@5.10	4.80@5.10
Pool 11, Philadelphia	4.50@4.75	4.50@4.75
Pool 1, Hamp. Roads	4.60@4.75	4.60@4.75
Pool 2, Hamp. Roads	4.20@4.30	4.20@4.30
Pools 5-6-7, Hamp. Rds.	4.00@4.15	*4.00@4.10*

BUNKERS

	Jan. 2	Jan. 9†
Pool 1, New York	$6.00@$6.25	$6.00@$6.25
Pool 9, New York	5.35@5.55	5.45@5.60
Pool 10, New York	5.05@5.40	5.15@5.45
Pool 11, New York	4.80@4.95	4.90@5.05
Pool 9, Philadelphia	5.30@5.55	5.30@5.55
Pool 10, Philadelphia	5.10@5.35	5.10@5.35
Pool 11, Philadelphia	4.75@5.00	4.75@5.00
Pool 1, Hamp. Roads	4.75	4.75
Pool 2, Hamp. Roads	4.30	4.30
Pools 5-6-7, Hamp. Rds.	4.15	*4.10*

Current Quotations British Coal f.o.b. Port, Gross Tons

Quotations by Cable to *Coal Age*

Cardiff:	Jan. 2	Jan. 9†
Admiralty, large	23s.@23s.6d.	23s.
Steam smalls	13s.6d.	14s.
Newcastle:		
Best steams	18s.	18s.
Best gas	16s 6d.	16s.6d.@17s.6d.
Best bunkers	16s.@17s.	16s.@17s.6d.

† Advances over previous week shown in **heavy type**; declines in *ital cs*.

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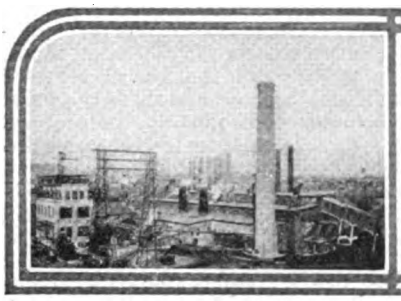
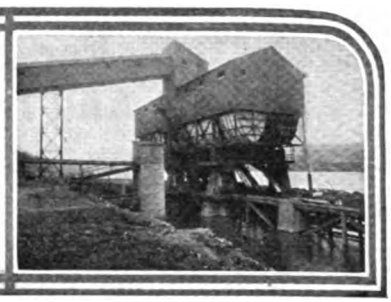


News Items From Field and Trade



ALABAMA

The Alabama ByProduct Corporation, Pratt Division, is constructing a new coal washery at its No 10 Mine, at Dora, in Walker County. This operation, which has been idle for some time, will resume production when improvements have been completed.

The Connellsville Mine of the New Connellsville Coal & Coke Co. has resumed production of coal after a long period of idleness. The work of rehabilitating this operation has been in progress for about six months. New tipple and other necessary mine structures have been built, a new washery constructed and other modern preparation equipment has been installed and the entire plant has been reconstructed along the most modern lines. Modern equipment also has been installed inside the mine for the mining and handling of the coal. This mine is located on the Jagger seam, the coal being considered a high-grade blacksmith and coking product. The operation is under the direction of the Yolande Coal & Coke Co., of which J. B. McClary, of Birmingham, is president. Production will be increased as rapidly as possible to a maximum of around 2,000 tons daily.

E. L. Elliott, who had been superintendent of the operations of the Davis Creek Coal & Coke Co., at Rock Castle, Tuscaloosa County, for a number of years, has been transferred to Connellsville, where he will be superintendent. Mr. Elliott is succeeded as superintendent of the Davis Creek Coal & Coke Co. by W. A. Upton, formerly with the Nelson Coal Corporation as superintendent at Red Star, Walker County, which mine is now being operated by the Pratt Fuel Corporation.

ARKANSAS

A new tipple for mine No. 2 of the Western Coal & Mining Co. at Denning, is almost completed and the mine will be ready for operation in about a month. The old tipple was destroyed several months ago when the shaft caved in. The shaft is nearly 100 ft. deep.

The store and office building of the Bernice Anthracite Coal Co.'s mine, at Russellville, where a strike has been in progress for several months, was dynamited about midnight, Jan. 1. The explosives, which caused considerable damage to the property but injured no one, were placed several feet from the building. The mines have been operated several months with non-union labor on the 1917 wage scale, union men having gone on a strike when the company refused to operate on a later scale. The miners are said to have been producing 200 tons of coal daily just before the holidays.

Many miners who walked out on strike at Alix, Aug. 19, have returned to work under the reduced wage scale, it is said. It is thought the men returned to the mines because no assistance was forthcoming from District No. 21, United Mine Workers. Only about half of the 175 men who walked out are remaining loyal to the union. Open shop mines are operating every day.

A large steam shovel has been installed in the coal field near Scranton by C. E. Packard and E. P. Linsey.

COLORADO

John B. Marks, formerly assistant to the president of the Colorado Fuel & Iron Co., has been elevated to the vice-presidency of the corporation as a result of a special meeting held Dec. 30.

B. W. Snodgrass, vice-president of the Victor American Fuel Co., has been appointed president of the same company with headquarters at Denver.

ILLINOIS

U. S. District Judge English at East St. Louis has appointed Wilbur E. Crane, of Chicago, receiver for the Standard Coal & Coke Co., of which Mr. Crane is president. Application for the receivership was made by a stockholder who charged that the company defaulted on obligations totaling $128,000, including $50,000 in bonds, due Dec. 31 last. The board of directors consented to the appointment of a receiver, stating that the company had been operating at a loss for several months. The Standard company is a Delaware corporation and owns properties in Williamson and Sangamon counties, Ill., and in Clarion County, Pa. Total assets as of Sept. 1, 1925, were $3,868,498 while the outstanding bonded debt of the company was placed at $1,756,200 in the receivership petition.

The first move toward the reopening of the mines formerly owned by the Southern Gem Coal Corp. and only recently purchased by the Brewerton Coal Co., of Lincoln, was made at the Sesser mine the first week in January, when the new owners started the fan and put pumpmen and examiners into the shaft to find out the condition of the inside workings. All maintenance men formerly employed at the mine have been paid their back pay by the Brewerton company and indications are that if conditions prove at all favorable, work will be resumed some time during January or early in February.

The St. Ellen coal mine at O'Fallon has resumed operation following a shutdown of 17 months.

The Majestic mine, at DuQuoin, owned by the Crerar-Clinch interests in Chicago, has made a record for steady production, having worked continuously since Oct. 1.

Operators in Saline County are said to be studying the possibility of getting into the Missouri markets as a result of the Interstate Commerce Commission ruling that established rates into that territory on the Burlington, Big Four and Illinois Central railroads beginning Nov. 30. Williamson and Franklin counties have done considerable business in the territory covered by the new rates, but Saline County, up to Nov. 30, was barred. Saline County operators believe that they have a chance to compete for business now and it is expected that selling campaigns will be inaugurated out of St. Louis.

For the first time in several months the Cherry mine at Cherry, operated by the St. Paul Coal Co., employed more than 500 miners every day in the week during the last two weeks in December. Heretofore the miners worked five days per week and this is the only large mine in Bureau County and one of the few large mines in northern Illinois which gives steady employment to miners.

It is reported that the Rowling coal mine at Litchfield, which has been idle for two years, has been sold to R. Williams, of Harrisburg, and will be reopened immediately.

A fire which has been raging for several days on the Hussey dock at Waukegan has threatened hundreds of tons of soft coal. The dock owners have thirty men at work moving the stored coal.

A new record was established at Zeigler Mine No. 2, of the Bell & Zoller Coal Co., at Zeibler, on Dec. 23, when the mine hoisted 7,642 tons of coal from one shaft in 7 hours and 42 minutes. This mine only recently surpassed its former record, establishing a new high record by hoisting 7,640 tons of coal. The mine employs 1,100 men. E. L. Berger is the superintendent.

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INDIANA

Fire on Jan. 2 burned the tipple and loading sheds of the Indian Creek coal mine at Bicknell, owned by the Knox Consolidated Coal Co. The loss was estimated at $75,000. The origin of the fire, which put 450 men out of employment, was undetermined.

The Crescent Coal Co., at Evansville, has awarded the contract for the construction of an office building on South Third St. The building will be of brick construction and will house all the company's offices.

The Patoka Coal Co., of Petersburg, has opened a new strip mine a few miles from that city and will begin work soon. The company, which is the first to engage in stripping coal in Pike County, has another mine in operation on Sugar Ridge, five miles south of Petersburg.

The Indiana Coal Co. at Sullivan, has filed a preliminary certificate of dissolution.

A federal injunction to prevent repetition of the disturbance at the Bosse Coal Co.'s non-union mine at Buckskin will be sought at once, Walter Korff, general manager of the company, declared. Five miners, who were brought to the mine to prepare it for reopening after 18 months' idleness, were taken from the premises by a group of 300 union miners. Later the five men were found at a railroad station where they had been ordered by their abductors to wait for a train.

KANSAS

A verdict of $50,000 damages was awarded by a jury in the Circuit Court at Kansas City to Matt Span, of Franklin, against the Jackson Walker Coal & Mining Co., of Kansas City. The verdict was the largest returned in a damage suit in that city in several years. While employed by the company at Franklin, Spann suffered an injury to his spine and paralysis resulted. He sued for $100,000.

Complete returns from the referendum held by the United Mine Workers of District 14 on Dec. 29 show almost unanimous approval of the proposal to postpone the biennial convention from next March until a year later.

Incendiaries are believed to have set fire to the tipple of mine No. 7 of the Girard Coal Co. at Radley, Dec. 27. The tipple and machinery were destroyed, entailing a loss of about $10,000. The estate of the late J. R. Crowe, of Kansas City, is the heaviest stockholder.

As a result of the fire which destroyed the washhouse at the Western Coal & Mining Co.'s mine No. 13, near Yale, the night of Jan. 5, each of the 175 men employed there lost about $15 worth of tools and equipment. A day's operation was lost before new lamps and tools could be obtained.

D. Frank Moore, mining engineer, was killed instantly Dec. 23, when he fell 100 ft. down a mine shaft at the Star Mine of the Roseland Coal Co., near Roseland, south of Pittsburg. Mr. Moore had been engaged in the mining activities in the district for 40 years.

First Rock-Dust Plant

This 20 x 32-ft. pulverizing plant was erected by the Old Ben Coal Corporation at No. 9 mine, West Frankfort, Ill., in 1918, when rock dusting was novel. There was no precedent to follow, but the design was so successful that no important changes have ever been made.



Several general officials of the Western Coal & Mining Co. visited the Pittsburg field Jan. 6 to make a special inspection of two new properties, No. 22 being sunk near Arma, and No. 23 at Minden, Mo., which was opened last fall. The Arma shaft is down 250 ft. to the coal and the Minden mine 54 ft. to the coal. Both shafts will be operated with electricity throughout. Tipple and machinery installation are about complete and both mines will soon be put in operation.

Peter Keegan, for several years statistical clerk in the Kansas mine inspection department in Pittsburg, but for the past two years with the U. S. Bureau of Mines, again has his old home town for headquarters, being assigned as foreman miner of the bureau's car No. 6, which is now in Kansas. Mr. Keegan is the son of Francis Keegan, of St. Louis, general superintendent of the Western Coal & Mining Co., who was for many years superintendent of its Kansas mines, with headquarters in Pittsburg.

KENTUCKY

Gov. W. J. Fields, of Kentucky, in his message to the 1926 Legislature, on Jan. 6, refrained from mentioning the movement for a tonnage tax on coal, which is one of the most discussed matters to come before the 1926 session. The Governor, however, recommended an appropriation of $75,000 for base mapping of minerals by the Kentucky Geological Survey.

Judge William F. Hall, president of the Three Point Coal Co. and other mining companies in the Harlan field, recently traded the Everett Coal Co., a going and producing concern, for 1,700 acres of farming land near Montgomery, Ala. The Judge said that he intended to rest up a bit and see if there were as many thrills to farming as there are in coal production.

The Main Jellico Coal Co., Williamsburg, has filed amended articles reducing its capital stock from $500,000 to $50,000.

The Whitco mines of the Whitesburg Coal Co., in Letcher and Perry counties, in the Elkhorn seam were leased on Jan. 1 to G. C. Clark, who formerly was superintendent of the mines. Mr. Clark will continue the development of the mines and plans to increase output.

The Trio Coal Co., Madisonville, with a capital of $30,000 has acquired the Finley Coal Co. and will increase the daily output from 6 to 25 carloads.

Sale of the holdings of the Sullivan Pond Creek Coal Co., on Pond Creek, Dec. 18 has been confirmed. Will M. Smith, well known Pike County farmer, who already owned the land, bought the plant. This mine, which has been closed for several months, is the last of the idle mines on Pond Creek, and with the resumption of production, practically all large mines on the creek will be running on almost a full-time basis. Cincinnati people are taking a controlling interest and will operate the plant. The company will be incorporated in the name of the "Octavia J."

MINNESOTA

The Civic and Commerce Association of Minneapolis, in its annual business review for 1925, places fuel at $6,000,000 for the year, the same as for the preceding year. Most other commodities show a gain over 1924. Petroleum products are placed at $160,000,000 against $145,000,000 for the previous year. There is much speculation on what portion of the increase represented the displacement of coal by fuel oil.

MISSOURI

W. B. McGregor, of Brookfield, a member of the Board of Penal Institutions, says that a coal mine has been opened in Callaway County, near Holt Summit, with convict labor, which will provide more than enough coal to supply the Penitentiary and leave a considerable surplus for state institutions. There is a large supply of coal in sight, he said. He estimated the saving by the state mining its own coal for the Penitentiary at $2,000 a month. The board employs forty convicts in the mines.

MONTANA

The West Virginia Coal Co. of Missouri, Boatmen's Bank Bldg., St. Louis,

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has been granted a refund on 1925 income taxes amounting to $152,635. It was one of thirteen St. Louis firms and individuals receiving such refunds.

Opening of a new coal mine, one-half mile south of Burlington, to be known as the Miller mine, has been announced by the owners, W. E. Gross and A. L. Miller, of Burlington.

OHIO

The Pan-Handle Colleries Co., of Columbus, has filed suit in the Franklin County common pleas court to recover $12,100 from the estate of the late David C. Thomas, who was associated with the present owners of the company during his life. It is alleged that Mr. Thomas contracted to purchase $20,000 worth of stock in the company on which he had paid $7,900 at the time of his death.

The Ohio Collieries Co. has put into operation Mine No. 210, located north of Athens, after an idleness of more than seven months. About 300 miners are producing 1,800 tons daily.

The Columbus Board of Purchase has rejected all bids received Dec. 23 for approximately 27,000 tons of nut, pea and slack for various city departments and will readvertise for bids Jan. 27 for five-sixths of the original tonnage including 12,500 tons of Ohio nut, pea and slack for the municipal light plant; 7,000 tons for the Scioto River pumping station; 2,500 tons for the garbage disposal plant, and 500 tons of West Virginia nut, pea and slack for the coal pulverizer at the garbage disposal plant.

The Kentenia Coal Co., Cincinnati, is in the process of liquidation. Its business and good will, which consists of the production from several mines in the Hazard and Harlan sections of Kentucky, has been taken over by the Midland Coal Sales Co. which thus adds about 300,000 tons a year to its disposal. According to P. H. Henry, president of the Kentenia company, all claims will be met and a surplus divided among the stockholders. Mr. Henry says he has not decided what he will do but he cannot see any chance for the jobber with overproduction to be contended with for the next five years at least. He will not be entirely out of the coal trade, as he is part owner of a large retail yard in Detroit. W. G. Polk, treasurer of the company, is a heavy stockholder in the Tennessee Jellico Coal Co. and will devote all of his time to the operating end of the business.

PENNSYLVANIA

The Reading Co. transported 2,126,428 gross tons of bituminous coal during November, 1925, as compared with 1,516,016 gross tons in November, 1924, according to a report of Albert B. Bierck, comptroller.

The following changes have been made in the personnel of the organization of the Snowdon Coke Co. effective Jan. 1: William T. McKnight retired as secretary of the company and was succeeded by William D. Rankin, auditor of Pittsburgh, who will retain the same office in the Farmers Bank Bldg. Mr. McKnight retires from active business and will spend his time looking after his personal interests, also keeping an office in the same building. Edward H. Coxe, of Uniontown, Pa., resigned as general manager of the company.

TENNESSEE

W. B. Dimmick, general superintendent of the Ridgway Sprankle Co., owner and operator of the Buffalo Creek Coal Co. at Helenwood, Tenn., while in Cincinnati recently said that thousands of dollars in improvements had already been put in these mines and other mechanical betterments would soon be started.

UTAH

The Gordon Creek Coal Co. has received a permit from the Securities Commission renewing its right to sell 10,000 shares of 6 per cent guaranteed cumulative preferred stock at 20 per cent commission. A share of common stock goes with two shares of preferred, the total price being $10.

VIRGINIA

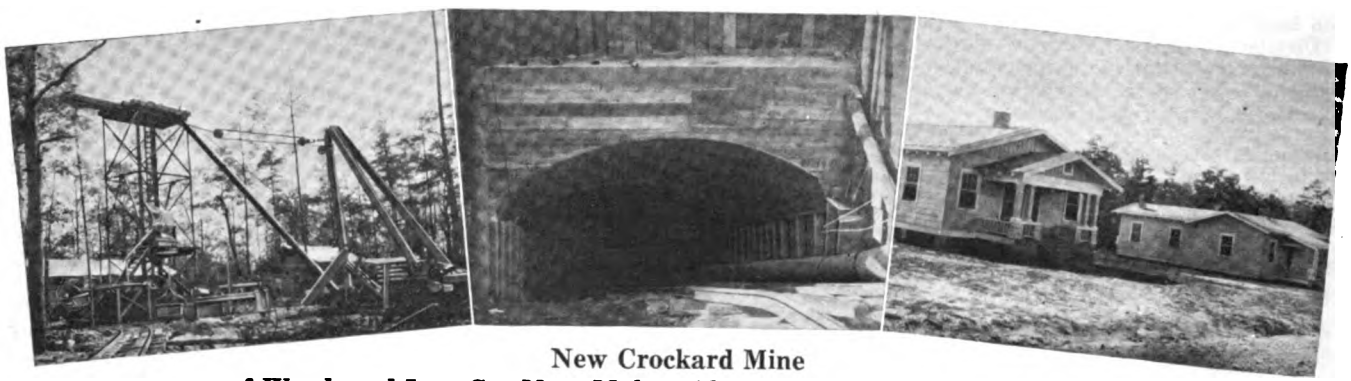
All the large mines in the state are going full blast, and many of them are working day and night according to A. G. Lucas, chief mine inspector of the Virginia state bureau of labor and industry. A number of the smaller mines which have been idle have been reopened. All the miners have plenty of work, and the operators are taking on everybody that comes along looking for a job.

WEST VIRGINIA

One of the largest coal land deals consummated recently was announced last week by Howard W. Showalter, president of the Continental Coal Co., of Fairmont, which purchased 1,000 acres of undeveloped Sewickley coal land in two 500-acre tracts for $300,000 in the Scotts Run section of Monongalia County. One block was purchased from Mr. and Mrs. D. E. Lemley and Dr. and Mrs. Chesney M. Ramage and the other from the David Henderson heirs and the Tennant heirs, both being located in Cass district. This gives Brock mine a total of 1,800 acres of choice Sewickley coal land and makes this plant the largest producing mine in the 12½ counties of northern West Virginia. Its present capacity of 3,000 tons in eight hours will be increased to 4,000 tons by April 1, Mr. Showalter predicts. The plant works non-union and on the 1917 wage scale.

The Baltimore & Ohio R.R. attained a new performance record over the Allegheny Mountains, east of Grafton, in December, when a daily average of 1,089 loaded cars were moved. In the 31-day period there were 33,759 cars moved over the mountains. It is estimated that from 65 to 70 per cent of this freight was coal.

The Imperial Coal Corporation of Johnstown, Pa., which purchased the



New Crockard Mine

of Woodward Iron Co., Near Mulga, Ala., Is Almost Ready to Produce

The photograph on the left snapped on Nov. 14, the day the coal was hit, shows the contractors' top equipment for sinking and concreting the skip shaft of the new mine. This shaft, 17 ft. 8½ in. x 7 ft. 1 in. with eliptical ends and 517 ft. deep to the top of the coal is lined all the way down with reinforced concrete. The Crockard mine taps, at a record depth for that coal, a virgin area in the Pratt seam. Two 6-ton skips operated by an electric hoist will provide a hoisting capacity of 6,000 tons in 9 hr.

The center illustration shows the concreted portal of the partially-completed 8 x 16-ft. man-and-material slope. This slope, which will hit the coal at 987 ft. has already been driven 635 ft. A short distance from the portal a 90-ft. shaft connects into one side of the slope. This shaft will be equipped with a temporary fan and used as an outlet airway for the slope until the mine has been developed to a point where another opening in a nearby hollow will connect with the surface. Finally, the 90-ft. shaft will be a permanent air intake in parallel with the manway portal.

A few houses, representing the standard set for the entire camp, already have been built at the Crockard mine. These houses are a five-room type, spaced 60 ft. apart, and equipped with strictly modern plumbing throughout.

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Yukon mine of the Whyel Coal & Coke Co. recently, assumed charge of the property Jan. 4.

According to a statement made to Congressman J. Alfred Taylor of West Virginia by the Bureau of Mines, the Governor anticipates that the state will handle about 185,000 tons of New River coal from Raleigh and Fayette counties during the current fiscal year.

CANADA

The Nova Scotia Coal Commission has completed its investigation and its report will be submitted to the government in a few days. Sir Andrew Rae Duncan, chairman of the commission, will return to England soon.

Traffic

Would Uphold Decision on Rates To Chicago District

Examiner R. L. Shanafelt of the Interstate Commerce Commission has made a report in Docket 11224, Chicago Coal Merchants' Assn., vs. Director General, as agent for the Santa Fe R.R. et al., recommending that the Commission find in accordance with its previous decisions, which is that interstate rates on coal from various producing regions to the Chicago switching district, higher to some delivery points than to Chicago itself, are not unreasonable, but that they are unduly prejudicial, the same as previously found. This is the third or fourth hearing in this case.

The substance of the previous decision was that the Commission found not unreasonable the rates assailed on coal from mines in Pennsylvania, Maryland, West Virginia, Ohio, Kentucky, Indiana and Illinois to points within the Chicago district and certain points in Illinois just beyond that district on the north and west. In other findings of undue preference and prejudice the Commission required reductions in the spread between the rates to Chicago and the points beyond the district on bituminous and anthracite coal from mines other than those in Illinois and Indiana, and the maintenance of rates on both kinds of coal from all mines to Greenwood Street in Evanston, Ill., on the Evanston basis.

In the Commission's decision just preceding this one it found that the rates on coal from origins involved to the Chicago district were not unreasonable, but that such rates were unduly prejudicial to the points within the district taking the higher rates.

Halts Increase in Breeze Rates

Increases in rates on coke breeze from the Birmingham (Ala.) district to St. Louis, Mo., and related points, which were to have become effective Jan. 4, have been suspended until May 4 by the Interstate Commerce Commission. The tariffs affected are Louisville & Nashville R.R. supplement 5 to tariff I. C. C. No. A-15643; Mobile & Ohio I. C. C. No. B-708 and St. Louis-San Francisco supplements 9 and 10 to I. C. C. 8524. The Commission has instituted an inquiry into the reasonableness of the proposed advances under I. & S. Docket No. 2576.

Car-Distribution on D. &. S. L. Unfair, Says Examiner

Examiner John T. Money of the Interstate Commerce Commission has made a proposed report in Docket 14968, Victor American Fuel Co. et al. vs. Denver & Salt Lake R.R., et al., involving the distribution of cars to coal mines between Aug. 1 and April 6, 1923. The examiner finds for the complainants on practically all points raised. It is in substance an assigned-car case, but involves certain other phases of the car-distribution rules incident to the placing of equipment.

It seems that the Denver & Salt Lake placed cars at some coal mines without charging them against the mines, as provided by par. 12, Sec. 1 of the Transportation Act. The examiner says the Commission should find defendant railroad's rules, regulations and practices are unreasonable, unlawful and unduly prejudicial; that its special practice of not counting cars against the mine's distributive share for railway fuel loading is unlawful and unduly prejudicial; that certain defendant coal companies have received an undue preference with their knowledge and consent by reason of their agreement with the carrier and the practice of the carrier under that agreement.

After a 30-page mimeographed report, in which the rules operating on the railroad are gone into in great detail, the examiner recommends that the coal operators on the Denver & Salt Lake R.R. and the officers of that line get together and promulgate rules that will avoid any preference to any shippers and set up a basis of rules that will be satisfactory to all concerned.

New York Canal Traffic Light

Transportation of coal through the New York State canals during 1925 decreased considerably compared with the tonnage carried in the previous year. Shipments of anthracite up to the end of September, when the effects of the strike began to be noticeable, were only 1,598 tons less than the tonnage for the corresponding period of 1924, but the total for the year shows that 35,560 tons was transported northbound via the Champlain Division, a decrease of 12,712 tons in comparison with the previous year. During the year 1,642 tons of bituminous coal was transported as compared with 3,471 tons carried in 1924.

Hearing to Equalize Coke Rates On Boston & Albany R. R.

Joseph Weed, chairman of the Coal & Coke Committee, Trunk Line Territory, announces that a hearing will be held at 11 a.m. Jan. 28, at 143 Liberty Street, New York, to consider adjustment of rates on coke, coke breeze, coke dust and coke screenings from Geneva, Solvay and Syracuse, N. Y., to various stations on the Boston & Albany R.R. The reason given for the investigation is a desire to establish rates in line with rates for similar distances from other shipping points in Trunk Line Territory to New England.

As an illustration, the present rate to Brookview, N. Y., from Geneva is $3.28; it is proposed to make it $3.02; the present rate from Geneva to Pittsfield, Mass., is $3.28; it is proposed to make it $3.15; the present rate from Solvay and Syracuse to Mellenville, N. Y., is $2.77; it is proposed to make it $2.90; the present rate from Solvay and Syracuse to Pittsfield is $2.77; it is proposed to make it $3.02; the present rate from Solvay and Syracuse to Springfield, Mass., is $2.77; it is proposed to make it $3.28.

There are about as many increases as reductions except that increases seem to be greater to distant points; for instance, the present rate from Geneva to Framingham, Mass., is $3.28, and it is proposed to make it $3.91; the present rate from Solvay and Syracuse is $2.77, and it is proposed to make it $3.65.

N. Y. Central Joint Rates On Coke Approved

The New York Public Service Commission has approved new rates of the New York Central (East) on coke, coke breeze and coke dust from Troy to New York, Ontario & Western stations: Eaton to Bernards, inclusive, $2.65; Constantia to Fulton, inclusive, $2.77; Minetto and Oswego, $2.90; New Hartford and Clinton, $2.39; Franklin Springs to Bouckville, inclusive, $2.52; Pecksport and Hamilton, $2.65; Randallsville to Galena, inclusive, $2.65; Galena to New Berlin Junction, inclusive, $2.77; Sidney to Walton, inclusive, $2.90; Beerston to Fish's Eddy, inclusive, $3.02; East Branch to Livingston Manor, inclusive, $3.28; Summitville, $3.40; Port Jervis, $3.53; Phillipsport to Kerhonkson, inclusive, $3.40; Accord to Hurley, inclusive, $3.53; Mamakating to Middletown, inclusive, $3.40; Crystal Run to Firthcliffe, inclusive, $3.53; effective Jan. 30, 1926. No joint rates heretofore have been in effect.

Obituary

Frank L. Fisher, vice-president of the Harvey Coal Corporation, Harveyton, Ky., interested in other coal-mining properties and a large holder of coal lands, died Dec. 31 at his home in Knoxville, Tenn., at the age of 76. Mr. Fisher also was president of the East Tennessee National Bank.

Association Activities

The Chicago Wholesale Coal Shippers' Association held its annual meeting at the Great Northern Hotel Jan. 6 and elected these officers for the coming year: John N. McCabe, of the Gruschow-McCabe Coal Co., president, succeeding R. B. Starek; James Andersen, of C. M. Moderwell & Co., vice-president, succeeding John N. McCabe; Geo. H. Merryweather, of the Waubun Coal Co. and the National Wholesale Coal Association, re-elected secretary; Fred A. Brahm, of the Platt & Brahm Coal Co., re-elected treasurer. Directors, J. B. Beardsley, of the Mitchell & Dillon Coal Co.; George H. Bridges, of D. E. McMillan & Brother; P. H. Holland, of the Holland Coal Co.; T. C. Irwin, of the Abbott-Irwin Coal Co.; Roscoe B. Starek, of the D. C. Shoemaker Coal Co.; William C. Hill, of the E. F. Daniels Coal Co., and George S. Wood, of the George S. Wood Coal Co.

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Coming Meetings

The Engineers Society of Northeastern Pennsylvania. Annual banquet at Hotel Sterling, Wilkes-Barre, Pa., 6:30 p.m. Thursday, Jan. 21. Secretary, T. F. McKenna, Scranton, Pa.

Hazard Coal Operators' Exchange. Annual meeting Jan. 22, at Lexington, Ky. Secretary, J. E. Johnson, Lexington, Ky.

American Wood Preservers' Association. Annual meeting, Jan. 26-28, 1926, at Cleveland, Ohio. Secretary, E. J. Stocking, Chicago, Ill.

Coal Club of Philadelphia. Annual meeting, Jan. 28, 1926, at the Bellevue-Stratford Hotel, Philadelphia, Pa. Secretary, C. K. Scull, Philadelphia, Pa.

Northeast Kentucky Coal Association. Annual meeting, Jan. 28, 1926, at Ventura Hotel, Ashland, Ky. Secretary, C. J. Neekamp, Ashland, Ky.

American Institute of Electrical Engineers. Annual convention, Feb. 8-12, 1926, at Engineering Societies Bldg., New York City. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

American Institute of Mining and Metallurgical Engineers. Annual meeting, Feb. 15-17, 1926, at Engineering Societies' Building, New York City. Secretary, Dr. H. Foster Bain, 29 West 39th St., New York.

The Rocky Mountain Mining Institute. Winter meeting, Feb. 23-25, 1926, at Albany Hotel, Denver, Colo. Secretary, Benedict Shubart, Boston Building, Denver, Colo.

New Companies

The Baby Grand Coal Co. has been incorporated at Paris, Ark., by C. W. Stone and L. B. Bench.

The Lily Meade Coal Corporation, Owensboro, Ky., capital $14,000 has been chartered by R. L. O'Bryan, William O'Bryan and William J. Mulligan.

The Day Coal Mining Co. of Whitesburg, with a capital of $5,000 has been incorporated at Frankfort, Ky., by S. B. Pearce, C. H. Latimore and D. R. Tomb.

Industrial Notes

The Pennsylvania Crusher Co. moved its general offices on Jan. 1, 1926, from the Stephen Girard Building to the new Liberty Trust Building, at Broad and Arch Sts., Philadelphia, Pa.

The Climax Engineering Co., Clinton, Iowa, announces the appointment of F. M. O'Laughlin as sales representative for its Eastern sales territory. Mr. O'Laughlin will make his headquarters at the company's offices, 30 East 42d Street, New York City. Previous to his connection with the Climax company, Mr. O'Laughlin was assistant manager of the New York office of the Buffalo Gasoline Motor Co. George A. Colley, who previously represented the Climax Engineering Co., has associated himself with the A. G. Griese Co., New York City.

The Drake Non-Clinkering Furnace Block Co., of New York, announces that Alfred Campbell, formerly district sales representative in the Pittsburgh and Cincinnati territories, has been appointed general manager of the company, and D. B. Wilson has been appointed district sales representative in Philadelphia and also is in charge of Baltimore and Philadelphia territories. Harry Baumgartner has been retained as refractory engineer.

The Maxim Silencer Co., of Hartford, Conn., manufacturer of silencers for industrial machinery, has appointed W. O. Whitney sales manager, effective Jan. 1, 1926. Mr. Whitney formerly was with the Brunswick-Kroeschell Co., New Brunswick, N. J., manufacturer of refrigerating machinery.

All designs, patterns, patents and good will covering Earle centrifugal pumps have been sold to the **Aldrich Pump Co.,** Allentown, Pa. This transfer will in no way conflict with the Earle Gear & Machine Co.'s regular business of manufacturing Earle cut gears, Earle movable bridge operating machinery, Lea-Simplex cold metal saws and Earle special machinery.

R. B. Sinnock has joined the **Climax Engineering Co.,** Clinton, Iowa, as a sales representative. He will make his headquarters at Clinton and will handle sales of Climax gasoline engines in the territory adjacent to that point. Mr. Sinnock was previously a member of the sales force of the Dayton-Dowd Co., Quincy, Ill. C. H. Adams also has been appointed a sales representative for the Climax company, and will travel throughout the southeastern portion of the United States. Mr. Adams has had a wide experience in the sale of mechanical equipment throughout that territory. Climax engines are used not only in industrial equipment such as cranes, shovels, locomotives, excavators, etc., but also as power units for operating pumps, generators, hoists, etc.

New Equipment

Adjustable Ring Maintains Pump Efficiency

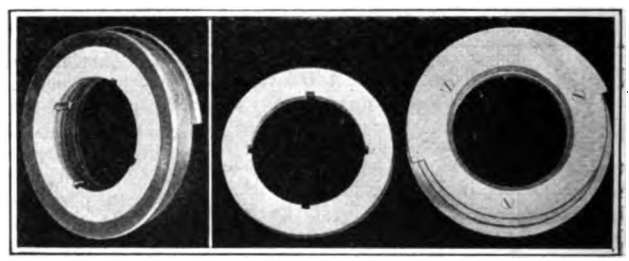
In the accompanying illustrations may be seen the adjustable ring recently developed by the Frederick Iron & Steel Co. for use on Frederick pumps. The photographs give a good idea of the appearnace of this ring and the cross-section shows its application. This ring, which is known as the "Adjusto" and which is used in pairs, makes it possible to maintain the original efficiency of the pump over long periods. When the pump is sent out from the factory the rings are adjusted to give maximum efficiency.

The new ring is made up of only five parts including the binding screws. It consists primarily of two main parts or collars, one threaded into the other, thus affording a means for varying the thickness of the assembled ring and compensating for wear. The outer bronze ring as shown in the section is held stationary within the pump casing by means of its interrupted flanges. It forms the inlet to the impeller. The inner ring, or collar, is threaded into it, being provided with spanner slots on its interior surface and is held in place by three adjusting screws. Both rings, as well as the adjusting screws, are made of bronze but of different compositions to avoid corrosion.

Only running clearance is necessary between this ring and the end of the impeller intake as these two parts will always be separated by a thin film of water. When, after several months of operation, appreciable wear develops at this point and causes the efficiency of the pump to decrease, it is an easy matter to readjust the ring and restore the original efficiency. The screws are first backed off releasing the adjustable ring. This ring is then screwed forward a distance that will give a clearance of about 0.003 in. between its face and the end of the impeller.

By this means the original efficiency of the pump is restored without the replacement of any parts; and this efficiency can be maintained at all times by merely keeping the rings in proper adjustment relative to the impeller. An outboard thrust bearing keeps the impeller in proper central position within the casing. In order that no seizure may take place between the impeller and the adjustable ring these parts are not only made of unlike metals but the threads on the rings are in such a direction (right or left hand) that any rubbing between the two surfaces tends to back the ring away from the impeller. As now built this ring is applicable to pumps 8 in. in size or larger.

FIG. 1
Two Views of New Ring
There are only five parts: a case ring, a collar and three adjusting screws.. All are of bronze, but of differing compositions to avoid corrosion.



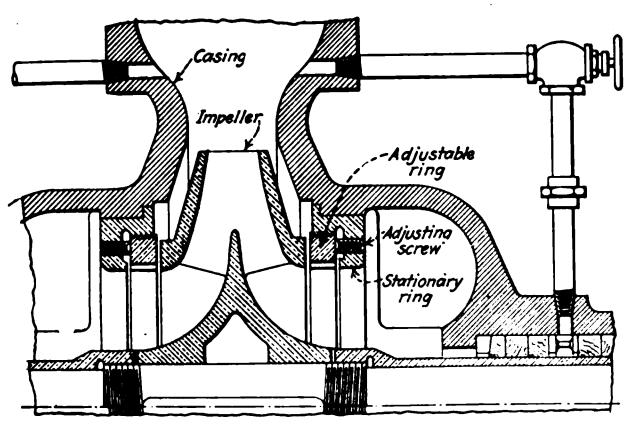


FIG. 2
Section of Pump
Efficiency of a pump depends upon the tightness of the joint between casing and impeller. These rings render it possible to adjust quickly the clearance of this joint, thus maintaining the original efficiency of the pump indefinitely.

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FIFTEENTH ANNUAL REVIEW NUMBER

JAN 23 1926

COAL AGE

The World's Accepted Authority on Coal Mining

McGraw-Hill Co., Inc. **January 21, 1926** 50 Cents per Copy



Blackwood Coal & Coke Co., Blackwood, Virginia

AGAIN

1925 Has Repeated the Success of "RandS" Installations



During the past year 65 percent of our contracts were *repeat* orders. Isn't that the soundest evidence of *satisfied customers* any organization can compile?

An impressive reason why this organization has gained and keeps the confidence of the coal industry is our uniform policy of improving and adopting new and better equipment—every "RandS" installation reflects this policy.

Let us tell you what this policy provides for your 1926 requirements.

Some of our 1925 Clients are

National Mining Co., National Station, Pa.	Marcus Tipple
Pittsburgh Coal Co., Pittsburgh, Pa.	Marcus Tipple
Gulf Smokeless Coal Co. Covel, W. Va.	Air Cleaning Plant
West Canadian Collieries, Blairmore, Alberta	Air Cleaning Plant
Hillman Coal & Coke Co., Edna, Pa.	Marcus Tipple
E. E. White Coal Co., Stotesbury, W. Va.	Marcus Tipple
Upland Coal & Coke Co. Elkhorn, W. Va.	Marcus Tipple
Algoma Coal & Coke Co., Algoma, W. Va.	Marcus Tipple and Air Cleaning Plant
Pittsburgh Terminal Coal Co., Castle Shannon, Pa.	Local Trade Bins
Berwind White Coal Mining Co., Windber, Pa.	Air Cleaning Plant and Tipple

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ENGINEERS AND CONTRACTORS

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Peerless Coal and Coke Co. Vivian, West Virginia

Fordson Coal Company Twin Branch, W. Va.



Hillman Coal & Coke Co., Edna, Pa.

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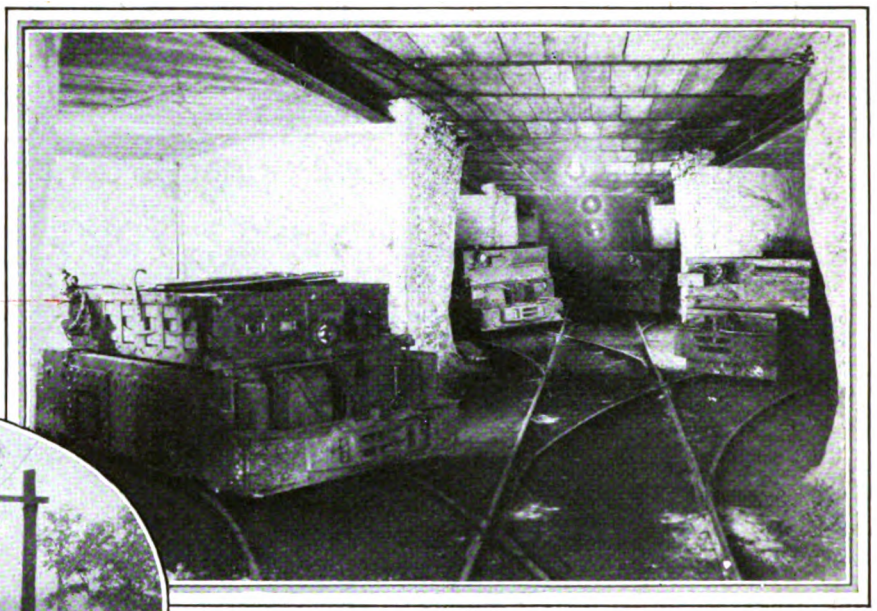
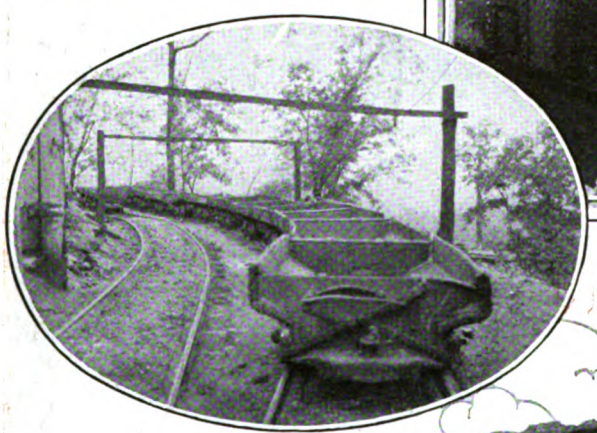


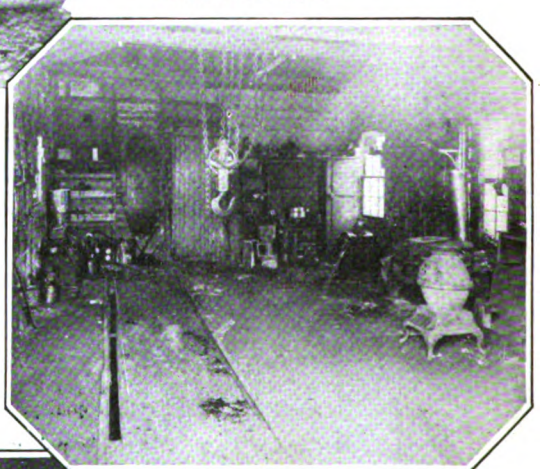
Four locomotives equipped with Exide-Ironclad Batteries, in the charging barn of Consumers Mining Company, Harmersville, Pa. An Exide-Ironclad has a high efficiency on charge. It takes current in quickly, easily, and uses it sparingly.

Here are empties badly needed at the face. When miners have to wait for cars the fault may lie in the speed with which batteries drive your motors. Exide-Ironclads have pep enough to keep cars moving rapidly all day long.



Here's one place you don't want your storage batteries to visit—the repair shop. Where there are Exide-Ironclads this shop stays empty most of the time, for these batteries are rugged.

When the motorman comes to a steep hill he needs extra power. He gets it if he is driving an Exide-Ironclad-equipped motor. Here's one that is breezing up a 4% grade with a long trip of loaded cars—and it's the last trip of the day, too.



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IF you put a storage battery in your motors that will handle more cars per shift, do it in less time, and keep the coal flowing smoothly without fuss or trouble, then your haulage costs will drop.

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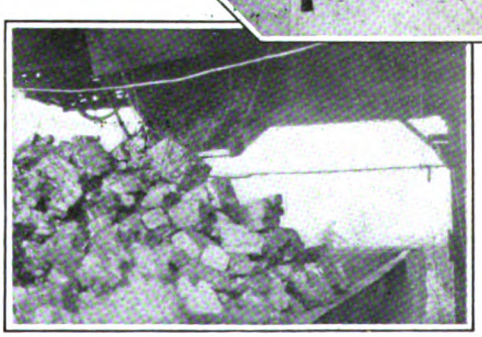
You should know more about Exide Ironclad Batteries. A representative from our nearest branch will gladly call, or write today for a free copy of our Booklet No. 1791, "Facts for Consideration in *Selecting a Battery* for Locomotive Service."



How many cars you ship each day depends largely upon the speed and efficiency of your haulage system, and that in turn falls back upon the work your battery motors do. More cars shipped—and loaded in quicker time—is the rule where Exide-Ironclads are used.

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 29 New York, January 21, 1926 *Number 3*

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Year Gives Impetus to Use of Conveyors Underground 71
BY ALPHONSE F. BROSKY.

Electric Power Load Becomes Profit Criterion 78
BY EDGAR J. GEALY.

Rehabilitation Features Progress in Mines 84
BY FRANK H. KNEELAND.

Experience in 1925 with Mechanical Loaders 90

Coal Industry Battles for Bigger Business 96

Anthracite Operators by Management Cut Costs 99
BY H. S. GILBERTSON and S. D. WARRINER.

Strike Dominated Anthracite History of 1925 102

Labor History Traces Decline of Union Tonnage 104
BY SYDNEY A. HALE.

"Pittsburgh Plan" Puts 16 Mines Back to Work 106
BY ARTHUR R. FRIEDMAN.

Accident Record of 1925 Rivals 1920 109
BY W. W. ADAMS.

Low-Temperature Semi-Coking Benefits Coal 112
BY R. DAWSON HALL.

New Equipment Attacks Cleaning Problems 115

Harrisburg and Washington Hold Attention in Hard-Coal Difficulty 134

Wage Cut and Abolition of Check-Off Demand Urged by Nova Scotia Royal Coal Commission 135
British Labor Would Nationalize Mines 135
Cosgrove-Meehan Takes Over Dilltown Mine 135
Organize Company to Mine Virginia Anthracite 135
Nation's Lawmakers Expect Negative Result from Pinchot Venture 136
Pittsburgh Coal Co. Opens Dickson Mine 136
Pittsburgh Coal Promotions 136
Bain Off Advisory Committee 136
Gas Explosion in Open-Lamp Mine Kills 91 Men at Wilburton, Okla. 137
Good Barricades Save Lives of 20 but 19 Die in West Virginia Blast 138
F. W. Lukins Dead at 70 138
Bureau of Mines Abolishes Urbana (Ill.) Station 138

Editorials 69
Annual Domestic Market Review 118
Annual Foreign Market Review 130
Weekly Review and the Market 139
Foreign Market and Export News 144
News Items from Field and Trade 145
Traffic 148

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Swift Tonnage

FAST LOADING of coal underground by machines has taught the Sheridan-Wyoming Coal Co. several truths that are not always accepted by men with less experience in operating loaders. One of these explained in an article in next week's issue of *Coal Age* is that a mine may not reduce its number of pit cars when it goes on a loading machine basis. This Wyoming company had 475 cars at Acme in hand-loading days before last June and did not retire a single one. Instead it had to increase the capacity of them all.

GOODMAN SHOVELING MACHINES working in rooms have averaged 196 tons for a whole month in this mine and the latest type Joys in entries averaged 160 tons. These figures are high but so is the coal. Improved shooting methods and perfections in haulage, with 5-car partings in each room to keep empties always at hand are expected to raise the tonnages even higher.

SIBERIAN COAL MINING comes in for a further treatment in next week's issue by Alfred Pearson, Jr., whose initial article, describing general conditions in the Kuznets basin appeared in this magazine Nov. 26, 1925. Mr. Pearson, who ran a group of mines for the Soviet government, explains some interesting things about primitive Russian mining and remarks upon the opportunities for betterment such as the Russians are striving after in the new mining movement they are initiating with the advent of 1926.

Advertising Index—Alphabetical, 160; Classified, 157; Consulting Engineers, 152; Searchlight Section, 153-155

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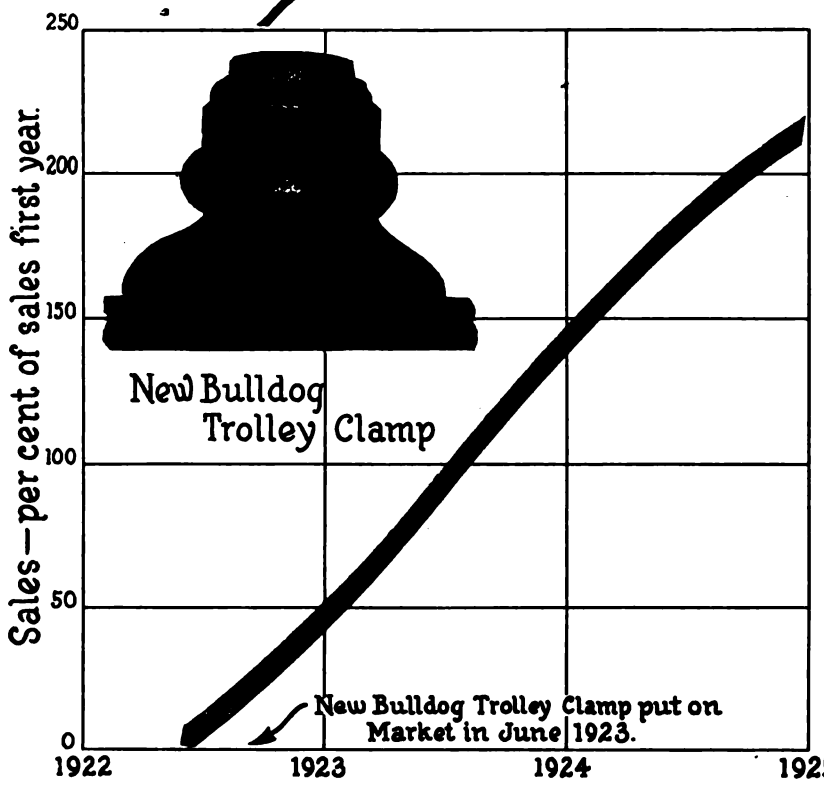
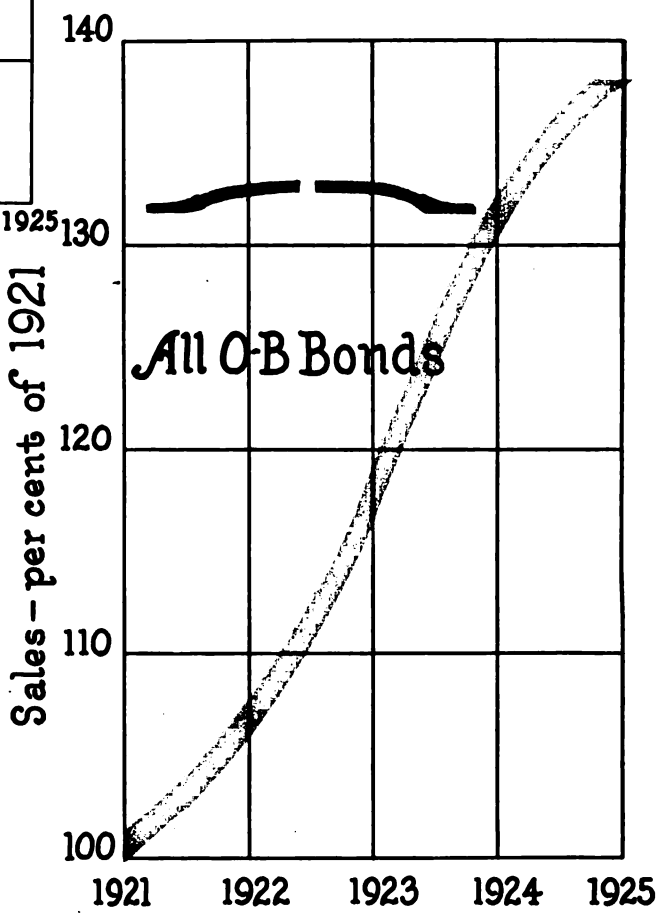
Merit Alone





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COAL AGE

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 29 NEW YORK, JANUARY 21, 1926 Number 3

A Year of Reconstruction and Business Activity Without Inflation Predicted for Bituminous Coal

DESPITE ALL THE disappointments of the year 1925, the industry enters 1926 not without renewed hope. The United States is just over the threshold of a period of prosperity which appears to be based on a most substantial footing. There is no panic purchasing. People are not buying for speculation nor are they placing a half-a-dozen orders in the expectation of cancelling five when one of the six is filled. So there is a safe and sane background for aggressive business. It seems likely to continue.

The bituminous coal industry is active. The whole coal tonnage for 1925, large as it is, does not give any adequate indication of the activity for 1926, because the output of the later months when business got its stride is immensely greater than in preceding months of the year. It is not safe to predict the market activity for 1926, but it should be a bigger year than that which preceded it. Stocks are not abnormally large, 48 millions on Nov. 1 of last year, enough for only 35 days at the present rate of consumption. The only uncertain and abnormal feature in the record productions of bituminous coal now being made is that they, in part, result from the anthracite strike.

Five Years of Bituminous Coal

	Annual Output (Net Tons)	Av. Spot Price (*Coal Age* Reports)
1925	523,072,000	2.06
1924	483,687,000	2.08
1923	564,565,000	2.77
1922	422,268,000	3.67
1921	415,922,000	2.55
1920	568,667,000	5.64

No rocks are ahead till 1927 and perhaps none then. No one is alarmed about the prospect of getting all the coal he wants. So there is no fever for fuel, only a steady healthy demand. Toward the end of the year production will be sustained, perhaps, from fear of a strike, but just now the industry has no such stimulus to business and yet the market is exceptionally brisk. In consequence, bituminous operators are hopeful of a large production and the only dampening influence is the low price of the product. The bigger and better mines will not fail to draw some dividends while the present condition lasts. In the summer a falling off is to be expected. That is every year's experience, barring a strike. By and large, 1926 will be a good year, though as far as prices are concerned not a booming one.

Large consolidations and the extensive entry of capital into the business as the result of bond issues (over $150,000,000 since early in 1924) are sure to help to steady the market. Bankers do not advocate an excessive anxiety for business such as would cause production to be conducted at a loss. In consequence all the gains in the technique of the industry, all the mechanisms and applications in loading machinery, electrification, conveyors, low-temperature carbonization and preparation are bound to make further progress. The advance in 1925 under the terribly adverse conditions which the industry faced during the greater part of the year make this certain. The many articles on these subjects in this issue, all give verification and countenance to this assurance. This will be a year of reconstruction.

Fortunately the industry is mending its standing with the public. The closing years of 1925 showed the anthracite industry entering into the good graces of the man on the street, a position which the bituminous industry gained, in the beginning of the year, as a result of its multiplied tribulations. One cannot but feel that the present anthracite strike must soon come to an end. The operators have taken a most reasonable stand and are supporting it by action that deserves and receives approbation. On the whole the anthracite operators merit and are receiving the goodwill of the public. As for the miners, they are beginning slowly to see that in their strike they are not opposing the operators' interest so much as their own. How long will they be in realizing that they have asked of the union, the operators and the public more than conditions will permit? For their sakes and for the sake of everyone, their well wishers trust that soon a more reasonable attitude will prevail.

A gratifying increase in output was registered in 1925. In 1924 the United States production was 483,687,000 net tons. This year the tonnage is estimated by the Bureau of Mines as 523,072,000, an increase of 8 per cent over 1924. The anthracite mines produced 62,120,000 tons in 1925 as against 87,926,000 in 1924. This decline was due, of course, to the extended hard coal strike.

The cost of bituminous coal according to the *Coal Age* index averaged $2.06 in 1925 and $2.08 in 1924. The improvement in equipment and the cutting out of high-cost mines would account for more than these 2c. So it would look as if the year 1925 made a better record on the books than the previous year. A study of coal uses, however, is to be recommended. No industry can rest with comfort so long as it finds its capacity so grossly in excess of its market as does the coal industry.

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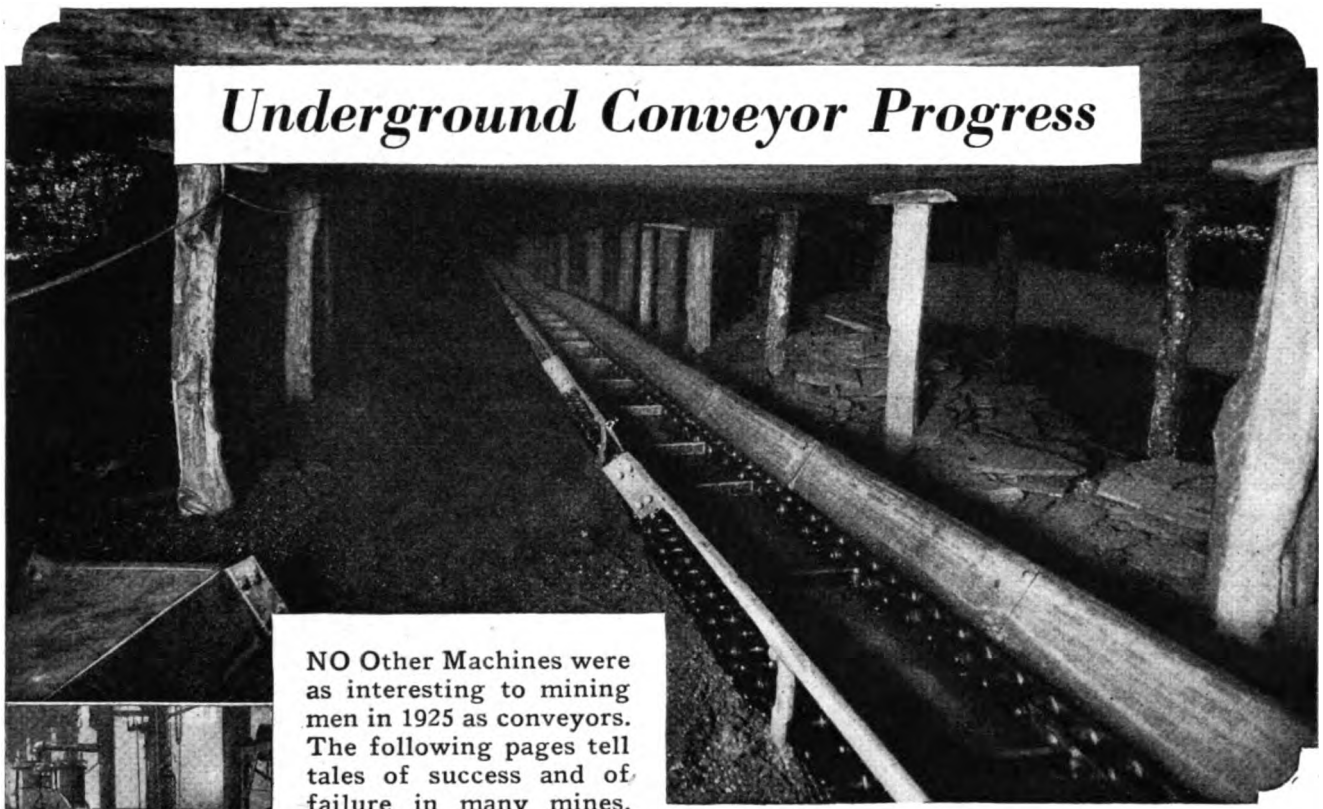
Underground Conveyor Progress



NO Other Machines were as interesting to mining men in 1925 as conveyors. The following pages tell tales of success and of failure in many mines. Various belt, flight, pan and shaker devices loaded about 5 million tons in a volume increasing daily.

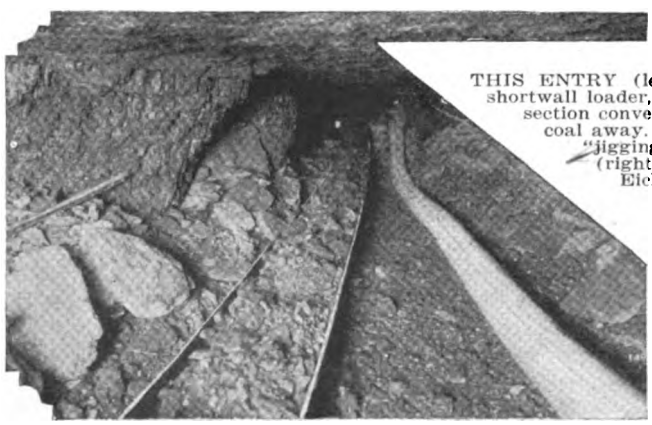
THIS ROOM CONVEYOR in low coal is used successfully in a room-and-pillar layout in the Knickerbocker mines near Johnstown, Pa. Coal is loaded onto self-contained face conveyors which discharge into this sectional conveyor leading to the haulway. The under strand moves on the floor and over rollers on about 6-ft. centers, making for light weight construction.



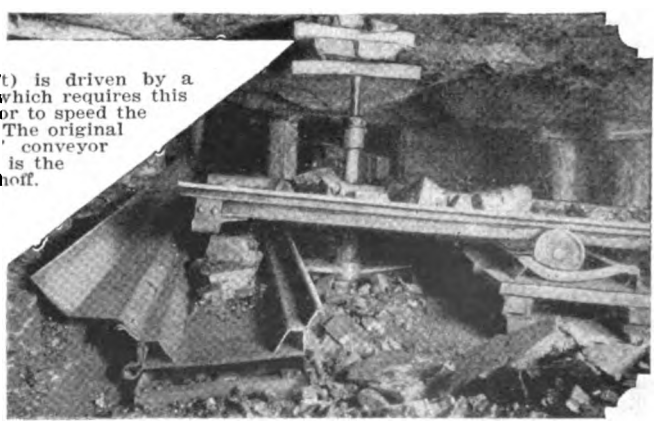
AN ARMORED CONVEYOR which, when placed close to a long undercut face, would stand up under a fall of coal, was desired by the Bertha-Consumers Co. This Fairmont face machine met the specifications.



IT IS a small trick for a man to load 30 to 40 tons of coal on a conveyor which is placed so close to the face as this one at Sweetwater, Wyo. It almost touches the props and cribs. The latter are always used though generally they do not take much weight.



THIS ENTRY (left) is driven by a shortwall loader, which requires this section conveyor to speed the coal away. The original "jigging" conveyor (right) is the Eickhoff.



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Year Gives Great Impetus to Use of Conveyors Underground in Many Coal Fields

Probably 5,000,000 Tons Were Handled by Various Types of Belt, Pan, Flight and Shaker Machines—Pittsburgh Coal Co. Developed Y System with Them

By Alphonse F. Brosky
Assistant Editor, *Coal Age*, Pittsburgh, Pa.

IN 1925 THE production of coal loaded by hand into conveyors nearly stepped up to the production loaded by machines into mine cars in our bituminous mines. Conveyors played a part in the mining of about 1 per cent of the country's production of soft coal last year or approximately 5 million tons. This is an estimate which seems to be well substantiated by the far-flung activity along this line. Conveyors are being built and used everywhere. Without doubt there are in existence now more types of conveyors than there are loading machines. because they are simpler mechanically and, therefore, more easily built. Their application to the mining of coal is more rapid than that of loading machines because they are more flexibly handled. In 1926 the industry may see more coal mined by the use of conveyors than by the use of loaders.

In what has already been said it is not intended to infer that the conveyor eventually will supersede the loader, for each has its special capacity to meet different sets of conditions. Primarily, the loader saves labor and the conveyor saves time; together, each facilitates the use of the other. As individual units the two have not yet been successfully co-ordinated but that will, and must, come later.

Of the conveyors now in use, some are light for the sake of portability; others are heavy and rugged enough to withstand the fall of a cut of coal upon them when they are laid to touch the face. Some are self-contained and others are sectional; all are more or less portable, as they must be. Wood, steel and rubber are worked into the construction of mine conveyors of many types using belts, flights, aprons or shaking pans.

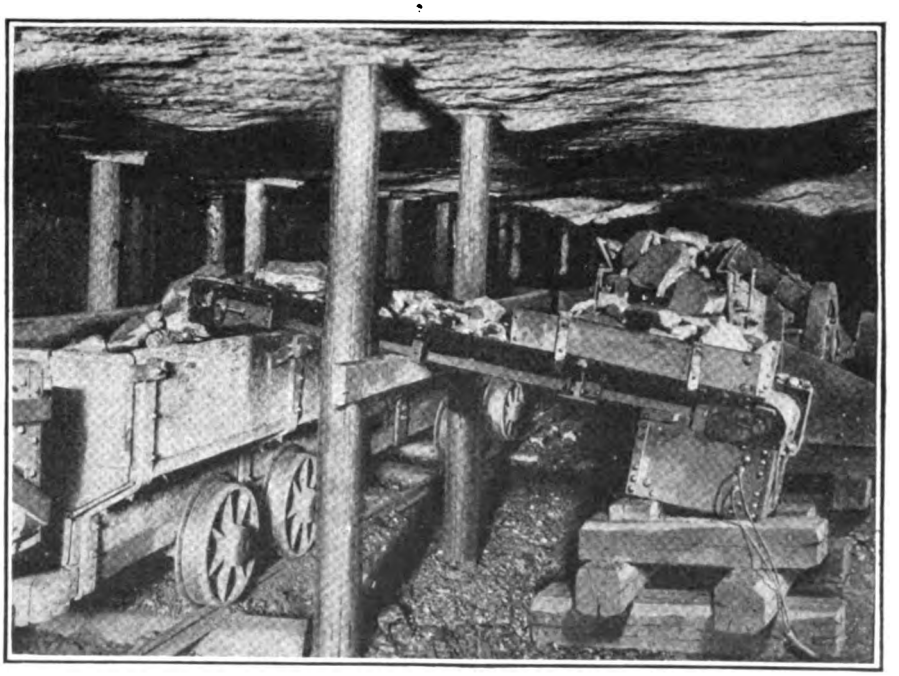
These at first were applied to long face layouts, the belief being current that the tonnage obtainable from a given area mined by rooms and pillars was not sufficient to insure efficient conveyor operation. Concentrated and intensive working is proving the good judgment of those who are applying conveyors to room-and-pillar layouts where long faces can be maintained only with extreme difficulty.

Light and portable, self-contained conveyor units, which can be thrown together at will, are doing fine work in the drawing of pillars from rooms and entries. In the brief period of a year the conveyor has sprung to a place of real importance. It now bids fair to transcend the lead which the loading machine heretofore has enjoyed.

Variations in the design of present-day conveyors are only partly due to the ingenuity of the makers. Mining men, understanding the requirements of the conveyors and the conditions under which they must work, have specified details of design and have dictated changes. This they have done to a far greater degree than with mechanical loaders. Several distinct types of conveyors are required, for one variety will hardly meet any two conditions inasmuch as the design must depend upon the duty of the machine.

The H. C. Frick Coke Co. has pioneered in the use of a heavy face conveyor. It contends that for successful longwall operation the unsupported span of roof between the face and the timbers must be a minimum and, therefore, that the conveyor must be laid so as to touch or almost touch the face before the latter is shot down. So placed, it must be rugged enough to withstand the fall of a cut of coal. This arrangement is advantageous in that much of the coal is placed on the conveyor without shoveling.

This company seems to place its hopes for more efficient mining on true longwall layout. Spasmodically it has experimented with straight



Portable Transfer Conveyor

The short conveyor in the foreground transfers coal from a longer sectional conveyor which is parallel to the mine track. This arrangement provides a means of loading in a room a trip of a length equal to that of the parallel conveyor. The one here shown is a self-contained Jeffrey flight conveyor with a capacity of 60 to 75 tons per hour.

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faces in its Leckrone mine with no startling results but is continuing active planning in this direction. Right now it is arranging a trial of retreating longwall, not necessarily from the boundary but from a starting point several thousand feet within solid coal.

In the Sweetwater mine of the Gunn Quealy Coal Co., in Wyoming, a Link-Belt sectional conveyor is working on a 250-ft. straight face. Three such faces, each using 500 ft. of conveyor, are in operation. The conveyors were first employed in a modified V-layout but the feeling that a greater tonnage from the same length of conveyor could be obtained by straight faces caused the shift to the latter. The coal averages 6½ ft. thick and lies on an average pitch of 5 deg. Over it lies a good sandy shale top. One of these faces during August of last year averaged 359 tons per day.

Props of 8-in. diameter are placed on 18-in. centers along the entire length of the face and are backed by a row of cribs on 15-ft. centers. The cribs are built of rejected railroad ties resting on about 6 in. of bugdust. They seldom take weight and serve their purpose only when an unusual condition causes the roof to ride over to the face when they protect the men and machinery. The roof caves every other cut. The coal which lies under 500 ft. of cover is shot directly onto the conveyor. Despite this fact, because this machine is heavily constructed, reasonable falls have not in the least damaged the conveyor. By this arrangement approximately 10 per cent of the coal is loaded out without shoveling. Recovery in the sections worked by long faces thus far has been 100 per cent.

Long Straight Face Used

Experience at this mine has shown that the long straight face is more flexible than the V-face and stands better during idle periods caused by a lull in the market. The company believes, however, that continuity of operation is a big factor contributing to successful long face operation.

In the Rachel shaft of the Bertha-Consumers Co. in West Virginia, heavy face conveyors are operated on a series of 100-ft. saw-tooth faces in the Pittsburgh seam. These are developed by rooms, 12 ft. wide on 80-ft. centers, turned at right angles to the butt entries. Movor and Fairmont flight conveyors are placed along these faces which are at 50 deg. to the rooms. These conveyors



Conveyor Hastily Digs Out of This

This photograph of a Jeffrey sectional conveyor operating on a 300-ft. face was taken immediately after the coal was shot down. The coal is lumpy and has rolled out to and on the conveyor satisfactorily. At least one-third of this shot will be loaded out with scarcely any labor on the part of the face men. The coal is undercut on one shift and loaded in a following shift. Fifteen loaders, stationed at 20-ft. intervals, have loaded out as much as 480 tons per shift or 32 tons per man.

are elevated so as to discharge into mine cars in the rooms. The face and the room track not flanked by coal are protected by cribs placed on a bed of bugdust, as in the Sweetwater mine. The crib is built so that by the removal of a trigger timber, it collapses falling forward toward the face. The salvaged timbers are utilized for rebuilding cribs closer to the face. Six men in a single shift are expected to load one cut which yields 150 tons.

Inasmuch as the coal is shot directly onto the Fairmont conveyor in the Rachel mine, the machine must be rugged in design and the chain totally inclosed, which necessarily adds to the weight of the machine. The frame is made up of bolted-together sections, about 6 ft. long, which are somewhat flexible when the bolts are not drawn tightly. The conveyor is taken apart only when it is moved from place to place. It is shifted forward by jacks or by mining machine chain or by barring it over greased skids. The drive section may be placed at any intermediate point and is reversible so that the motor may be placed on either side of the conveyor.

An interesting longwall-conveyor operation is in the mine of the Paris Purity Coal Co. in the Paris basin of Arkansas. The bed being mined averages 24 in. thick, is free from partings, and pitches about 5 deg. The roof is of hard shale and the bottom of hard clay to a depth of about 5 in., below which is another layer of hard shale. The layout consists of faces 275 ft. long and on a pitch of 3 deg. at right angles to the haulways serving them. These faces extend across the end of blocks 1,200 ft. long and are mined advancing. A conveyor is placed along the face and loads direct into mine cars in long trips on the haulway in which 4 ft. of bottom is lifted. The conveyor used was designed by Clarence Claghorn, consulting engineer, of Baltimore, Md., and was furnished by the United Iron Works, Kansas City, Mo. It meets the requirements specified by the coal company, which stipulated that the height be limited to 7 in. and that it carry the coal, not drag it. The traveling element consists of a double-strand chain, each strand of which is about 10 in. wide with a pitch of 5 in. The capacity of this conveyor is 60 tons per hour.

Conveyor Breaks Coal

Lump only is loaded on this conveyor so that the coal does not rub to any extent on the bottom of the pan. Practically all the coal mined is lump due to the practice of allowing the weight of the cover to break the coal which, incidentally, is hard and lumps well. After being undercut (in the clay) the coal falls as one slab from one end of the wall to the other and must afterwards be broken into lumps by sledges and wedges. In the cover, which is 130 ft. thick, is some sandstone and sandy shale; yet breaks extend to the surface. This company has found that the roof must be supported rather rigidly near the face if the roof is to be broken and that breaks must be

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made if the system is to succeed under these conditions.

Sand jacks, designed to withstand a pressure of 300 tons, are employed to support the roof. They consist of a heavy cast-iron cylinder fitted with a plunger which, in working position, rests on sand. A bleed valve is provided at the bottom of the cylinder. Though the sand is subjected to an enormous pressure it is easily drawn off. During the last year over 100 of these jacks have been put into use. Many of them have been in service for a full 12 months and have proved successful in breaking the roof along definite lines. Patent rights covering this jack have been applied for.

A 5-ft. undercut along this face yields 90 tons of coal which is loaded in a single shift by seven or eight men. On the night shift are two timber men, two cutters and one shoveler who gobs the clay cuttings. Due to the small capacity of the car in use three men are required on the entry—two trimmers and one conveyor operator. H. Denman, consulting engineer, and president of the Paris Purity Coal Co., contributes further some interesting experiences and comments on conveyors and mining in general:

"The Paris Purity Coal Co. installed its first conveyor, 250 ft. long, a little over two years ago. In 1925 we installed one more 250-ft. conveyor and one 300-ft. conveyor. All three are of the same general type. Since the Paris Purity Coal Co. installed its first conveyor twelve others have been installed in the Paris field by different operators. At this time all these conveyors appear to be operating successfully. Most of these machines have been installed within the last year and a number of them within the last three or four months. They are all of the chain type furnished either by the United Iron Works on the design worked out by Mr. Claghorn, or by the Pittsburgh Boiler & Machine Co. of Pittsburg, Kan., on a somewhat similar design, though much lighter and cheaper. The conveyors are all working on faces ranging from 200 to 300 ft. in length. Sometimes a wall is started about 100 ft. long and gradually extended.



Close-Up of Link-Belt Conveyor

This conveyor is installed in the Sweetwater mine of the Gunn Quealy Coal Co. in Wyoming. The heavy chain and scraper flights have been comparatively free from break-downs. They stay on the bottom of the trough carrying with them all of the coal which is placed on the conveyor.

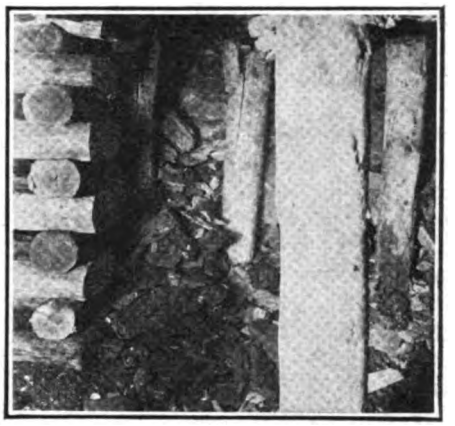
"Our first conveyor is now working for the third season, operating practically every day the mine runs and producing from 85 to 100 tons a day. The second conveyor, which is 300 ft. long, was installed about the middle of last summer. It puts out about 100 tons a day. The third was installed this winter. My partner, Mr. Johnson, believes that with a 200-ft. wall he will have fewer difficulties in handling the roof than with a longer wall. The last conveyor is being used in a layout which is virtually a 200-ft. room served by a roadway which is brushed on one rib.

"In the operation of these conveyors it is our aim and intention to load out one cut every day. In low coal especially, I believe conveyors are not a success unless one cycle of operation is completed every 24 hr. If on any day the men fail to load out the entire cut, so that the wall can be cut again that night, during that day and the one ensuing a loss of money is sure to be sustained.

Must Keep Even Bottom

"As we cut in a hard clay under the coal the machine runners at first made a step of some 6 to 10 in. along the entire length of the cut, which caused trouble in moving the conveyors. Later on, the machine runners learned how to keep an even bottom. We have found that certain types of mining machines can cut a more uniform and even bottom than others, an important point which must be kept in mind to insure ease in moving the conveyors.

"Out of nearly 30 mines operating in the Paris field I believe there is only one working on the room and pillar system, and at this mine the rooms are driven 100 ft. wide. In this field longwall holds sway and the mines have been worked in this way for six or seven years. The longwall system is what put Paris on the map. The conveyors here are not just being used on trial or as an experiment. They are being used every day to mine the coal. At our mine about three-fourths of the output comes from conveyors and if these cannot work the mine is shut down.



Props and Cribs Behind a Long Face

This face is under 50 ft. of cover. Even so, the roof caves every other cut. The props have an average diameter of 8 in. and the cribs are constructed of rejected railroad ties resting on a bed of bugdust.

"Judging from a number of articles I have read, it seems that many of the conveyor systems in the country are being tried out only to see what they can do, and not as a regular system of producing coal. I note in a recent article that a company put in a system similar to ours, using scraper loaders, the use of which was discontinued after they had been proved successful. The conveyors in the Paris field are standard equipment on which we rely in making our living in the coal business.

"During the last year there has been considerable agitation on the part of the United Mine Workers to force some kind of a contract on the operation of these machines. The operators of the Paris field believed it impossible to inaugurate any kind of a contract scale for these conveyors that will meet the varied conditions encountered in operating them.

"It has been the experience everywhere in the past that when the miners make a scale no reduction in the cost of operation is possible. The scale for contract work is always based on the present method of mining and made high enough to absorb any advantages in the system by allowing the operator only a small differential which in most cases does not cover the power bill for the operation of the machinery, much less take care of interest, depreciation, repairs and the great risks of failure when new machinery and processes are tried out."

In the No. 5 mine of the Kemmerer Coal Co. at Sublet, Wyo., in a seam which pitches 20 deg., shak-

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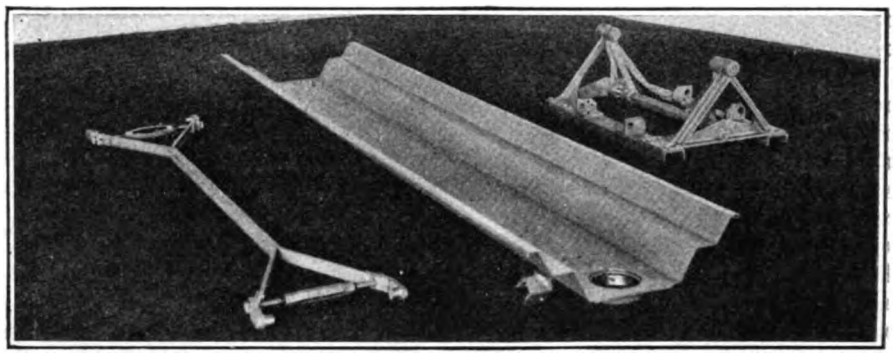
ing conveyors are operated on a 100-ft. face which is turned to give a 3-deg. inclination. The coal is about 5½ ft. thick and is topped by a weak roof which falls when not supported. The thickness of the cover is about 1,100 ft. of which at least 50 ft. is sandstone. The coal is not undercut. Ten face men and one man on the entry jointly produce about 125 tons in 8 hr., all mining duties accounted for. The direct result of this layout has been better coal, less powder consumption and higher recovery.

The face conveyor is placed 5 ft. from the coal in each advance. Five rows of props on 5-ft. centers each way are maintained behind the conveyor and two rows of props are set between the face and the conveyor before the latter is advanced. The face conveyor discharges into a second conveyor which is on the pitch. At the lower end of the pitch conveyor is a curved chute which causes the coal to discharge into the mine cars on the haulway in a direction parallel to the track.

The sections of this conveyor are suspended from chains hung from cross bars between posts. The forward stroke is imparted by a motor-driven engine and the return stroke by a helical spring.

In the low coal beds of central Pennsylvania the Pennsylvania Coal & Coke Corp. has driven rooms 25 to 35 ft. wide and drawn pillars by the use of portable and extensible belt conveyors, resulting in a substantial increase of efficiency of cutters and loaders. The most satisfactory results from conveyor loading in these mines have been obtained in the drawing of entry pillars. Light, 12-ft. and 20-ft. belt conveyors, made by the mechanics of the company, have proven most satisfactory in this work. The company believes it is too early to tell whether or not the wear and tear on these conveyors and the labor of shifting them will offset the economies effected in cutting, shooting, loading and hauling.

Great concentration and speedy recovery are obtained by the use of conveyors in a room-and-pillar layout in the mines of the Telford Coal Co. and the Jasahill Coal Mining Co. in central Pennsylvania. Here the Suppes sectional conveyor is used, supplemented by self-contained, portable belt conveyors. Rooms are driven 35 ft. wide and 250 ft. long, leaving 18-ft. pillars. Five men completely mine as many as three cuts from such a room in one shift and as many as four from the pillar which is drawn immediately after the room reaches its limit. A saving of 25 per cent in the production cost is reported. This conveyor is used also in these mines to advance entries and for brushing the top or taking bottom.



Ironton Conveyor Parts

Each trough section is composed of only three pieces which are joined together without bolts. For each trough section there is one hanger and one spacer which holds the latter in position with respect to adjacent hangers. The trough sections are fastened together by a flexible point, the respective mates of which are a part of the trough sections. Accurate alignment is unnecessary.

Down in Alabama in the Aldrich mine of the Montevallo Coal Mining Co., in the Cahaba field, which works the Montevallo bed lying on a pitch of 12 to 15 deg., true longwall and conveyors have been in operation for a long time, the former since 1906. In this mine five 325-ft. faces are mined advancing by the use of shaking conveyors after at least one other type had been tried and scrapped. On each face are employed a total of 8 men on the night shift and 16 men on the day shift, of which 10 are loaders. These men take one 4-ft. cut a day in coal which is 50 in. thick including about 16 in. of rashings. The mine worked 310 days last year and during the last two years only five times has the company failed to make one cut a day on each of the five faces. Convict labor is used exclusively.

METHOD EMPLOYED

The layout, in plan at least, is somewhat like that employed by the Paris Purity Coal Co., of Arkansas, except that the walls are longer and the aircourse on the otherwise closed end of the wall is maintained in the goaf by a pack wall instead of by cribs. Bottom is taken in the haulway—which is kept open behind the advancing face by rock-filled cribs—so that the top of the mine cars is on a level with the bottom of the coal to facilitate direct loading from the shaking conveyors. The walls are turned to provide an inclination of not less than 1¼ per cent in favor of the conveyor load. The average grade is equivalent to an 8-deg. pitch.

The face is kept open by props on 4-ft. centers which are not recovered. Two rows of timbers are maintained behind the conveyor and two are established in front of it before it is advanced to a new position. Bug-dust, rashings and slate are thrown behind these timbers and generally are of sufficient quantity to fill to the roof. Where the quantity is inadequate soft cribs are built over the refuse. The roof, consequently, is allowed to subside gently and does not cave violently as it does in many of the mines where long faces are being tried these days. Definite roof breaks occur every 200 to 600 ft. except where slips in the sandstone of the cover are encountered when much cribbing and timbering is required at great expense. The cover varies from 435 to 800 ft. in thickness.

The conveyor being used is a modification of the Mavor & Coulson shaker. Pan sections, provided with rollers which ride on a cradle, are 9 ft. long. Actuation is through the medium of a rope from the walking beam of a 27-hp. motor-driven shaking engine to a bell crank supported by an anchoring roof jack at the drive section of the conveyor. A ropeway is maintained in the goaf by cribs which obviate the necessity of moving the engine after every cut.

Because it believes as a result of its experience that the maximum efficiency in mechanical loading cannot be obtained by loading directly from the working face into the mine car, and because the seam which it is working is so badly cut up by erosion as to militate against a systematic layout of long faces, the Portsmouth By-Product Coke Co. is turning its attention to the application of conveyors in wide rooms in a room-and-pillar layout. It has already experimented with the layout using mine cars in place of conveyors and is con-

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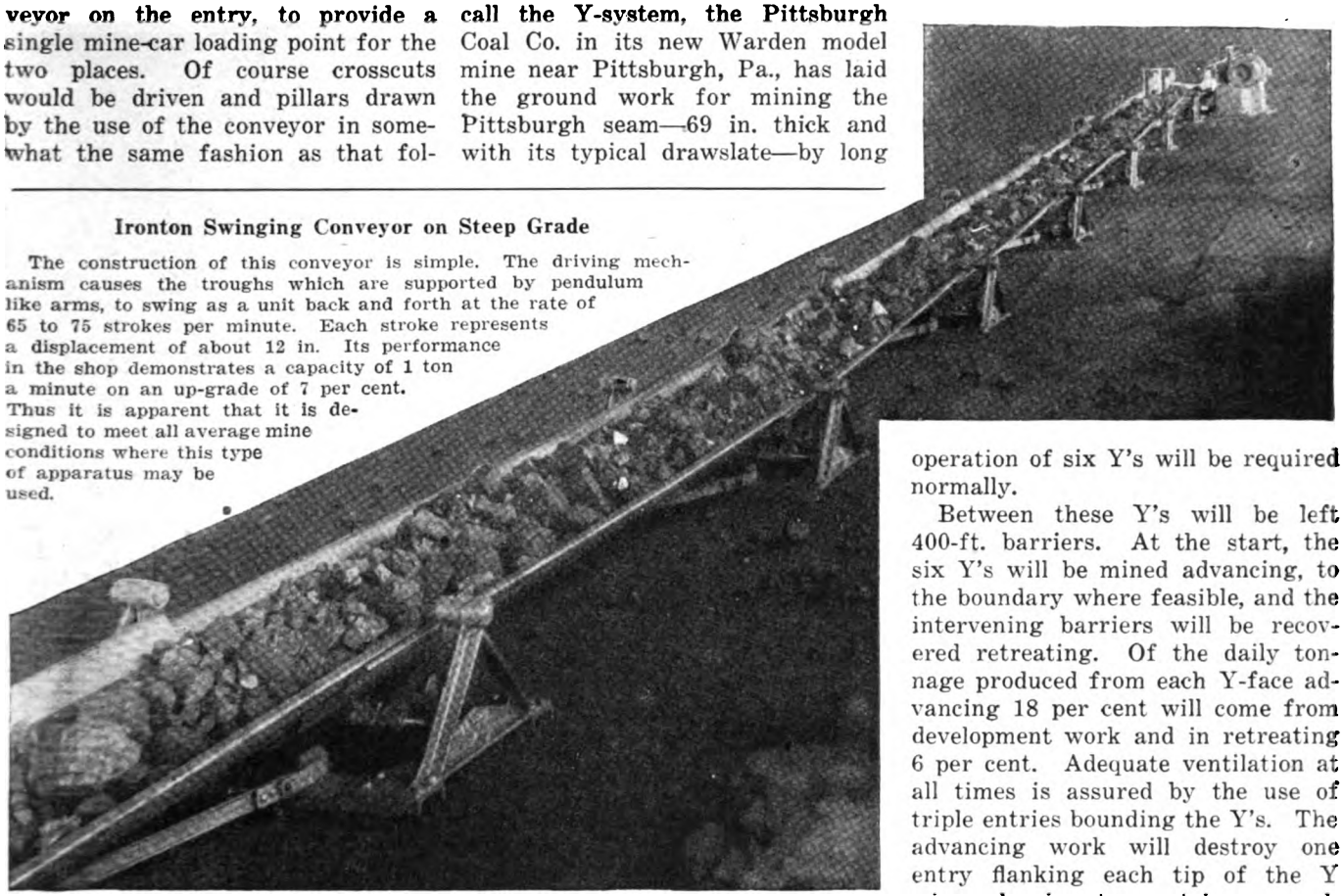
vinced that its roof conditions will lend themselves readily to such a layout, in which conveyors can be efficiently applied.

The plan provides for 40-ft. rooms on 80-ft. centers, driven about 325 ft. long, two of which would be mined simultaneously by face and room conveyors, the last of which would discharge into a common conveyor on the entry, to provide a single mine-car loading point for the two places. Of course crosscuts would be driven and pillars drawn by the use of the conveyor in somewhat the same fashion as that followed by the Knickerbocker Mines in central Pennsylvania. Thomas Devenny, superintendent of its Freeburn mines, believes the tendency is unmistakably in the direction of machines which will cut and load—a necessary adjunct of which will be conveyors.



Ironton Swinging Conveyor on Steep Grade

The construction of this conveyor is simple. The driving mechanism causes the troughs which are supported by pendulum like arms, to swing as a unit back and forth at the rate of 65 to 75 strokes per minute. Each stroke represents a displacement of about 12 in. Its performance in the shop demonstrates a capacity of 1 ton a minute on an up-grade of 7 per cent. Thus it is apparent that it is designed to meet all average mine conditions where this type of apparatus may be used.

At Dawson, N. M., the Phelps Dodge Corp. is using 20-ft. belt conveyors of the Jeffrey type in pillar work and in a narrow-V layout. Two of these conveyors are laid in tandem along the V-faces of blocks 45-ft. wide (developed by single entries) and discharge at the throat of the V into mine cars on a haulway which is maintained partly in the goaf. The haulage arrangement in the working places is like that being followed by the Bertha-Consumers Co. in its Rachel mine. These V-faces in a panel have retreated well over 100 ft. without a pronounced cave, upon which the success of the system depends; so this company is not ready to commit itself on the results of this work. In certain sections of its mines it is effecting a saving by the use of short conveyors, especially on pillars from 40 to 50 ft. wide, by eliminating brushing and the laying of additional track.

By what R. Y. Williams, who is in charge of the work, is disposed to call the Y-system, the Pittsburgh Coal Co. in its new Warden model mine near Pittsburgh, Pa., has laid the ground work for mining the Pittsburgh seam—69 in. thick and with its typical drawslate—by long faces and the use of conveyors and also loading machines when these can be applied to the system.

The plan is that of a double chain of 200-ft. blocks developed by triple entries and divided by single entries. Each of these will be mined by faces which converge to a common point on the one longitudinal single entry between each chain. The faces will be inclined at 90 deg. to each other and each will subtend an angle of 45 deg. to the longitudinal single entry, with which they form a Y. Conveyors will be laid along the faces and in the stem entry of the Y, discharging into cars of 4-ton capacity (hand-filled) on cross haulways.

Each face or wing of the Y is about 282 ft. long, this length being fixed to conform in shift tonnage to the single shift capacity of the equipment installed. Thus an undercutting machine is calculated to cut normally about 18 in. per minute. At this rate it would cut two faces or about 564 ft. in 6 hr., leaving 2 hr. or 25 per cent of the shift as leeway for delays. Incidentally, the plant equipment throughout is designed to handle its output in 6 hr. Since this mine is designed to produce 4,800 tons a day and since each Y will yield about 800 tons per shift, the operation of six Y's will be required normally.

Between these Y's will be left 400-ft. barriers. At the start, the six Y's will be mined advancing, to the boundary where feasible, and the intervening barriers will be recovered retreating. Of the daily tonnage produced from each Y-face advancing 18 per cent will come from development work and in retreating 6 per cent. Adequate ventilation at all times is assured by the use of triple entries bounding the Y's. The advancing work will destroy one entry flanking each tip of the Y wings, leaving two entries on each side for complete-circuit ventilation in the retreat. In either case the goaf will be on the return end of the circuit.

Already this company has initiated the plan by the development of a single wing of one Y. The work was started in a small way so that the details might be worked out and co-ordinated, and because the coal-handling equipment was in the course of construction at the time. Incidentally, it has only recently been completed. This single face had been extended to a length of 220 ft. and advanced 140 ft. from the point of start, perpendicularly to the face, when about two months ago all the mine cars had been filled. The tipple now having been completed the face will be started again.

A major break occurred when the face had moved 110 ft. from the starting point, after which the face was advanced four cuts before it was

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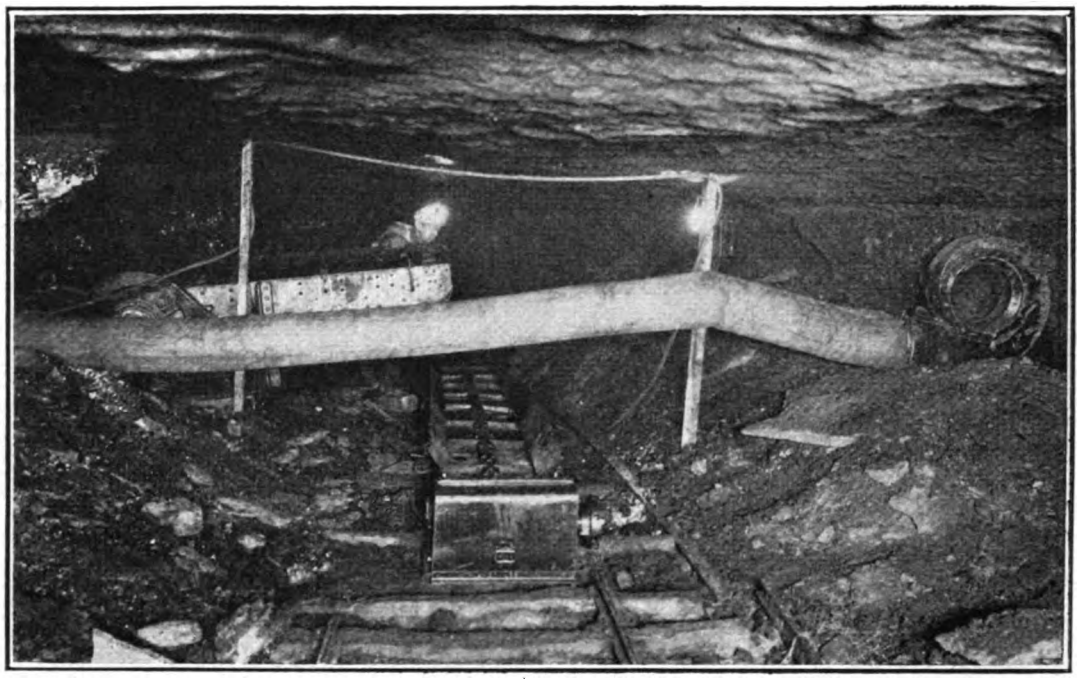
Side Line Type

The tributary conveyor is serving a shortwall loader. That at least two such loaders and two tributary conveyors are in operation is evidenced by the fact that a main conveyor is being used. The location of the blower at a distance from the mouth of the working place which it is ventilating prevents a closed air circuit.



stopped. This and a normal condition at the face after two months of idleness indicates the effectiveness of the roof control system which has been tried out.

The face is held by a line of mechanical jacks, set on 3-ft. centers 6 ft. from the face, each provided with a screw for adjustment and a removable head. A 10x30-in. boiler plate, ½ or ¾ in. thick, is placed over each jack to keep it from pushing through the roof. The drawslate, which is 10 in. thick, is held by steel beams 14 ft. long running perpendicularly to the face. One end of each beam is inserted in a hole cut to a depth of 1 ft. in solid coal while the other end rests in a depression in the head of the jack.

DRILLS 6-IN HOLE 7 FT. IN 30 SEC.

A drill has been built in the shops of the company which in 30 sec. will put in a 6-in. hole to a depth of 7 ft., penetrating a 6-ft. cut and extending 1 ft. into solid coal beyond the limit of the kerf. The beams are inserted in these holes before a cut of coal is shot down. The face plan, therefore, involves a span of heavily supported roof, measuring 6 ft. and 12 ft. from the line of jacks and posts to the undercut face and to the solid coal respectively. Jeffrey sectional conveyors with hand loading are used on the face and in the stem entry leading to the cross haulway. The results thus far indicate the ability of a man to load out 25 tons of coal in 6 hr.

In the C mine of the Union Pacific Coal Co., at Superior, Wyo., an Eickhoff jigging conveyor is now functioning as a take-off for coal gathered by a scraper. Later it will be laid for hand loading along a 275-ft. face which will be extended to 450 ft., worked across the pitch. The Eickhoff conveyor is comparatively new in this country, though it has been used extensively in Europe for many years.

INSTALLATION AT TOMS CREEK, VA.

In a mine of the Virginia Iron, Coal & Coke Co., at Toms Creek, Va., Eickhoff conveyors are working on a 70-ft. face in a layout of 10-ft. rooms on 80-ft. centers. The pillar face is mined retreating from the inby end of the room. Coal is loaded by hand into a face conveyor, which is driven by a chain from a swiveling sprocket attached to the main delivery conveyor in the room. Full details of this installation will appear in an early issue of this magazine.

The Ironton Engine Co., of Ironton, Ohio, completed in the last month the development of a swinging or pendulum conveyor. This machine is simply a chain of interconnected 9-ft. troughs, which are supported by swinging arms pinned from hangers and driven as a unit by a heavy bell crank from a simple crank on a motor-driven engine at the rate of 65 to 75 strokes per minute.

The driving mechanism produces a rapidly accelerated stroke in one direction and a slow stroke in the other. The individual troughs are moved positively as a single unit about 8 in. to the front of the hanger centers and fall back through the remainder of the swing to the rear. Thus is imparted a slow forward and upward stroke in the direction in which it is intended the coal shall move and a quick downward return stroke in the reverse direction. The movement is similar to that which a man uses in slinging coal from a shovel. The swinging design obviates any buckling of the trough sections where the conveyor is erected on an uneven mine floor.

No bolts are used in connecting the units. The hangers are held in correct position by spacers between them. As the joints between adjoining sections are flexible accurate alignment is unnecessary. Two men can easily handle any of the three parts of the extensible portion of the conveyor. A portable scraper conveyor is provided in conjunction with this conveyor. This elevates the coal from the swinging conveyor to the height of a mine car. The height of the discharge end of this conveyor is adjustable.

CHIEF PROBLEMS OF MINING

The introduction of conveyors of itself will not guarantee any advantages over the older method of loading directly into mine cars. The success or failure of any conveyor installation will depend more upon the attention devoted to related problems of layout, supervision and management in general. The ironing out of wrinkles will be accomplished quickly or slowly, as the degree to which the several phases are correlated. The problems encountered are chiefly those of mining and coordinating it with equipment.

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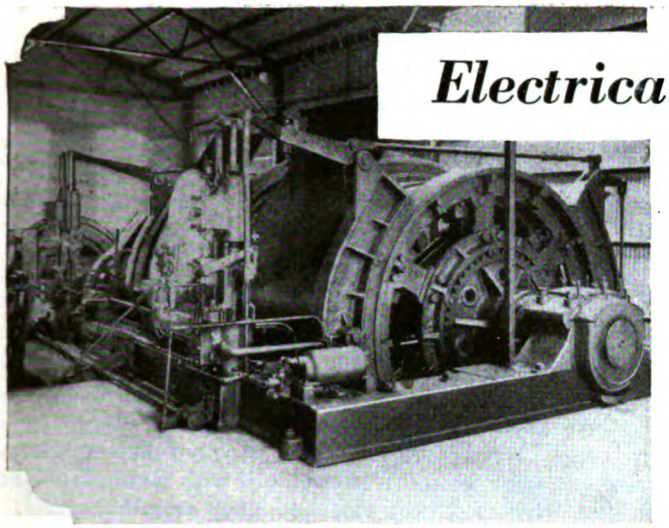
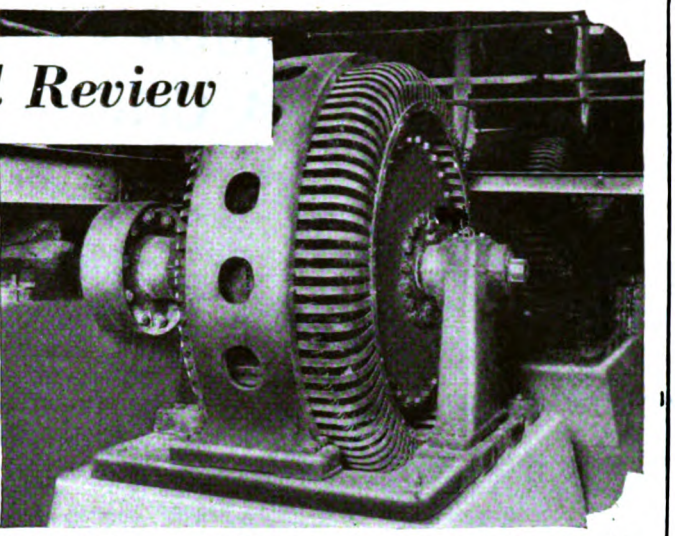
Electrical Review

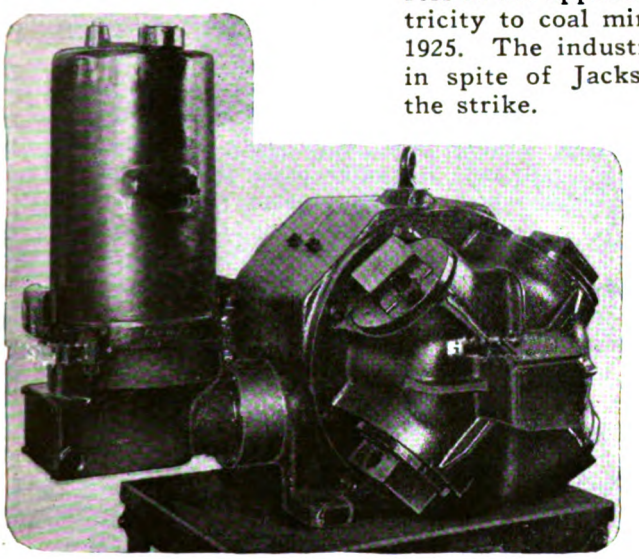


THIS 900-HP. electric hoist is in the new breaker of the Colonial Collieries Co., near Natalie, Pa.

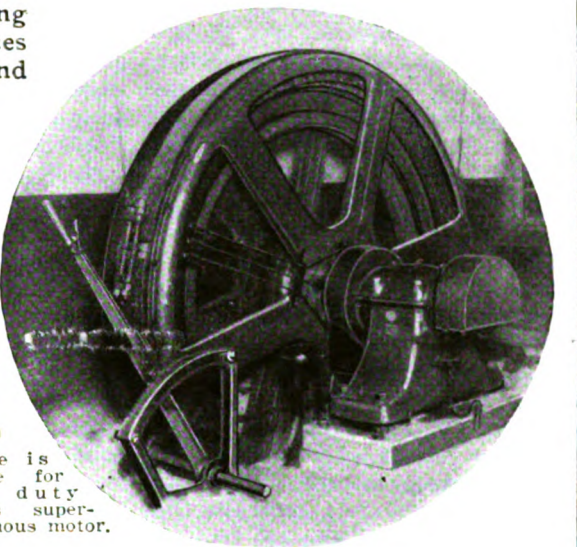


A MAGNETIC CLUTCH is built into the frame of this synchronous motor. Thus the unit is compact and easily controlled.

THE SUCCEEDING PAGES tell a story of progress in the application of electricity to coal mining during 1925. The industry advances in spite of Jacksonville and the strike.

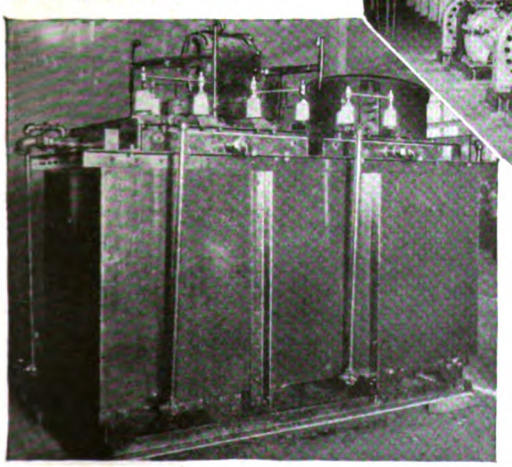


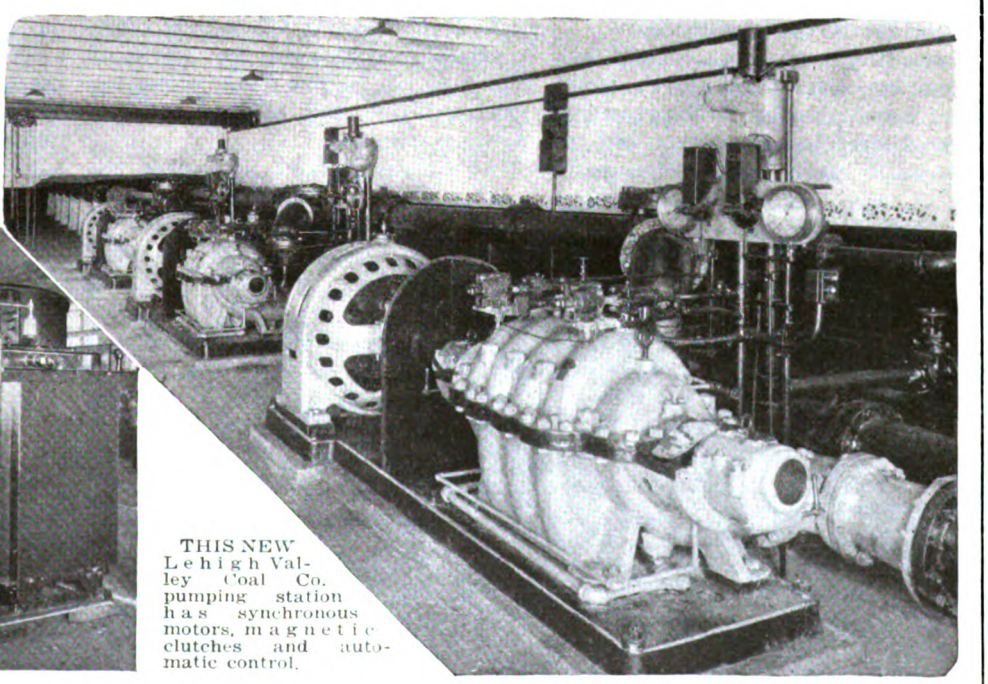
THIS INCLOSED motor and controller for gassy workings is the first complete outfit of its kind approved by the U. S. Bureau of Mines.



HIGH torque is available for starting duty in this super-synchronous motor.

IMPROVED liquid slip regulators like this now control the energy supplied by the flywheel of a motor-generator set.





THIS NEW Lehigh Valley Coal Co. pumping station has synchronous motors, magnetic clutches and automatic control.

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Size of Electric Power Load Has Become A Criterion of Profits

Modernized Plants Are Setting New Ideals of Design, Operation and Success — Investments in Electrical Machinery Show Handsome Returns—Future Is Bright

By Edgar J. Gealy
Associate Editor, *Coal Age*
New York City

THE UNUSUAL profit-producing advantages proved by electrically-driven mining equipment, last year, have left no room for doubt regarding the better efficiency, greater reliability and larger success of motorized apparatus. With the aid of up-to-date tipples, breakers, haulage and pumping systems many mining companies even though operating under most adverse labor, economic and production handicaps have come back with renewed life.

Today, in both the bituminous and anthracite fields, other conditions being nearly equal, successful and unfortunate companies can be divided respectively into two groups—those which are highly electrified and those which continue to work with obsolete equipment by direct use of steam generated at isolated boiler plants.

Most conclusive proof of these facts is found in territories paying high wage scales which still find it possible to mine coal at a profit. Such a territory is that in southern Illinois where one can also see some of the most elaborate large-scale electrifications in the coal fields.

Operating cost data, lately collected by several anthracite engineers, have revealed the large economies of electrical equipment and the wastes of steam-driven machinery, especially, when supplied through long steam lines. Consequently, there are under way many forces tending toward larger and more efficient electrically operated breakers and the rapid abandonment of steam-driven engines. All through the coal fields marked success has been attained by electrical apparatus.

A few weeks ago the Westinghouse and Nordberg two-motor 4,000-hp. electric hoist at the Orient No. 2 mine of the Chicago, Wilmington & Franklin Coal Co., at West Frankfort, Ill., broke the world's daily output record by hoisting 12,823 tons during one shift.

The Glen Alden Coal Co., of Scranton, Pa., lately installed a 15,000-kva. turbo-generator, built by the Allis-Chalmers Manufacturing Co. At the same time an addition was built to the Nanticoke power plant large enough to house fourteen new Stirling type boilers of sufficient size to handle about 45,000 kva. more generating capacity.

CONFIDENCE IN ELECTRICITY

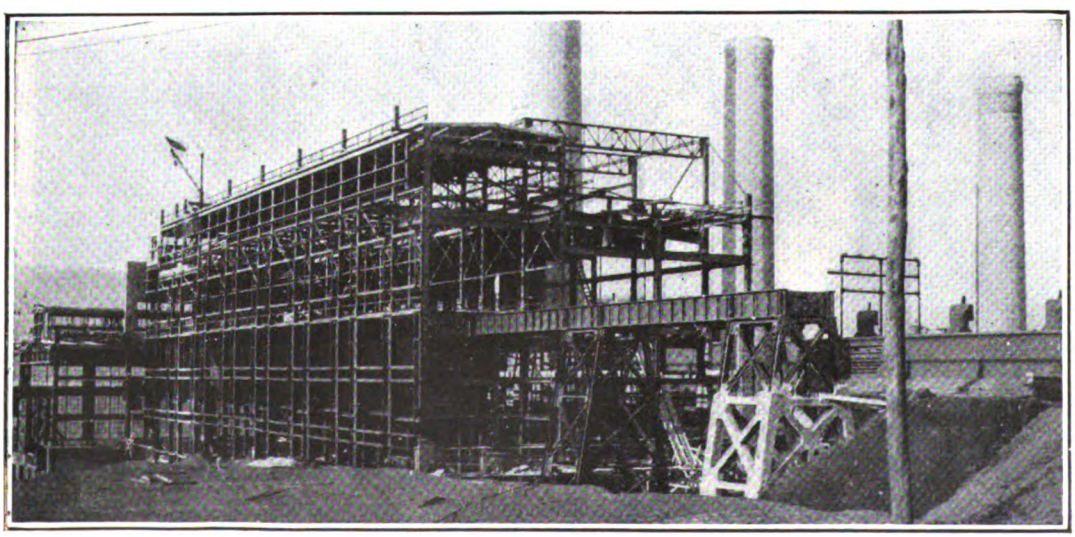
In Illinois the Old Ben Coal Corp. practically completed its work of changing its mines from steam to electric drive and effected unusual power savings.

At Colstrip, Mont., the first all-electric open-pit mine was made possible by the use of two 60-ton General Electric storage battery locomotives equipped with Exide-Ironclad cells rated at 1,800 amp.-hr.

Within a radius of a few miles, in the lower anthracite region, three new electrically operated breakers destined to set new standards of construction, operation and success are being completed.

The largest of these is the 10,000-ton breaker of the Lehigh Coal & Navigation Co., at Lansford, Pa. Standing near the site of the old wooden breaker, which formerly prepared the coal at this place, all the surrounding buildings are dwarfed by the new structure of steel and concrete which towers more than 200 ft. above the ground level. Mine cars are transported to and from the breaker on four inclined trestles. Near St. Clair, the Repplier Coal Co. is finishing a modern electrified steel breaker known as Newcastle Colliery. Here there is a connected motor load of 4,500 hp.

Between Mount Carmel and Shamokin the Colonial Collieries Co. has erected an electrically operated breaker completely covered with asbestos siding. This building is unique in many other respects. Flotation coal cleaners, manganese-



Mine Power Plant Made Larger

Fourteen new boilers can be placed in this addition to the Nanticoke power plant of the Glen Alden Coal Co. This company now has 50,000 kva. in electric generating capacity. Last year the company finished its electrification of all its mine pumps and now the work of complete modernization revolves around fan and hoist drives. Many shaft hoists requiring large-size motors may next be electrified.

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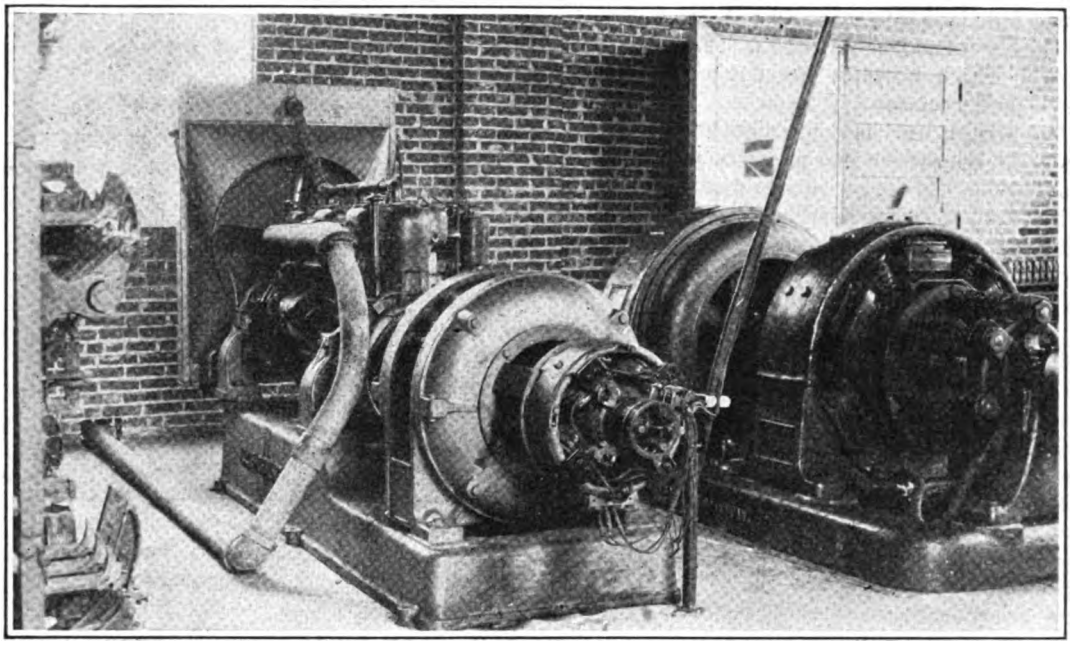
Auxiliary Drive

View in the substation at the North Diamond mine, Earlington, Ky. This shaft mine, one of the St. Bernard group of the West Kentucky Coal Co., is the most modern in that section. The 50-kw. 2,300-volt gasoline-electric generating set is the auxiliary for driving the 50-hp. wound-rotor, variable-speed motor of the ventilating fan. This set was the second of its type to be installed at a coal mine. The first was at the Dehue (W. Va.) mine of the Youngstown Sheet & Tube Co.



steel centrifugal pumps, magnetic clutches, belt conveyors, car dumping equipment, hoists, belt-type loading booms and recovery plants co-ordinated in novel ways and used for new purposes are a few of the items of interest in this most modern coal preparing plant.

Nothing has done more to hasten the formulation of new programs involving the rapid installation of electrical equipment than the collection of comparative operating costs showing the advantages of electric power over steam. One large company has found that in most instances the quantity of steam required for power applications to mining equipment is three times that necessary to generate electricity to perform the same duty. This was at mines which had already electrified its most inefficient machines. Some steam-driven apparatus was found to use as much steam during the 16 hr. of idle time as in the 8 hr. when running. The reason for these conditions was the fact that steam lines must always be kept hot and leaks are almost unpreventable. Also, it is common practice to leave throttles and valves open to keep the lines free of condensate.

Costs Reduced

At a small independent mine in the lower anthracite region, previously well equipped with both electric and steam drives, the change to complete electrification reduced its power costs alone from 70c. to 45c. per ton. Another anthracite company found that when steam and electric energy were used at one of its mines its average power was between 65c. to 70c. per ton. Now, when completely electrified the average cost is about 35c. A saving of 25c. or 35c. a ton may seem small but when applied to an annual output of 8,000,000 tons it amounts to $2,000,000 or $2,800,000.

More than $140,000,000 has been placed recently in the coal industry by means of new bond and stock issues. This money is being spent upon modernization plans. That satisfactory results are attainable is a sure fact, because even companies which have always enjoyed the reputation of being most progressive are realizing worth-while returns upon their investments in more electrical equipment. Such assurances of success will surely exert a strong urge upon many companies which have much greater opportunities to effect savings. A few examples show the results obtained by these new investments.

Proof of Examples

One breaker recently completed is designed to save $1,000 a day. Another similar type structure costing about $700,000 will make a saving of $10,000 a month. More than $100,000 a year will be saved by another company which recently spent $142,000 for a few electrified hoists and pumps which were installed at only one of many mines it owns.

Many new and improved appliances particularly designed for mine service were developed during the last year.

The major improvements in the design of electric locomotive equipment were with a view toward obtaining better balance, greater pulling effort, lower maintenance costs and greater safety. Early in the year the Jeffrey Manufacturing Co. and the Goodman Manufacturing Co. each had a locomotive approved as permissible, thus increasing the latitude of choice of the coal operator.

The dynamic braking controller has been strengthening its position in the coal industry. Another advance has been in the use of battery locomotives for main-line haulage. Realizing the advantages of electric haulage over all other types mine operators in places have introduced battery equipment where the use of the trolley would be neither desirable nor safe.

Introduces New Locomotive

A new storage-battery locomotive has been introduced by the Vulcan Iron Works. It is equipped with equalizing levers, a worm-gear drive, self-locking brakes and a cast-steel bar frame. This company has also placed on the market a bar-steel trolley locomotive with three-point suspension.

The Westinghouse & Manufacturing Co. has recently had approved by the U. S. Bureau of Mines a Baldwin-Westinghouse storage-battery locomotive for use in gaseous mines. This locomotive is of the company's standard bar-steel construction, equipped with two motors, single reduction geared drive and having a rated drawbar pull of 2,000 lb. at 3.5 m.p.h. All wiring is inclosed in metal conduit, flexible type is used where required by movement of apparatus. The locomotive is designed and approved to use either the lead-acid or the nickel-alkali storage bat-

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tery. Efficient operation is obtained by the use of series-parallel and field control which permits the use of a very small resistor.

The switch unit is conveniently located for inspection and consists of a double-pole fused disconnecting switch and a fused headlight switch combined in a single case. These switches are interlocked with a sliding door which permits safe and easy renewal of fuses.

There has been a large increase in the number of electric shovels used for open-pit mining. Today it is claimed that 40 per cent of such shovels are electrically operated. Practically all sizes of shovels have been successfully electrified, some being equipped with 90-ft. booms and 10-yd. dippers. One of the largest used in an open pit mine is that owned by the Sunlight Coal Co. of Boonville, Ind. It is a Marion model 350 supplied with the General Electric Co.'s Ward-Leonard voltage control apparatus.

An improved form of liquid slip regulator for use with wound-rotor motors on flywheel motor-generator sets for mine hoists has been developed by the Westinghouse Co. The method of operation is the same as for the older designs in which a torque motor receiving current from a series transformer in the primary circuit of the motor causes the electrodes to separate on overload, thereby increasing the slip of the motor and allowing the flywheel to take the load.

In the past there has been difficulty in bringing the main motor connections to the electrodes within the electrode cells. This arrangement has recently been improved. Former designs employing wood pot cells gave more or less trouble due to leakage of electrolyte. The newly designed stationary electrodes are supported by insulated bars from the top of the tank on a framework.

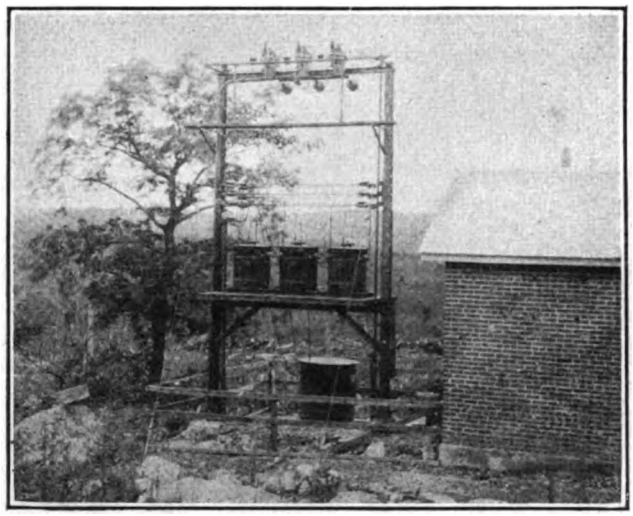
The cooling system consists of a number of deep narrow troughs open at the top, suspended around the inner side of the tank. This construction has a decided advantage over the pipe coils, where the cooling water contains a considerable quantity of suspended matter which would quickly clog up a pipe coil. The troughs being open at the top can be cleaned readily either by flushing out with water or by removing the trough and dumping.

The first electro-pneumatic hoist control outfit, designed by Westinghouse, was installed at Lansford by the Lehigh Coal & Navigation Co. A similar unit recently was sold to the Consolidation Coal Co.

A safety electric room hoist driven by a 5-hp., 250- or 500-volt direct-current motor designed by the South Fork Foundry & Machine Co., was approved by the U. S. Bureau of Mines.

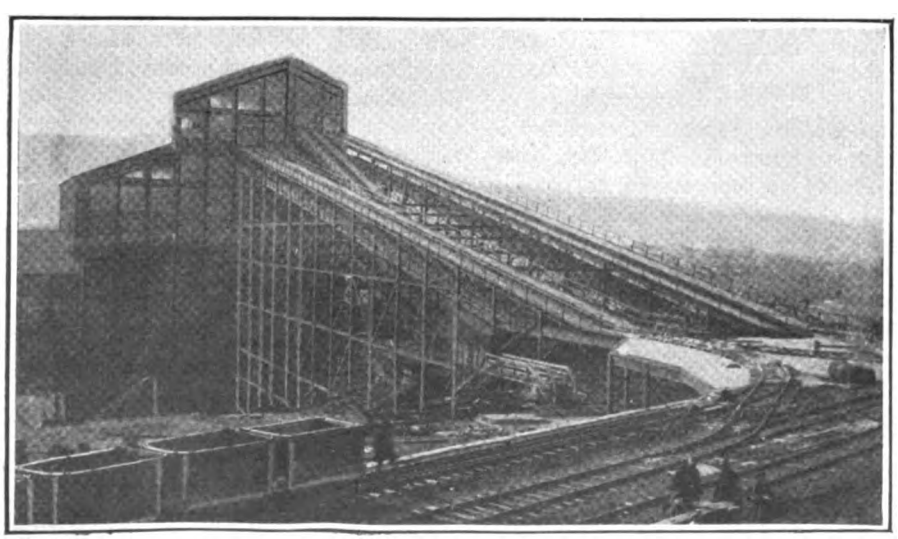
The anthracite strike gave much impetus to the installation of electric equipment. Just before the workmen were called out the operators did not know how many or what maintenance men would be allowed to work. Realizing that lack of fuel for steam plants and scarcity of labor for attendance would bring about serious consequences, there was the grand rush for pumps, motors and control equipment for several weeks preceding the strike. However, there were already several other economic forces exerting their effects upon pumping problems.

A new line of high-speed synchronous motors was developed by the General Electric Co. for the operation of centrifugal pumps. The size of these motors, for a given horsepower output, was reduced greatly as compared with previous designs.



Substation on Top

This particular substation is automatic feeding current to a slope through a borehole. Outdoor transformers are here used thus minimizing building expense. Stations of a similar nature requiring little or no attendance are often installed underground, in many instances separated from the balance of the workings by fireproof doors o partitions.



Cars and Coal Are Lifted to the Breaker on Trestles

Four long sloping trestles over which loaded and empty mine cars are transported will be kept busy feeding this 10,000-ton breaker at Lansford, Pa.

SAFETY TO THE FRONT

The first complete motor and controller for use in a gaseous mine was brought out by the General Electric Co. and approved by the U. S. Bureau of Mines. The motor is a direct-current unit rated 5 hp., 900 r.p.m., 550 volts. Other motors and controllers of this type are now being designed.

More and more automatically primed, started, protected and controlled centrifugal pumps were installed. Also, many breakers were changed to wet-process preparation methods and several new types of pumps have been needed; consequently, many lead-lined, manganese-steel, rubber and bronze units were used.

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There has been a marked tendency toward simplification and improvement of automatic pump control apparatus. A new priming valve actuated by a spring instead of a solenoid was developed by the Barrett, Haentjens Co. The notching relay has been supplanted by definite time relays and thermal relays which lock out the starting device after several trials to start have been made, if something is wrong with the pumps or its appurtenances.

The first application of super-synchronous motors to mine fans was made, during the year, by the Glen Alden Coal Co. Five General Electric motors of this type having a total horsepower of 1,500 were put in service during the summer. The largest one of these motors was installed at the Truesdale mine. It drives a Jeffrey double-inlet, exhaust, non-reversible, stepped, multi-blade fan supplying 380,000 cu.ft. of air per minute at a water gage of 3.8 in.

Another motor of this type was installed at Bliss Colliery. It is a 250-hp., three-phase, 60-cycle, 4,150-volt unit. Its synchronous speed is 109+ r.p.m., it has sixty-six poles. Besides being designed to carry a 250-hp. mechanical load it is rated at 200 kva. unity power factor, with a temperature rise of 40 deg. F. The normal direct-current field current is 23.9 amp. and the full load stator current is 28.1 amp. A small motor-generator set supplies the field excitation.

When the motor is started the outer frame revolves on its own set of bearings which are mounted in the same housing as the revolving element which is directly coupled to the fan shaft. After the stator has reached full synchronous speed it is slowly brought to standstill by the application of a hand brake. By this means the full-speed torque of the motor is available to start the fan. One of the largest fans to which this type of motor was applied was quite heavy as is indicated by the fact that its WR^2 was 1,440,000.

Another notable fan drive installation was one made by the Price, Pancoast Coal Co. at its mine in Throop, Pa. To assure continuous operation of its ventilating system a 225-hp. Stirling internal combustion engine is provided.

Automatic substation equipments were sold in greater volume than in any preceding year. Most of the outfits were for single-unit instead of multiple-unit substations. A few double-unit control systems were furnished so that when the first machine becomes overloaded the second one is started.

Records of one of the largest manufacturers of automatic substation apparatus reveal the fact that there is still a marked tendency toward the use of motor-generators sets in preference to rotary converters. This company's list of automatic control outfits sold to date show that more than 75 per cent of them were for synchronous motor-generator sets.

More Sectionalizing

Greater appreciation of the desirability of automatically sectionalizing power feeders in mines was evidence by many installations of automatic reclosing switch equipments. Many direct-current and alternating-current automatic feeder switches were placed in service to localize overloads and prevent such conditions from interfering with all the other functions performed by electricity.

One of the most progressive movements of the year in the better design of electric motors was the production of anti-friction bearing motors by the Allis-Chalmers Manufacturing Co. These motors are equipped with Timken tapered roller bearings.

A new type synchronous motor is being offered to meet the need for a motor having extra high starting torque, low starting current, and the recognized high efficiency and good power factor characteristics of a synchronous motor. The new motor, available in standard ratings from 60 to 600 hp., is manufactured by the Westinghouse Electric & Manufacturing Co. It consists of a combination of two pieces of apparatus which are well established in the electrical power field.

The complete unit consists of a standard synchronous motor combined with a magnetic clutch in a single compact frame. The over-all dimensions are practically the same as the hitherto standard synchronous motors of the same ratings, with the exception of the length which is usually from 4 to 10 in. longer.

This clutch-type synchronous motor is started in the same manner and with the same equipment as used with a standard synchronous motor started under light load conditions. It is particularly adapted for driving crushing or grinding machinery, fans, rolls and other loads requiring high starting torque. The starting torque of the motor is the same as the maximum running



Visitors Get a Good Eye-Full While Inspecting Modern Electrified Hoisting Equipment

These are a few of the anthracite engineers who recently visited the mammouth new breaker of the Lehigh, Coal & Navigation Co. at Lansford. The men had just arrived at the hoist building which houses two large electric hoists. One of them is provided with new electro-pneumatic contactors, a progressive step in the design of large hoist control apparatus.

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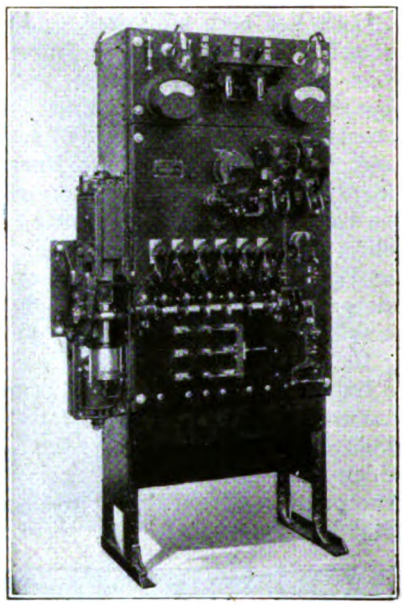
torque because the motor is brought to synchronous speed and fully excited before being connected to the load. It can thus exert any required torque up to the value of its pull-out torque during starting periods. Furthermore, this is accomplished without shock and at an acceleration rate controlable by adjusting the clutch excitation current through a rheostat. The clutch cannot be excited during starting periods, and as a result the rotor quickly reaches full speed.

The rotor section of the clutch is faced with asbestos lining, riveted to a steel ring and made in halves for easy removal. The armature member of the clutch has a smooth surface where it comes in contact with the brake lining. Steel shims may be inserted between the asbestos lining and the ring to compensate for wear.

Ample clearance between the clutch plates is provided by spring plate construction. The armature member is mounted on a steel disk which has sufficient flexibility to allow the clutch faces to make contact when the clutch coil is supplied with current. When excitation is removed, the flexible member will spring back into its normal position which provides sufficient clearance between the friction surfaces to prevent contact.

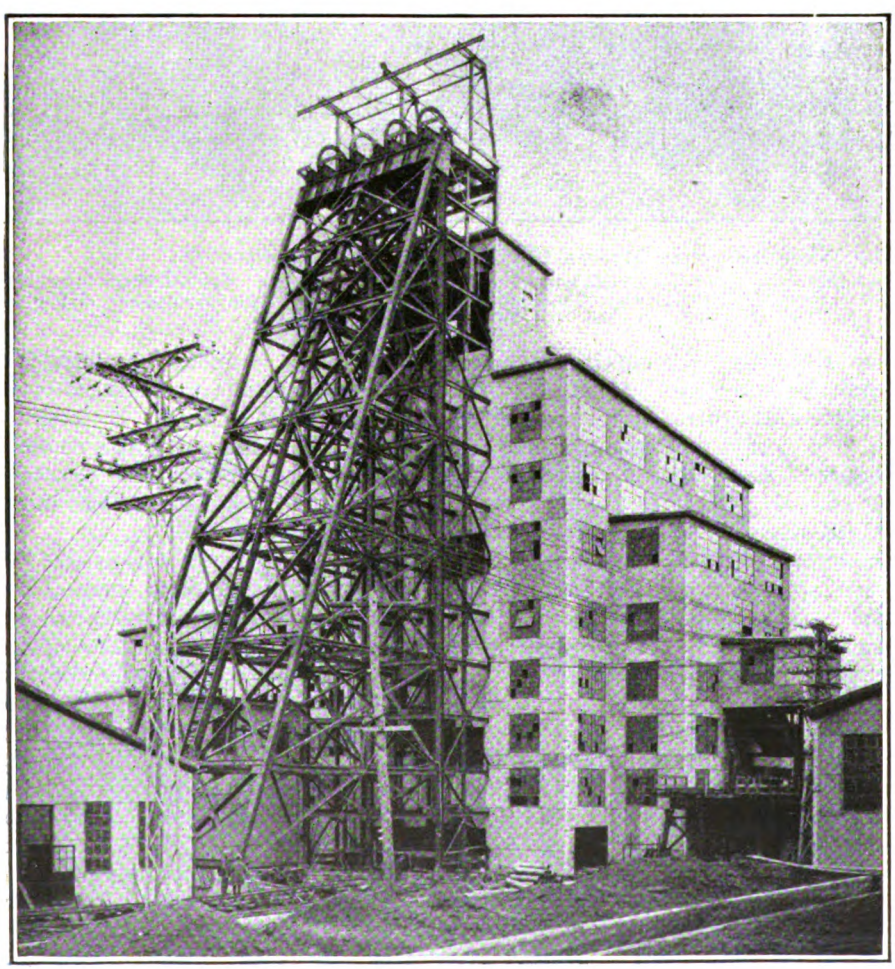
The motor shown in one of the illustrations is similar to one used in a new breaker built by the Repplier Coal Co. It is rated at 575 hp., 180 r.p.m. and 100 per cent power factor. An interesting feature is that it occupies but 2½ in. more space than a standard motor of the same rating.

Increased interest has been shown in the subject of power factor correction, a great demand is consequently growing for more synchronous motors and static condensers. Pioneering installations of new type synchronous motors have been made to breaker and tipple drives, also fans, pumps and air compressors. Several static condenser outfits have been applied and proven unusually successful in reducing power costs, bettering voltage regulation, and releasing equipment capacities for useful work.



Automatic Panel Reduces Costs

Accurate control and regulation of electrical equipment has taken away the difficulties occasioned by human effort.



Built to Produce at Low Costs

This new breaker of the Colonial Collieries Co. is, no doubt, destined to set new standards of design, operation and success in the anthracite field. It is completely electrified and modern in every respect, in fact, many unique features successfully tried out in other industries are incorporated here. The building looks white because it is completely covered with Johns-Manville corrugated asbestos transite siding.

Measured by the success of past achievements, the future of electrical progress in mining will undoubtedly be great. Even today when relatively few mining companies are completely electrified, E. M. Herr, president of the Westinghouse Electric & Manufacturing Co., has said, "The coal industry, now the largest consumer of electric power, will continue to offer a large market for electrical apparatus."

Economic, market and labor conditions have exerted strong influences promoting electrification; today the advantages of electrical equipment have been proved. Companies which formerly owned the most modern types of steam-driven apparatus have found from experience and operating cost data that savings made by electric drives are big enough to pay capital charges and still show large returns on investments.

Thus the results of the old year forshadow bigger things for the new. Further application of electrical apparatus will be made along approved lines, new problems will be solved with specially designed devices and machines, companies already highly electrified will modernize their remaining steam units and completely supplant stand-by steam stations with internal combustion engines driving electric generators.

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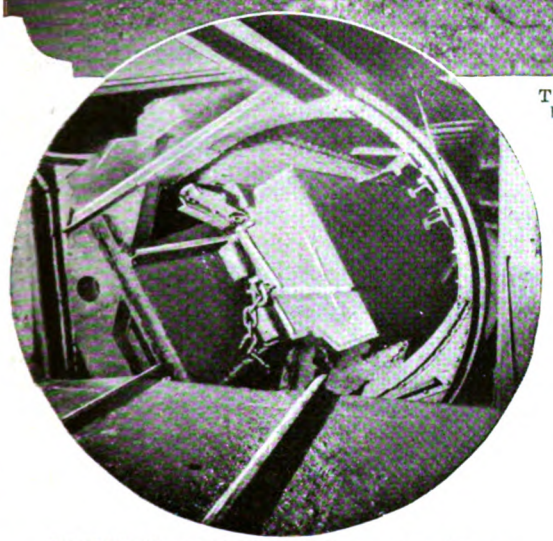
Does "Equipment Make the Mine"?

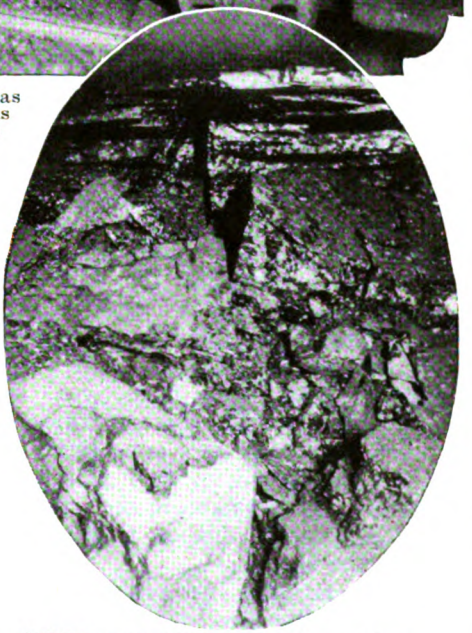


THIS center-shearing machine has been used in southern Illinois to increase lump output. Its cutter bar swings up and down in line with the center of the machine

THE "rehabilitation" that has been going on in a number of mines in 1925 and mentioned in more or less detail in the following pages proves that it pays to "spend money in order to save it."



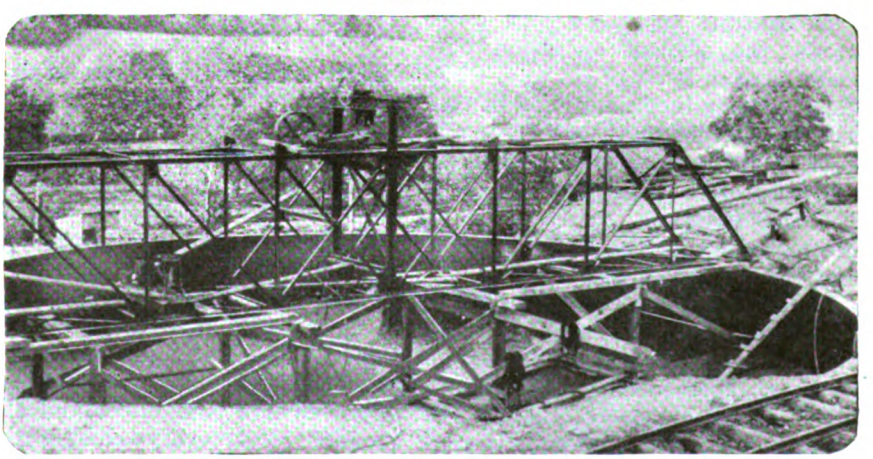
POSITIVE operation and large capacity are the characteristics of rotary dumps of this kind Two or more solid-body cars can be discharged as quickly as one.



AFTER a shot in a center sheared face. The size of the coal produced speaks for itself.



THIS compact vibrating screen is popular for preparing small sizes of bituminous coal.



SLUDGE thickener at an anthracite colliery. Today even the smallest size is reclaimed. The water, freed from the sludge, is returned to the washery system.

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Rehabilitation Is Big Feature in Progress Made During 1925 in American Mines

Cost-Cutting Devices Adopted With Avidity and Power Generation Much Improved—Managements Learn How to Spend Money in Order to Save It

By Frank H. Kneeland
Associate Editor, *Coal Age*, New York City

IF ONE WERE to search for some terse expression that would effectively sum up the progress made by the coal industry during the past year in mechanical improvement he could hardly select a better term than the word "rehabilitation." And, as here used, this would mean "to put on a proper basis," not necessarily to restore to some former state of prosperity or glory.

During 1925 the coal industry was faced with approximately the same adverse conditions that prevailed during the preceding year. Demand was not particularly heavy or insistent, competition was keen, and as stated elsewhere in this issue, the weighted average realization for the bituminous product of the mines amounted to $2.06, or two cents less than that realized during the preceding twelve months. Under such circumstances, only the fittest could hope to survive. The best energies of many operators were accordingly directed toward putting their mines, practices and equipment, in such condition as would enable them to weather the storm.

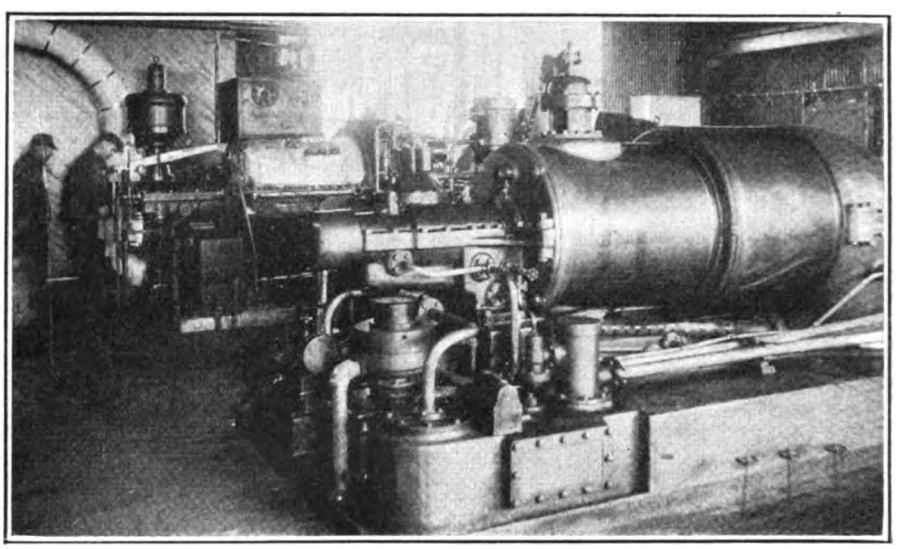
During the year just past, mines closed down literally by the dozens. On the other hand, the number of operations that worked six days per week steadily increased. In other words, the efficient operation pursued the even tenor of its way, while the hopelessly inefficient mine banked its fires, boarded up the windows, and went to the wall, where it belonged. And the fewer mines working satisfied the country's needs quite as effectively as did the larger number that tried to work in 1924.

Thus, throughout every field strenuous efforts have been made to adapt the mines to better working and to secure cheaper costs. Never before have mechanical devices been adopted with greater avidity, never have consolidations looking toward more efficient operation been more carefully projected, never have improvements in power generation and distribution been more carefully planned or more quickly adopted, never have officials and executives scanned the details of their plants and practices more minutely in the hope of being able to cut down power consumption here, dispense with the services of a man there, or increase the quality of the product by one-half of one per cent somewhere else. Nor have managements been as niggardly as they sometimes have been in making appropriations for improvements.

Probably few individual operations have carried this program of altering top and bottom conditions so as to meet more effectively developed needs, and of transforming equipment and practices in such a way as to assure less expensive production, than has the Valier Coal Co. of Valier, Ill., This mine invested approximately $50,000 in a series of improvements both under and above ground. Yet, every change there made is now earning dividends and will pay for itself in not to exceed three years. Some of them will earn their full purchase price in less than twelve months. One big change made at this operation—the method of distributing bits—paid for itself almost over night. The cost was practically negligible but the savings amount to some thousands of dollars yearly.

Another Illinois plant that well illustrates this trend toward rehabilitation and saving, is that of the Indiana and Illinois Coal Corp., at Witt. The mines of this company were formerly operated chiefly on purchased power with steam used to a limited extent, chiefly for heating water and for hoisting. The demands for power became so large however, and the expense involved became so great that a modern steam power plant has been erected at one of the mines and power is transmitted at high voltage to the company's other operations in the vicinity. In this plant, high-pressure superheated steam will be generated in modern water-tube boilers and utilized in turbo-generators operated condensing.

A few years ago a decided trend was apparent at the mines, particu-



Turbines Bring Down the Cost of Electric Energy

Years ago many coal companies found the purchase of electric power to their advantage. Today the cost of purchased energy has so increased that in many cases decided economies may be realized from the generation of electric current at the mine. This photo shows the interior of the new power plant of the Indiana and Illinois Coal Corp. at Witt, Ill. It is estimated that not only can power be generated here at a material saving over purchased current but that many of the expensive shutdowns to which mines operated on public service energy are always subject, will be avoided.

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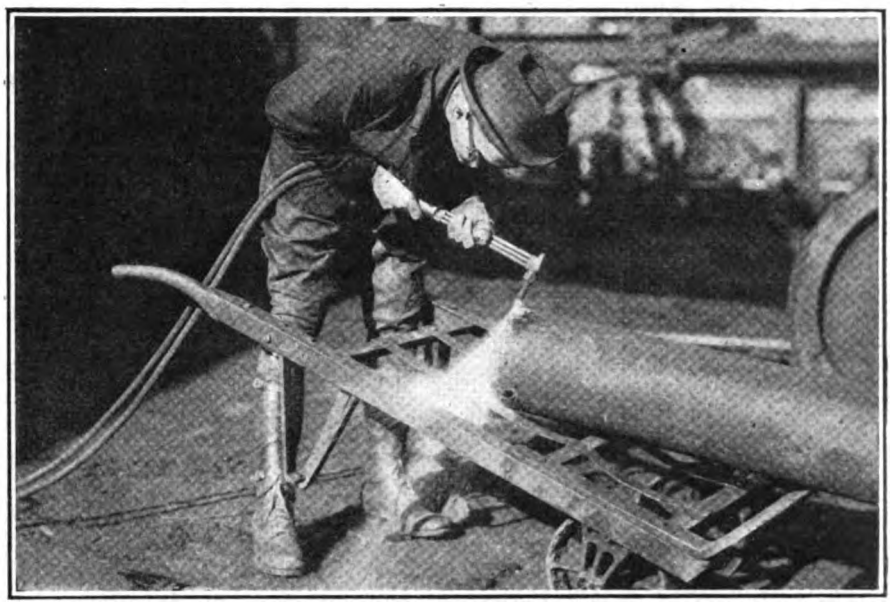
larly those of the West and in the Appalachian Region, toward the adoption of purchased power. Today apparently the pendulum has started a swing in the reverse direction, as many mines are now forsaking the purchase of current and are building highly efficient generating plants of their own. Of course some mines are so located that water for plant operation cannot be obtained. The mercury boiler has not yet been developed to such a stage as to render it a competitor of the steam boiler for mine operations, and for plants that cannot secure an adequate supply of water the purchase of power is the only alternative at present available.

Utilization of mine refuse as fuel during the past year has been carried further than in the year preceding. At many operations pickings from the tables and sweepings from the mine and tipple tracks possess an ash content that render them unmarketable, yet they have a fuel value sufficiently high to make them available for the generation of power at the mine. This material may be burned either in the powdered form or on mechanical stokers. Naturally, the stokers must be of such kind and type that the ashes are either voided continuously, as is the case with the chain grate, or may be dumped periodically as with certain of the underfeed and other varieties. Probably one of the best examples of a "refuse-burning" mine plant to be started during the past year is that of the Fordson Coal Co. in Kentucky, which utilizes pulverized bone as a fuel. Such plants as this are blazing the way for cheaper power at the mines—power generated at a cost that will clip a few cents per ton off the f.o.b. price of the mine products.

MAKES STEADY PROGRESS

Mechanical loading, which got a real start in American mines only a few years ago, has steadily advanced during the past twelve months as reported in another article in this issue. Some mines are already operated by mechanical means exclusively, others use both mechanical and hand loading, while still others are trying out different makes and types of loaders in order to determine from actual experience which variety will afford the best commercial results. The findings of these operations will be watched with extreme interest.

Last summer a new mining, or rather a cutting, machine of decidedly unusual type, was installed in a mine in Ohio. This saws the coal on a face, 100 ft. or more in length, by means of a flexible cutter passing around and driven by rubber lined sheaves. This cutter travels at high velocity, and the percentage of bug-dust made by it is approximately one-third of that made by the ordinary chain machine. In fact, the quantity of fine material produced is so small as to be almost negligible. The percentage of lump obtained is remarkably high, and no explosives are necessary to bring the coal down. Naturally, the present machine is largely experimental in character, but the results so far secured, both in performance and costs, are encouraging. Much interest will attach to its development.



Cutting Pipe with a Torch Is a Time Saver

A few years ago oxyacetylene was the exception rather than the rule at mine repair shops. Today many shops are equipped with both oxyacetylene and electric welding outfits. The former has the advantage that it may be used for cutting also. The operator is here shown trimming up the end of a heavy pipe that he has just cut off with his torch. Much time and money can be saved around a mine plant by doing large cutting in this manner.

Not only have efforts been made to increase the quantity of coal produced, but to improve its quality as well. In many regions, particularly those catering to a domestic market, the proportion of lump coal produced determines in large measure the return realized for the coal sold. As a result, any increase in the proportion of lump size obtained from the mine product is reflected directly in the amount realized per ton of output hoisted. While much can be gained by careful handling during transportation and preparation, it is at the face and in blasting that the really big economies can be made.

To this end the practice of center shearing the undercut face has been tried, especially in southern Illinois. At least two large coal companies operating in this field have used shearing machines with excellent results, one firm having increased its proportion of lump by as much as 15 per cent. This company makes a shear cut in the center of an undercut face to a point about 8-in. above the kerf. The cutter bar is then raised to its full height and allowed to fall, thus breaking out the coal between it and the under cut. This break widens out for some distance upon either side of the shear. The face is thus snubbed to a certain extent. By this means a free end is provided in the coal face, the quantity of explosive necessary to bring the coal down is decreased, and the product of the shot is rolled out on the floor in better shape for loading. As in the case of many another improvement acting to the benefit of all concerned, however, more or less pronounced opposition to its adoption has been encountered from the miners' union.

BETTER PREPARATION DEMANDED

Year by year the public becomes more fastidious and exacting in its choice of coals. Or, what is another way of saying the same thing, it lays greater and greater stress on preparation, demanding a clean, carefully sized product. This has been reflected during the past year in the installation of better washing and flotation plants, as well as better screens in the tipples. Thus, the Chance and flotation process, and the Rheo washer have made great strides, particularly in the anthracite region of

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Pennsylvania, although both processes are now invading the bituminous industry. Some remarkable results also have been obtained from the apparatus which for want of a better name has sometimes been called the hydroweir or hydrowasher. This machine separates the coal from its accompanying impurities in an upwardly moving current of water. It is most efficient in treating the smaller sizes, but has been successfully used on grades up to and including pea.

LESS ROOM REQUIRED

All of these devices take up less room than do the usual jigs and tables. Some of them, notably the Chance cleaner, may be used most advantageously if the breaker or washery is built especially to accommodate this type of machine. Some such installations have already been made and more are under construction and in prospect. The hydrowasher on the other hand is so much smaller than the ordinary jig of equal capacity that when installed in a breaker or washery built for jigs it gives the casual observer the impression that the building is far larger than necessary to house the equipment installed.

For treating the smaller sizes of bituminous coal the vibrating screen is in many instances supplanting the much larger oscillating screen or shaker. The vibrating screen trembles or vibrates under the action of a rapidly revolving, unbalanced weight, causing the tightly stretched wire cloth forming the screening surface to tremble in much the same manner as does the belly of a violin under the action of the bow, strings and bridge. The capacity of these machines is high, and they may be made multiple-decked so that several sizes may be prepared on the same machine. They are becoming justly popular, particularly in the Middle-Western fields, where the preparation of small sizes is carried to a fine point.

Nor have improvements in equipment been confined to machines employed directly in coal production or preparation. There is no question but that the caterpillar mounted stripping or overcasting power shovel possesses advantages over the type that must be provided with rails or track. Heretofore it has not been considered possible to mount a shovel of the size now used in stripping operations in this manner. During the past year, however, a big stripping shovel of this kind has been built and mounted on caterpillars.

This machine, which was constructed for the United Electric Coal Co., of Danville, Ill., and intended for use in one of this firm's strip pits in the western part of that state, will weigh over 1,000,000 lb. Naturally, it is of the full-revolving type. The generous use of alloy steel in its construction has rendered its caterpillar mounting possible. The operation of this new shovel will be watched with keen interest by coal men interested in stripping.

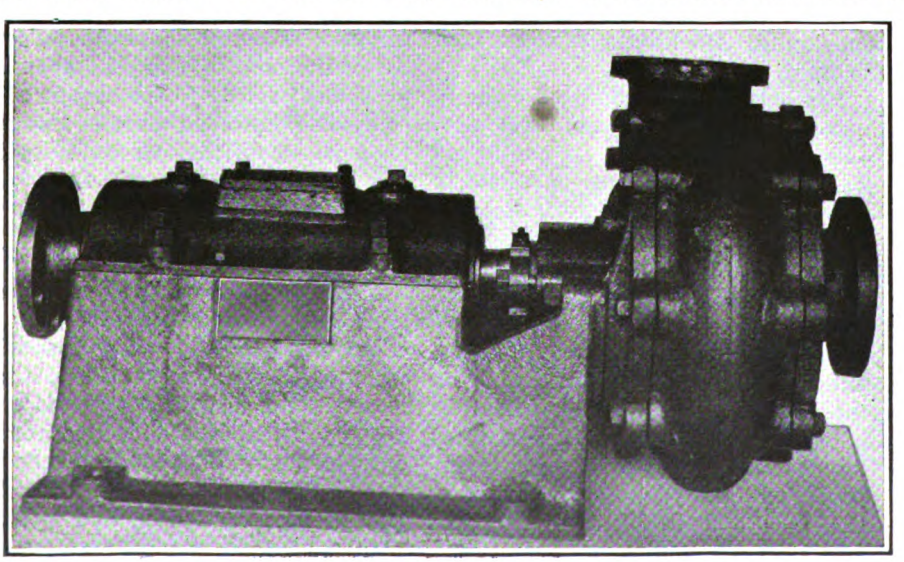
One of the potent factors in this program of rehabilitation and cost lessening, has been the further adoption and installation of automatic substations and automatic pumping stations. The electrical transmission of power within the mines has now become all but universal. Placing the control of substations and pumping stations in various electrical devices which "never slumber nor sleep" but are constantly "on guard" permit the men previously employed to care for and manipulate such installations to be used in productive work elsewhere. Stations of this kind have fully demonstrated their utility and practicability. Last year saw several of them installed, and their use will unquestionably increase in the future.

In the matter of mine haulage, several improvements have been made. Although many of these may rightfully be considered as being of a minor character, they have, nevertheless, an appreciable influence on the cheapening of costs. Bigger cars are today the rule. In some instances this necessitates the employment of larger locomotives; in others it merely means doubling or articulating units: that is, placing two or more under the control of one man. This limits the stress imposed upon the track to the weight of one locomotive.

CARS BUILT BIG AND LOW

Present practice tends toward the large, low, solid body, box type of car intended for discharge by means of a rotary or some other type of dump which will turn the car almost completely upside down. Automatic couplers have been employed with good results.

Grease lubrication applied under high pressure is largely supplanting the older oil lubrication. This change has been contemporaneous with the extensive adoption of the roller bearing on transportation equipment. Packing a roller bearing of large capacity with grease under pressure once in six months is far cheaper and more satisfactory than employing a boy continuously to oil the cars. In fact the playful young oiler, whose presence in the tipple or dump house or on the shaft bottom or landing, was once common and who beguiled the monotony of the day's labor by occasionally squirting blackstrap at one or more of his associates even though such a course might necessitate a hasty and precipitate retreat, is now fortunately almost extinct. The "car greaser" with his pail and "squirtgun" was unquestionably a picturesque figure, but he could not compete in cost or efficiency with the "power gun" that now lubricates the cars at comparatively infrequent intervals.



New Pump for Special Flotation Processes

For the several flotation methods of cleaning coal now used the Morris Machine Works has developed this new pump. All wearing parts of this unit are made of manganese steel, thus it has been possible to combine the high efficiency of the usual type centrifugal pump with the ruggedness and durability of a dredging pump.

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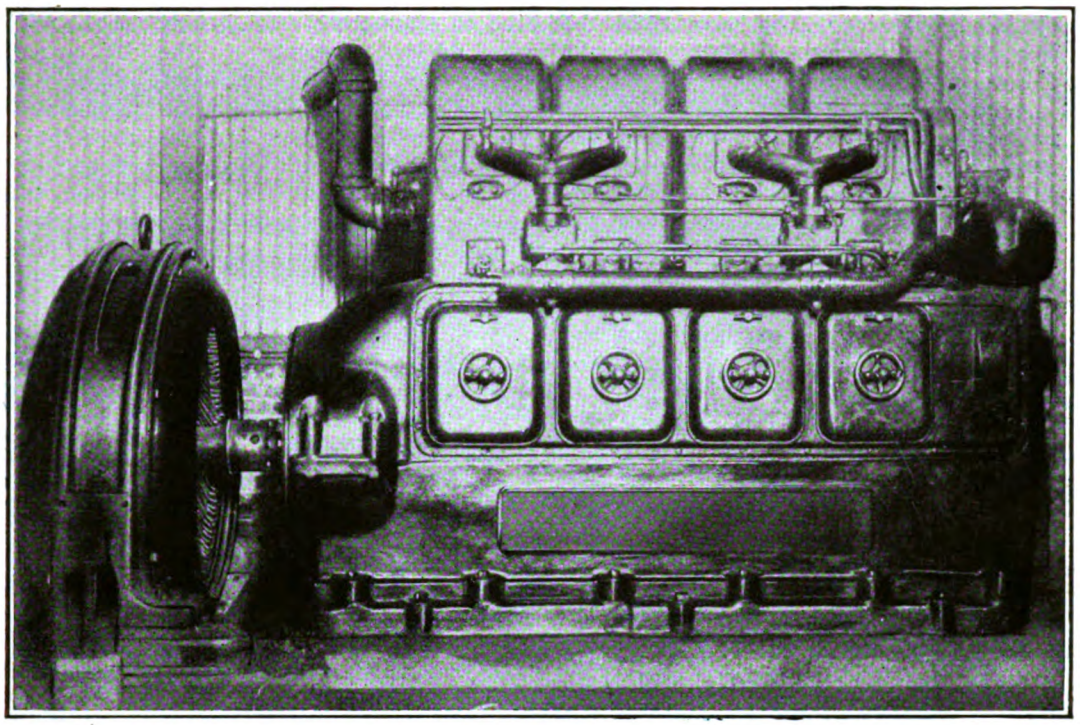
Dependable Stand-by

Should power for any reason go off the line, this stand-by engine can be started on short notice and is large enough to furnish emergency current. The installation of such units as this is becoming quite a common practice, especially at mines that operate on purchased energy. With a machine of this kind a mine is seldom completely "down and out."



Further progress has also been made in adapting the use of electric haulage to so-called gassy mines. This, however, has largely taken the form of improvements in the details of construction of the storage battery locomotive and the portable power unit, as well as in their charging facilities. A new binder to hold the active element in the battery plate was discovered in England. This apparently possesses great possibilities for increasing the capacity, life and efficiency of the battery itself. Experiments with this material have not yet been completed even in Europe, and, therefore, it is here mentioned merely to indicate a possibility of the future.

For many years coal mines in England and English possessions, including Canada, have been large users of steel mine car wheels, whereas this country has clung tenaciously to the chilled tread cast-iron wheel. Within the recent past however, the steel wheel has made its appearance in the United States chiefly in the mines of the South. Admittedly this type of wheel possesses many advantages chief of which are its greater lightness, toughness and strength. Decreasing the dead weight of a car is equivalent to increasing its carrying capacity as well as adding to the coal handling capacity of the locomotive.

Naturally, the railroads have perfected the science of material handling and brought it to a point well beyond that attained by other industries. As coal mine haulages grow longer and heavier they parallel more and more closely the problems of railroading. The mines may well in many cases, therefore, take a leaf from the notebook of the common carriers and emulate their practice. Some operations are doing this very thing and installing not only telephonic dispatching systems but also railroad switchboards provided with electrically lighted targets, semaphores or their equivalents, remote control switches and the like, all of which tend toward the rapid and efficient movement of the coal from the face to the shaft bottom. Valier furnishes an excellent example of work of this kind although many other mines are making improvements of a similar or parallel nature.

Rock Dusting Leads

Probably the chief safety measure extensively employed during 1925, at least the one which is most spectacular and which is intended to forestall the most spectacular of mine accidents, was rock dusting. Although this practice has been followed for years by some coal companies, it did not receive general attention until about 1924. Work begun during that year was continued in 1925 and now more than 200 mines producing in excess of 10 per cent of the country's coal have been treated with this inert material. Rock dust has demonstrated its effectiveness as a killer of explosions upon several occasions. Its use is now compulsory by law in some states and it is only a question of time until most mines throughout the country will be thoroughly protected in this manner.

During the past twelve months electrification of mine equipment kept up the pace established in previous years. Even at mines where the hoist is installed in close proximity to the boiler house and steam is therefore available for use in hoisting engines it has been found advantageous in many if not most cases to operate the hoist electrically. Power consumed by an electric machine is easily and accurately measurable, thus revealing not only the average but the peak loads as well. This fact has been largely responsible for the adoption of the cylindro-conical drum in lieu of the older cylindrical and double conical forms. For a given capacity this shape of drum imposes a smaller inertia load on the machine than do either of the other forms mentioned. This type of drum, therefore, is the one usually selected on present-day hoists.

Purchased power has brought problems of its own. One of the most exasperating of these is line failure. During recent years it has become increasingly customary to make provision at mines served with purchased energy for operating at least the fan and the man hoist should power go off the line from any cause. To this end stand-by engines and generators have been provided. In many cases the stand-by unit consists of a vertical multi-cylinder engine direct connected to an

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electric generator. The year 1925 saw the installation of many machines of this kind.

According to the old fable the reeds bent before the wind and escaped injury whereas the sturdy oak stoutly resisting the force of the gale was destroyed. A somewhat similar principle has been put to good effect by lining mine pumps with rubber. In machines of this kind handling gritty water or that carrying much foreign matter a non-yielding metal is quickly abraded or cut away whereas rubber, because of its resiliency is little affected. An advantage inherent to the rubber lining is the fact that it is almost inert to the action of acid in such concentrations as are usually encountered about coal mines. Pumps of this type are being given a thorough trial in coal preparation plants using the sand flotation process. This type of service closely parallels their use in the metal industry in pumping concentrator slimes.

It would be manifestly impossible within the confines of an article of this kind to enumerate even briefly the many devices applicable to the mines that have been introduced, developed or improved during the past year. Their number and variety have been too great. The reason for the intense interest manifested in mechanical devices intended to replace hand labor and in advanced methods for improving the quantity and quality of the mine product is not hard to find. Highly competitive conditions have brought the bituminous industry face to face with the necessity of reducing costs. In only slightly lesser degree the same is true of the anthracite industry as well. When muscular energy under the present wage rate costs anywhere from $4 to $8 per horsepower-hour, whereas an equal quantity of power in the form of electric current may be delivered at the working face for approximately 2c., it is only logical that mechanical energy will be used whenever and wherever its adoption is possible.

Again, although improved methods of operation, such as center shearing of the working face, may not increase the output produced by so much as a single ton, yet if it improves the quality sufficiently or to such a degree that the increase in realization more than outweighs the added expense, this practice should by all means be adopted. If other practices that improve the quality of the output, such as cushioned shooting, for instance, interfere with state laws that were framed long before these practices were invented, it is high time that the statutes thus infringed were modified.

Many long strides have been taken toward the mechanization of American coal mines; many others yet remain to be taken. The progress accomplished during the recent past unquestionably will be continued and extended during the year that lies ahead. The industry is today confronted with a new set of conditions which it has never before been required to face. It is solving its difficulties by the adoption of improved practices and improved equipment. The mines are being rehabilitated.

Coal Produced in West Virginia and Wyoming in 1924[a]

(Exclusive of Product of Wagon Mines)

	Net Tons					Value		Number of Employees				Average Number of Days per Man Worked	Average Tons per Day
								Underground					
West Virginia County	Loaded at Mines for Shipment	Sold to Local Trade and Used By Employees	Used at Mines for Steam and Heat	Made Into Coke at Mines	Total Quantity	Total	Average per Ton	Miners b	All Others	Surface	Total		
Barbour	1,772,449	30,160	10,490	23,488	1,836,587	$3,379,000	$1.84	1,432	450	267	2,149	146	5.86
Boone	2,310,928	26,383	5,261	.....	2,342,572	3,882,000	1.66	1,530	752	506	2,788	152	5.53
Braxton	179,747	45,067	5,597	.....	230,411	358,000	1.55	193	81	63	337	175	3.90
Brooks	792,469	984,701	300	.....	1,777,470	3,960,000	2.23	1,294	422	223	1,939	160	5.74
Clay	868,733	23,887	10,758	.....	903,378	1,580,000	1.75	478	186	151	815	214	5.18
Fayette	7,632,720	127,388	47,154	231,227	8,038,489	16,377,000	2.04	5,336	3,052	1,554	9,942	172	4.70
Gilmer	114,791	2,868	3,621	.....	121,280	187,000	1.54	47	27	18	92	208	6.32
Greenbrier	982,704	61,263	5,647	.....	1,049,614	1,829,000	1.74	390	261	133	784	230	5.83
Harrison	5,246,245	169,583	6,323	.....	5,422,151	9,098,000	1.68	4,026	1,486	896	6,408	134	6.30
Kanawha	4,044,359	105,720	20,137	.....	4,170,216	6,952,000	1.67	3,133	1,615	808	5,556	148	5.07
Lewis	14,454	21,148	.....	.....	35,602	69,000	1.94	52	21	11	84	109	3.90
Lincoln	266,931	3,125	630	.....	270,686	391,000	1.44	283	83	93	459	149	3.96
Logan	17,375,019	222,335	13,109	.....	17,610,463	28,239,000	1.60	6,647	4,039	1,962	12,648	219	6.35
McDowell	17,438,461	164,900	168,377	57,958	17,829,696	35,657,000	2.00	7,140	5,937	3,474	16,551	192	5.62
Marion	4,647,393	193,227	68,469	21,086	4,930,175	9,543,000	1.94	3,498	1,777	750	6,025	140	5.83
Marshall	1,084,580	328,643	84,135	.....	1,497,358	3,118,000	2.08	1,076	337	202	1,615	199	4.65
Mason	33,493	28,512	2,464	.....	64,469	129,000	2.00	75	24	15	114	121	4.69
Mercer	3,443,017	41,813	5,099	69,210	3,559,139	7,182,000	2.02	1,564	1,134	854	3,552	226	4.44
Mineral	262,804	7,890	2,018	.....	272,712	482,000	1.77	401	125	118	644	118	3.60
Mingo	4,850,344	36,371	11,590	.....	4,898,305	8,387,000	1.71	1,940	1,429	859	4,228	226	5.13
Monongalia	6,482,775	115,301	56	14,528	6,612,660	10,470,000	1.58	3,711	1,431	650	5,792	190	6.00
Nicholas	235,394	18,608	9,980	.....	263,982	538,000	2.04	249	116	78	443	155	3.84
Ohio	1,831,431	293,930	5,298	.....	2,130,659	4,161,000	1.95	1,474	431	145	2,050	217	4.78
Preston	1,282,227	66,795	4,364	115,166	1,468,552	2,598,000	1.77	1,230	484	331	2,045	150	4.80
Putnam	83,360	747	1,796	.....	85,903	172,000	2.00	177	102	47	326	78	3.39
Raleigh	9,924,984	100,804	81,986	.....	10,107,774	18,840,000	1.86	4,536	3,032	1,574	9,142	206	5.36
Randolph	497,635	20,445	13,136	.....	531,216	1,124,000	2.12	380	128	80	588	179	5.05
Taylor	285,153	15,240	284	.....	300,677	451,000	1.50	734	304	90	1,128	55	4.88
Tucker	632,256	9,442	34,577	560	676,835	1,494,000	2.21	565	210	78	853	160	4.95
Upshur	541,457	18,043	10,728	.....	570,228	992,000	1.74	387	145	78	610	159	5.88
Webster	15,975	558	.....	.....	16,533	57,000	3.45	35	8	5	48	135	2.55
Wyoming	1,745,163	21,207	12,953	.....	1,779,323	3,046,000	1.71	893	771	475	2,139	162	5.12
Other counties c	249,863	1,401	6,518	.....	257,782	487,000	1.89	161	80	68	309	207	4.03
Total	97,169,314	3,307,505	652,855	533,223	101,662,897	185,229,000	1.82	55,067	30,480	16,656	102,203	182	5.48
Wyoming County													
Albany and Uinta	16,595	10,177	3,334	.....	30,106	83,000	2.76	28	5	13	46	183	3.58
Campbell, Johnson and Weston	136,470	13,770	13,191	.....	163,431	467,000	2.86	90	49	36	175	212	4.41
Carbon	496,496	9,296	16,400	.....	522,192	1,431,000	2.74	193	136	78	407	194	6.61
Fremont, Hot Springs and Park	509,871	6,221	35,638	.....	551,730	2,004,000	3.63	385	230	131	746	173	4.27
Lincoln	1,263,073	11,949	67,869	.....	1,342,891	3,803,000	2.83	877	352	271	1,500	222	4.04
Sheridan	846,924	28,732	4,306	.....	879,962	1,568,000	1.78	651	162	142	955	110	8.41
Sweetwater	3,177,878	31,910	57,368	.....	3,267,156	8,971,000	2.75	2,061	838	385	3,284	170	5.85
Total	6,447,307	112,055	198,106	.....	6,757,468	18,327,000	2.71	4,285	1,772	1,056	7,113	176	5.41

a Note that the coal statistics of the Geological Survey for a given year include only the mines that had an output in that year. The number of active mines of commercial size in West Virginia was 1,666 in 1923 and 1,220 in 1924; in Wyoming 62 in 1923 and in 1924. Many mines that operated in 1923 produced no coal in 1924; moreover, many of the mines that did produce in 1924 worked for a short time only.

b Includes also loaders and shotfirers.

c Grant, Hancock and Wayne.

Statistics issued by U. S. Bureau of Mines.

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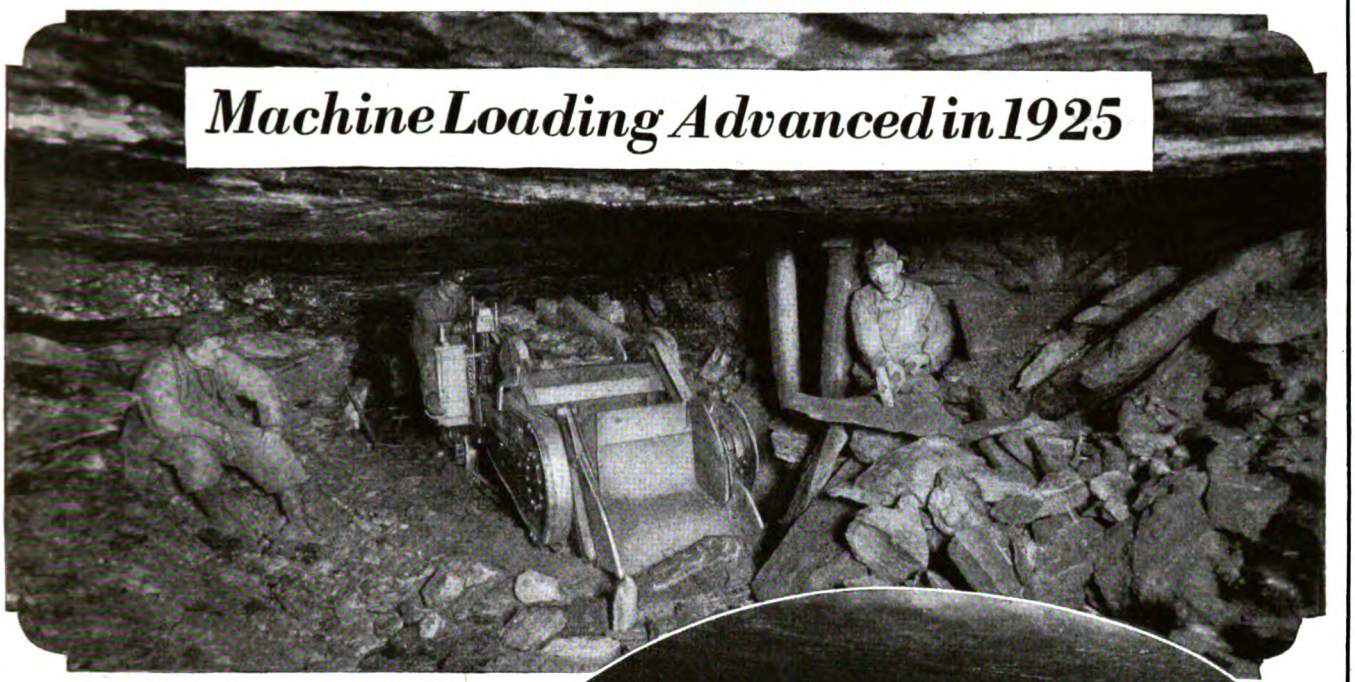
Machine Loading Advanced in 1925



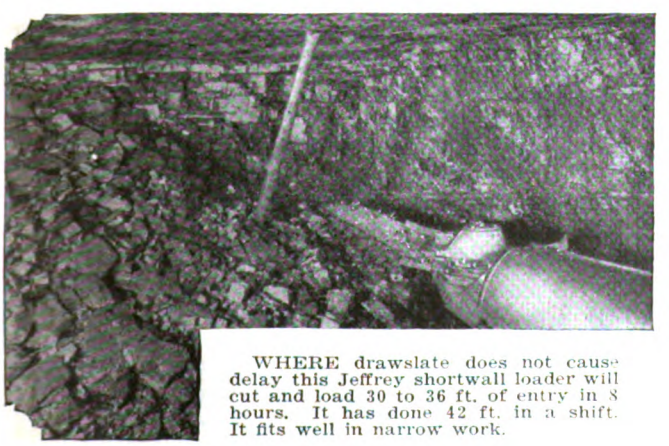
CLEANING up a gangway with a Myers-Whaley in West End Coal Co.'s anthracite mine at Mocanaqua, Pa.

FIVE HUNDRED machines are covered in the performance record spread on the pages that follow. These give a definite impression that underground loaders are an indispensable aid in mining.

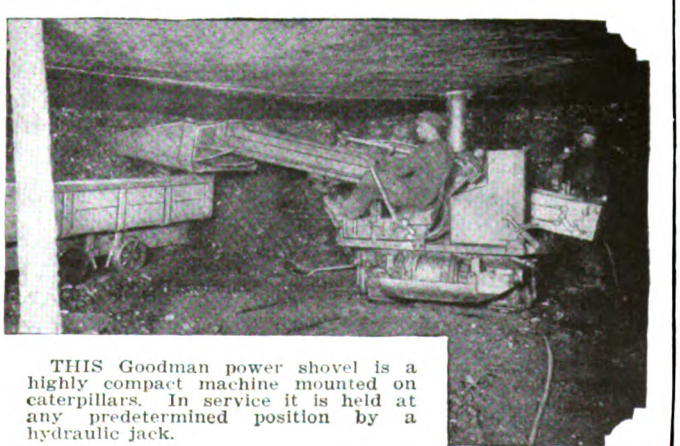




THE ENTRYLOADER (left) solves the sore problems of loading and transportation. In the platform, overhanging the mine car, is a hoist which draws the bucket (shown above) to and from the face. The operator of the scraper is on the entry and cannot see the bucket when it is at the face. Yet the control is so positive and flexible that this man can feel conditions and the position of the bucket with respect to the face.



WHERE drawslate does not cause delay this Jeffrey shortwall loader will cut and load 30 to 36 ft. of entry in 8 hours. It has done 42 ft. in a shift. It fits well in narrow work.



THIS Goodman power shovel is a highly compact machine mounted on caterpillars. In service it is held at any predetermined position by a hydraulic jack.

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Experience in 1925 with 500 Mechanical Loaders Clears Way for More Progress in 1926

These Machines, Exclusive of Conveyors, Handled Eight Million Tons or 1½ per Cent of Country's Output—Fewer Delays by Machine Failure

DURING 1925 underground loading by machines flourished in some places, developed slowly in others or died out, according to the degree of its opportunity. Experimentation, practiced broadly, stimulated its growth however. A variety of experience with various machines in many fields contributed to the industry's knowledge of the art and in recording the results it is the intention in this article, and another in this issue on the kindred subject of conveyor usage, frankly to give the good with the bad. The industry profits by its failures as well as by its successes.

In this magazine's review a year ago of progress in mechanical loading it was estimated that 1½ per cent of the nation's coal produced in 1924 was loaded mechanically into mine cars or by hand into conveyors. It was predicted that the tonnage of 1925 loaded by these means would exceed the combined output similarly produced in all preceding years. This prediction was fulfilled. The total tonnage handled by loading machines was nearly 8 million tons.

Definite figures of production from a number of mechanized operations, added to piecemeal data from others give a total for machine loaded coal alone slightly in excess of 1½ per cent of the entire production of bituminous coal for 1925. Various types of conveyors produced during the year about 1 per cent, so that the two handled at least 2½ per cent of the year's bituminous production.

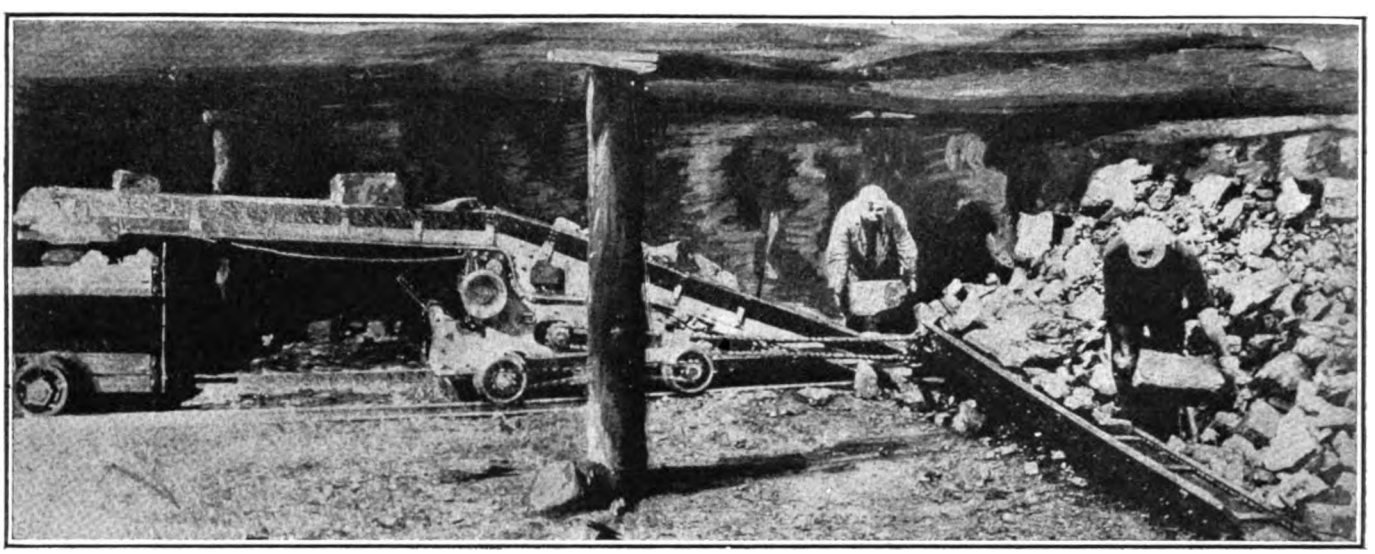
This survey has accounted for about 500 machines, which are in more or less constant use. Most of these, loaded more than 75 tons per shift. By assuming this as an average for 200 days, the 1½ per cent estimate stands as reasonably accurate.

Investigation brought to light a good many interesting facts as to loading machine performance during the year. The Pocahontas Fuel Co. produced with Coloders about 1.6 million tons and in this respect continues at the top of all single companies. Joy machines in operation during 1925, numbering 175, have produced nearly 4½ million tons. One of these machines alone in the mine of the Gay Coal & Coke Co., in Logan County, W. Va., produced about 70,000 tons last year, working two shifts each day. The Monitor Coal & Coke Co., in the same field, is reported to be producing regularly a minimum of 200 tons per shift using a Goodman power shovel, and the company claims the installation is beyond the experimental stage. The Ayrshire Coal Co., in Indiana, is gaining a consistent output of 1,200 tons per day with Joys.

Two completely mechanized mines of the Pennsylvania Coal & Coke Corp.—Ehrenfeld No. 8 and Arcadia No. 42—jointly produce 1,200 tons per day using scrapers and portable conveyors. Six other companies have reported daily averages of machine loaded coal in excess of 1,000 tons, with requests that their identification be hidden. Production of 500 tons per shift by this means is rather common.

Last year at the Acme mine of the Sheridan-Wyoming Coal Co., in northern Wyoming, eight Goodman power shovels and four Joys were installed in a program of complete mechanization. During November of last year the machines working in rooms 26 ft. wide and 10 ft. high loaded nearly 200 tons per shift each. The coal is 40 ft. thick but only 10 ft. of it is brought down in first mining. Other machines while working two-thirds of their time in pillars and the remainder in entries averaged about 160 tons per shift each.

Driving of entries by machine has



Jeffrey Pit-Car Loader Proves that Mechanical Complications Are to Be Avoided

One of the simplest and most effective loading devices thus far developed is the pit-car loader which is nothing more than a portable inclined conveyor into which coal is loaded by hand and elevated to the mine car. In wide places portability is most helpful.

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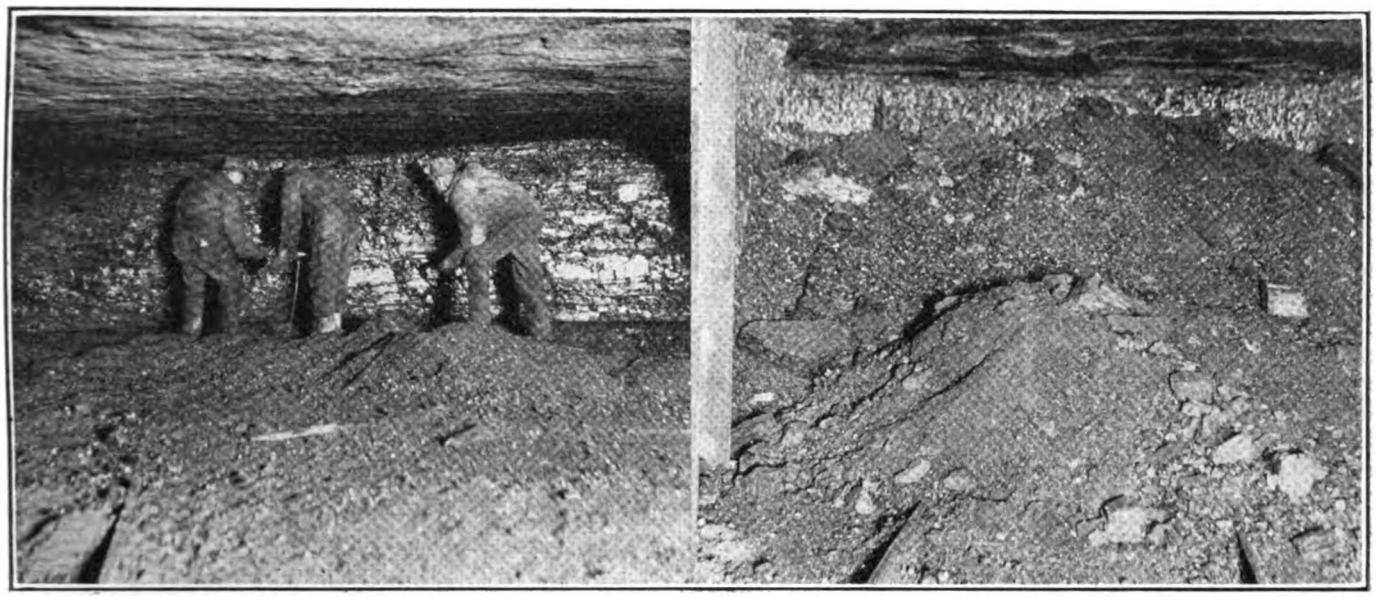

Correct Drilling and Shooting Are Important to Machine Loading Success

These men are drilling coal for mechanical loaders, expert shooting of coal is essential. That being the case, responsibility for drilling must be vested in men who understand shooting. The electric drill insures the proper location of holes. The coal shown at the right was shot too hard. The need for better blasting methods where loading machines are operated is imperative. Where the coal is pulverized, as it was in this room, the loss of lump coal offsets any saving in loading. This subject is getting more attention nowadays and will be one of the leading subjects at mining conventions next year.

demonstrated its superiority over the hand method. By and large, loaders and conveyors are already achieving satisfactory results in entry work. The reason for this is, no doubt, the close supervision which such operations receive by reason of the anxiety of the operator to push development. Even where the cost of driving mechanically is slightly greater than that incurred by hand loading, the operator is satisfied with his investment because the advance is more rapid.

Almost every one of the loading machines now in use has been applied in some degree to the driving of narrow places. The Pennsylvania Coal & Coke Corp. has been successful with a small type scraper in this work. This device and two others—the Jeffrey 43-A shortwall loader and the McKinlay entry driver—belong in one class because all three operate more or less continuously in a single place. The shortwall loader and the scraper, of course, can be relocated readily, but the McKinlay machine must be torn down at the old location and reassembled at the new or else it must cut its way through solid coal to a new place.

The Jeffrey shortwall loader is demonstrating its ability to advance an entry 30 to 36 ft., or 5 to 6 cuts, in a shift where the roof is good and the machine, therefore, is not delayed by the handling of roof material. This machine cuts and loads, discharging into a sectional conveyor. While a place is being cut it is being drilled also and the machine, consequently, is idle only during the time required for shooting and clearing away the smoke. Incidentally this lost time is little inasmuch as a blower moves smoke speedily.

At one of the mines of the Fordson Coal Co. at Kentenia, Ky., one of these machines was in service during the last six months of 1925 and in that period advanced an entry 2,651 ft., which is equivalent to about three 6-ft. cuts per shift. Following is the comment of this company on its experiences with this machine:

SHORTWALL LOADER INSTALLED

"On June 15, 1925, one of the Jeffrey shortwall loaders was put in service in entry driving. In conjunction with this machine is a sectional conveyor composed of 6-ft. segments which are added one at a time as the loader advances in the entry. This conveyor is laid along one side of the entry parallel to the mine track for the cars which carry the coal away from the conveyor. This arrangement necessitates the use of a 7-ft. cross conveyor for carrying the coal from the sectional conveyor to the mine cars. At this transfer point, which is advanced about every 250 ft., a pot hole must be shot in the roof over the discharge point above the mine car.

"The rate of advance with this machine depends on several factors, such as the height of coal, width of entry, character of top and coal and any regulations or state laws governing shooting. One of the claims made for this machine—that it will achieve continuous operation—does not hold good where heavy drawslate is encountered. Under this condition this machine is at a disadvantage because it is delayed while the operating crew cleans up the slate. In one of our experiences we encountered a heavy drawslate which could not be held by timbers. As the operating crews on our loaders are among the highest paid, we were compelled to use high-wage men on work which is usually accomplished by men who are paid the least; besides, we suffered a loss due to the part-time idleness of the machine.

"Although the machine has disadvantages it has made a pretty fair record as to cost, production and advance during the last six months or so. Mechanically it has given us little trouble. One of the biggest items of repair has been the charge for feed ropes which drag the machine across the face."

The Fordson Coal Co. installed the first new type McKinlay cutter and loader, which started to operate early in 1925. In the eight months of the year in which it was in actual operation this machine advanced an entry 3,961 ft., cutting and loading 7,205 tons. During the month of June it advanced the entry 745 ft. On this machine the company reports to *Coal Age* as follows:

"The McKinlay cutter and loader is strictly an entry driving machine and is not adaptable to wide work. It operates most favorably where long entries are to be driven and, therefore, little moving of the ma-

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chine is necessary. Due to the size and weight of the machine it is necessary to take the machine apart to move it any great distance, which requires at least 15 days and the services of about six men. On one occasion we moved the machine 1,800 ft. by driving it through solid coal, deciding that this course would be cheaper than its alternative. While driving to the new location it was necessary to negotiate two right-angle turns. This was done by driving it 40 ft. beyond the turning point which was widened out in the new direction by four cuts of a mining machine, allowing the machine to be backed and slewed in the new direction under its own power.

"Our McKinlay was idle approximately four months during 1925 due to breakdowns which were not quickly remedied, ours being the first machine of its kind in commercial use. With further developing and some redesigning we think this machine will have real promise as an entry driver.

COST OF ADVANCE LESS

"Our experience has been that the cost per ton of coal mined by this machine is slightly greater than that of hand loaded coal. The cost per foot of advance by the machine, however, is about 2 per cent less than that incurred when the driving is by hand. The reason for this is that the section mined by the machine is of less area than that of an entry driven by hand."

A test machine of this type, equipped with a 75-hp. motor which is much larger than that on the McKinlay machine at the Fordson operations, is now in use in the Nason mine of the Illinois Coal Corp. It is equipped with a conveyor under which two mine cars can be placed. In this mine it has made an advance of 42 ft. in 8 hr. which is not the limit by any means, for frequently it has advanced 10 ft. in one hour.

A wide difference of opinion prevails as to whether loaders and conveyors should be applied to the old room-and-pillar layout with possibly some few modifications or whether these devices should be used on long faces to gain the benefit of economies long face layouts theoretically provide. Many failures in trials of long faces can be attributed to lack of knowledge and experience. Roof action, as applied to each particular condition, is not well enough understood. So attempts to control the roof in many cases have failed.

Thus far no loader that is easily portable has been applied successfully to advancing or retreating long faces. This, however, does not apply to scraper loaders, to the Jeffrey conveyor loader or to the O'Toole long face machine, none of which can be moved quickly from place to place. All portable loaders thus far developed have been working in rather narrow places and on pillars which sometimes are slabbed. This slabbing is the nearest approach to an application of portable loaders to long face work.

MACHINE PRODUCES 70,000 TONS

It is by this arrangement that the Gay Coal & Coke Co. established its enviable 1925 record of 70,000 tons from one machine. In the section of the mine worked by this loader several inches of loose roof slate overlies the coal; also there is a heavy shale band in the coal which is removed by a turret cutter. Pillars 135 ft. wide and 350 ft. long are mined by slab cuts which move toward each other and toward the long axis of the pillar. The seam is approximately 6 ft. thick.

The Bertha Consumers Co. is operating five Joys and one Myers-Whaley machine in the Eureka mine which is located near Morgantown, W. Va., and in the Pittsburgh seam. Here a typical Pittsburgh region room-and-pillar layout is employed in which rooms are driven and pillars recovered by means of these machines. Rooms which are 18 to 20 ft. wide on 50-ft. centers are driven 250 ft. long. The pillars are drawn by butoff places 18 ft. wide supported by a 6-ft. stump or peg which is pick-mined. As this mine was closed during much of 1925 because of a fire, records of full-time operation are not available. An output of as much as 236 tons has been produced by a single machine in one shift and on many days individual machines have loaded 150 tons.

JOYS LOAD AYRSHIRE'S OUTPUT

The Ayrshire No. 6 mine of the Ayrshire Coal Co., Indiana, is now producing about 1,200 tons per day, all of which is loaded by Joy machines. The No. 5 seam here is about 6 ft. thick and is overlaid by drawslate which varies in thickness up to 18 in. and comes down with the coal as a general rule. The depth of cover is about 100 ft. There is no gas, and no dust is stirred up by the machines. Rooms are 26 ft. wide on 33-ft. centers. The output is obtained by seven machines on the day shift and three on the night shift.

Inside and outside, about 130 men are employed, all of whom are paid a day wage except the cutters who are paid the tonnage scale provided by the agreement for the district. The coal is undercut and drilled electrically. This company finds that expert shooting of coal almost entirely offsets the breakage due to machine loading. The presence of drawslate requires one man to clean up after each machine, and to set timber and pull down loose slate. David Ingle, the president of the company, believes long faces could be worked quite satisfactorily in this mine if it were not for this drawslate.

At present only 60 working places are maintained as against 180 for an equal output under hand loading methods. The plant's labor cost has been reduced about 30 per cent but the supply cost has increased appreciably because the company must stand the overall charge for drilling and shooting, of which the cost of explosives is by far the biggest item. Additional power charges and machine repairs contribute to the increase.

MACHINES AID POCAHONTAS CO.

The Pocahontas Fuel Co. continues to roll out big tonnages mechanically from its mines in the Pocahontas No. 3 seam. A few additional machines and bettered efficiency of those in long time operation have enabled this company to increase its machine loaded output from 1.25 million tons for 1924 to 1.6 million tons last year. Four Coloders have been installed in the new Faraday mine of this company and three more machines will be installed soon, to be followed by others as development progresses. The company is pleased with the fact that the cost per ton over long periods varies by only a fraction of a cent. Upkeep costs and interruptions are few.

In practically every coal-producing state scraper loaders are being tried and with a fair measure of success. That this type of loading device will not pass away is evidenced by the keen interest being taken in it everywhere. Its utility for loading and transporting coal without sacrificing simplicity and ruggedness and its comparatively low cost, has made many friends. If the practicability of the various forms of "V" layouts is eventually proved, the future will probably see many scrapers applied

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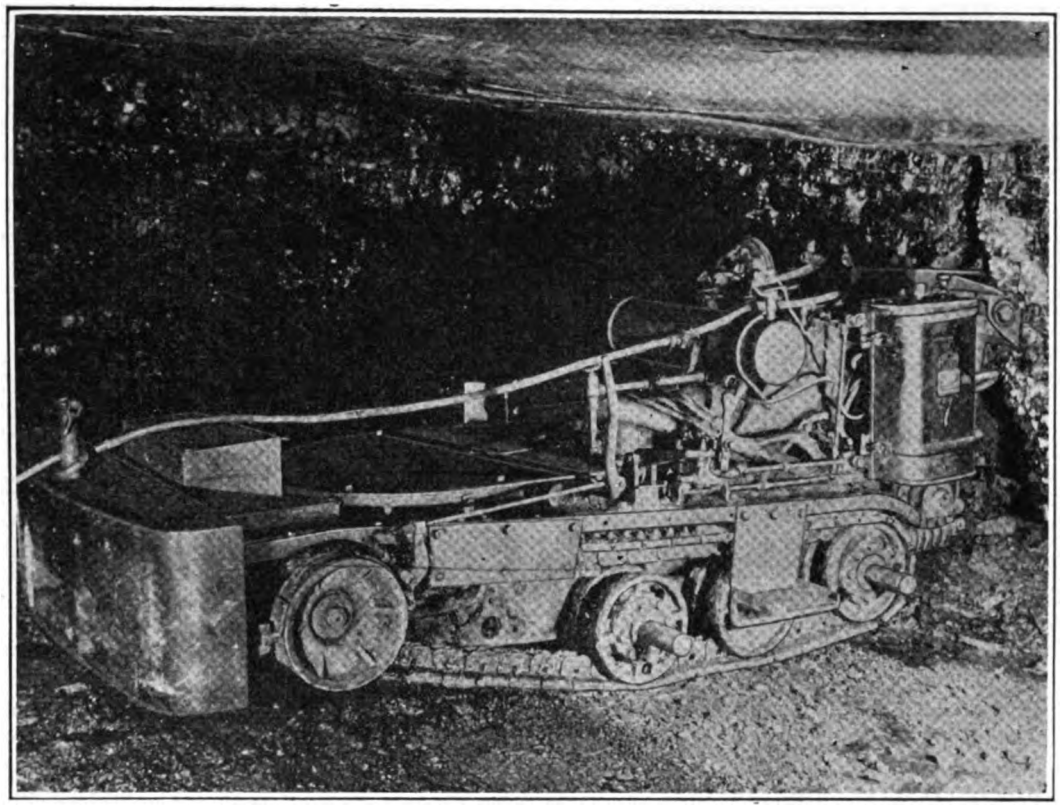

Joy Shearing Machine

It is mounted on a caterpillar tread and is provided with demountable mine car wheels such as are used on the Joy Loader. It follows the undercutting machine from place to place. Shearing not only increases the percentage of lump but also boosts the daily tonnage of a mechanical loader by eliminating tight shots.

to this mining plan which provides an easy path for them in moving from the face to the mine car or conveyor.

In its Ehrenfeld No. 8 mine and its Arcadia No. 42 mine the Pennsylvania Coal & Coke Co. is using scrapers of 1,500-lb. capacity, equipped with 35-hp. motors, in a modified "V" layout. In the first mentioned mine the seam is 4 ft. thick and in the last it is less than 3 ft. At Ehrenfeld, where three bands of impurity occur in the seam, outside mechanical preparation is required. At Arcadia, where the impurity is confined to a small sheet of bone over the seam, the coal is satisfactorily prepared at the face. The entire output of these two mines, which totals 1,200 tons per day, is produced mechanically. The experience of this company with mechanical loading methods has been uninterrupted operation and a substantial increase in output per man.

In this company's mines trials of machines designed to pick up coal with flights, arms, bits, etc., have not been successful.

In most parts of the country the tendency is toward the use of large capacity scrapers in thick seams. In the No. 4 mine of the Union Pacific Coal Co., Rock Springs, Wyo., a 3-ton scraper, made by the company, is now in use and a 4-ton Goodman scraper will be installed soon in an adjoining mine. The scraper now in use in coal from 6 to 9½ ft. thick is producing 200 to 270 tons per 8-hr. shift, with a crew of only six men who perform all the duties incident to the work of this machine. During its operation in 1925 this machine worked on a long, inclined face.

The new big Goodman scraper will be equipped with a 3-drum hoist propelled by a 125-hp. motor. This hoist will spool 800 ft. of ⅞-in., 1,200 ft. of ¾-in. and 1,700 ft. of ⅝-in. rope. In conjunction with this equipment four sections of conveyor mounted on mine car wheels are provided to carry the coal from the discharge point of the scraper to a trip of cars on a parallel entry. By this means it is believed the scraper will not have to be moved oftener than once in 10 days. The layout will employ a long straight face.

Scraper Loaded 450 Tons in 8 Hr.

One of the big scrapers introduced last year is the Ace which proved its high capacity while in operation in Mine A of the Pike County Coal Corp., Petersburg, Ind. It has loaded as much as 450 tons in 8 hr. over a period of many shifts in coal which ranges from 7 to 9 ft. in thickness and which has good roof and bottom. The bucket is 10 ft. long, 5 ft. wide and 32 in. high. It loads into a dumping platform extending over a haulway on which mine cars are spotted. This scraper is operated by a 125-hp. hoist which is capable of dislodging standing coal and imparts running speeds to the bucket of 500 ft. per minute when running light and 350 ft. when loaded. The loading platform incorporates a storage basin under which is an apron conveyor extending to the tip of the mine-car loading boom.

The Jeffrey shortwall loader is applicable to room-and-pillar work as well as entry driving. In places 25 to 30 ft. wide it loads directly into a sectional conveyor but in wider places it discharges into an auxiliary face conveyor which joins with the sectional conveyor. It also is claimed to have application in long-wall work in which case it would load from an end-on position into a sectional conveyor, thus requiring no space between the latter and the face. In two mines where the entire output is loaded by these machines the average daily output per man, inside and outside, is 10 tons.

Another interesting mechanical loading operation which bore fruit last year, as reported by Dever C. Ashmead, anthracite mining engineer of the U. S. Bureau of Mines, is the Hoar shovel installation in the Pancoast colliery of the Price Pancoast Coal Co., in the anthracite field. In the operation of this colliery during the past year this shovel facilitated the reclamation of pillars in old workings by loading out rock, 1 to 8 ft. thick, in caved chambers. The cost of this method of clean-up as

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Joy 5-BU Operating in One of the Mines in Which It Has Had Conspicuous Success

One of these machines in an operation of the Gay Coal & Coke Co., Logan County, W. Va., last year loaded 70,000 tons, double-shifting. In that time, states Harry S. Gay, Jr., general superintendent, the machine more than paid for itself.

compared with that of hand loading showed a saving of 35 per cent.

In the King mine of the Princeton Mining Co., near Princeton, Ind., two 4-BU Joys, two Jeffrey pit-car loaders and one Myers-Whaley loaded a combined average of 452 tons per day over a long period despite the fact that three of these machines were working in narrow places while only two were in operation in rooms. An Oldroyd loader was in operation there during the last half of the year but no record of its production was received.

The intense interest taken at the recent meeting of the Coal Mining Institute of America in the discussion of the highly successful use of the Myers-Whaley machine for cleaning up falls in back entries and for assisting in the brushing and taking of bottom indicates that this type will serve another specific purpose besides loading coal. One company in central Pennsylvania is operating six of these machines in this work in a low seam. The Lynch mines of the U. S. Coal & Coke Co., Lynch, Ky., are using two of these machines in the work of increasing the height of their entries. In rock work the Myers-Whaley is loading from 50 to 125 cars—1½ tons of coal capacity—in 8 hr.

The Jeffrey conveyor-loader belongs to the family of loading machines as well as to that of conveyors. As its name implies this device both loads and conveys coal and is applicable to long face work. Briefly, it is a flexible conveyor which rests flat on the bottom and is fed forward into loose coal by ratchet jacks. This conveyor extends the entire length of the face, is only 28 in. wide and 17 in. high, for which reason it is suitable for low coal and timbers may be set close to the face. Flights hinged to the conveyor chain gather and convey the coal. This mechanism facilitates the taking of two cuts from a long face in one shift.

The O'Toole machine, which is 42 ft. long, is intended for long face work in which it loads as it cuts. During 1925 it produced 89,887 net tons of coal in an actual working time of 2,272 hr., an average of 39.5 tons per hour. On the performance of this machine during 1925 in one of the mines of the U. S. Coal & Coke Co. at Gary, W. Va., Colonel O'Toole reports: "The operation of the cutting and loading machine has been satisfactory and by its use we have increased the production per man 25 per cent. We consider this good inasmuch as the machine is experimental and we would have done better had we not been experimenting for the greater portion of the year with a new roof control machine."

NEW JOY DESIGN SUCCESSFUL

During the past year the Fordson Coal Co. operated one 5-BU Joy at its Kentenia operations in Kentucky. With regard to its performance L. C. Skeen, superintendent of these mines, has this to say:

"The 5-BU Joy loader has been in use here for the entire year of 1925 with the exception of the month of June when the machine was thoroughly overhauled and the new improvements of the later type added. Our experience with this machine during the first six months of last year, before it was rebuilt and the new improvements added, involved one delay after another, due to mechanical trouble. Our records for this period show that the machine was down for repairs 23 per cent of the operating shifts. During the last five months of the year, after the design and construction of the machine had been revised, we lost only one shift due to mechanical trouble. Of course, short delays occurred due to burned out cables and things of that sort which cannot be blamed upon the machine. This experience leads us to the conclusion that the machine is now approaching the endurance of the ordinary cutting machine.

"During 1925, up to Dec. 23, this machine loaded 37,791 tons, despite the fact that it did not operate during July and was idle practically one-fourth of working time prior to that month. From January until June economies by the use of the Joy were negligible after depreciation was deducted; but during the last five months of operation it has effected a saving, over hand loading, of 13 per cent. In the accounting, to the total cost of operation is added a depreciation charge of 5½c. per ton. We also add an additional haulage charge to the cost when the loader fails to load as many tons as one gathering locomotive hauls on an average from hand loaders."

The Joy machine has been improved in a number of places. One of the improvements is a change of the gathering arms in size and shape, giving the machine increased capac-

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ity and the arms greater strength. The latter are now made of manganese steel. The demountable track wheels are now cast solid, an improvement over the old type of wheels which were built up. Changes have been made in the caterpillar mechanism, which may add to the life of this part of the machine. A new control valve provided with renewable seats has been designed, which gives dependable hydraulic pressure for raising and lowering the gathering head and the rear conveyor. The hydraulic pump which supplies this pressure has been improved by the insertion of ball bearings.

A new type of Myers-Whaley for use in 4-ft. coal was introduced last year. This machine does not replace any of the other sizes. It is about 24 ft. long, 4½ ft. wide, stands 3¼ ft. off the rail, has a reach of 8½ ft. and weighs 14,000 lb. Its capacity in loose material is about 34 cu.ft. per min.

Another of the new machines of the past year is the Stockly loader. It is one of the smallest and lowest of the machines thus far developed, is mounted on caterpillar treads and is distinctly different from other machines in that the front conveyor is a mat of interlocked endless drive chains which also serves the purpose of driving a digger shaft at the nose of the machine. On this digger shaft are mounted 20 five-tooth sprockets which are provided with digging teeth. In loose coal it has a capacity of 2 to 3 tons per min.

Thus it is apparent that not only have mining men increased their knowledge of how to fit loaders into methods of mining but several manufacturers have been alert to their own opportunities and have equipped the industry with more effective loading machines for 1926. Machine loading is steadily advancing.

Gandy Shows What National Coal Association Has Been Doing During 1925

The 1925 activities of the National Coal Association outlined in a statement by Harry L. Gandy, executive secretary, show that the association rendered a good many services to the industry. His statement covers especially the period from June, when the association's year began following the annual meeting at Chicago.

The association's standing committees are: Executive, finance, foreign trade, government relations, membership, publicity, research, safety, tax and cost accounting, and transportation. And there is a special committee to develop a plan for the collection and dissemination of trade information. This list of committees gives a general index of the major lines of work. The committees are functioning through definite programs.

The National is, of course, closely concerned with the advisory committee of Secretary Hoover, of the Department of Commerce, in relation to the reorganization of the Bureau of Mines. On this committee the National is represented by J. G. Bradley. Recently, at the instance of the American Wholesale Coal Association, the National named a committee on trade relations, and this committee met in New York, Dec. 16, with members of the wholesale organization to consider several matters of mutual interest.

Other than attending many meetings of local associations, Mr. Gandy during the last few months has addressed important gatherings, which afforded excellent opportunities to broadcast the message of bituminous coal, namely, the annual meeting of the New York State Retail Coal Dealers' Association at Richfield Springs, N. Y., the annual convention of the Purchasing Agents of the Institute of American Meat Packers, Chicago, and the meeting of the Executives of Industrial Associations at the annual convention of the National Association of Manufacturers, St. Louis.

Several conferences were held with the New England governor's fuel committee and co-operation was given also to the New York state coal commission, assisting in several educational programs for the burning of bituminous coal. The association purchased and distributed thousands of pamphlets, issued by the American Society of Mechanical Engineers and carrying directions for the use of this coal.

Studies Stream Pollution

Recent activities of the association include a study of stream pollution. In order to obtain data on this important subject for the benefit of the entire industry, a representative of the National, in the company of an official of the Bureau of Mines, made an investigation in October of stream pollution in the Indian Creek District, Pennsylvania.

The association has several representatives on the sectional committees of the American Engineers' Standards Committee. These sectional committees are outlining recommendations for the industry. We are financing a research fellowship in the Carnegie Institute of Technology in the person of Russell B. Cooper, a graduate of Pennsylvania State College.

Activities of the government relations committee have been in full force for some period. The only sound program, according to the National's experience, is one of absolute freedom from governmental interference. The attitude of the National, however, really is not arbitrary. The association is constantly studying with an open mind suggestions made by legislators, economists and others, in this and other countries, to determine if there is merit in proposed panaceas.

In order to inform fully the membership in respect to the editorial opinion of the country concerning the coal situation and also the trend of events in Washington, the association commenced on Oct. 13 a weekly series of government relations committee letters. These letters, to date, have carried thirteen symposia of editorial opinions, representing a review of more than 5,000 editorials, nearly 700 of which have been quoted, from about 500 different papers in 41 states. Our members, in not a few instances, acting on information obtained in these letters, have been successful in efforts to tone down or change for the better the policies of not a few consequential organs.

In order to keep the members completely in touch with the vital news of the industry, a bulletin is issued weekly or oftener which contains in brief and pointed paragraphs such information as we consider of outstanding value. It is largely through the medium of this bulletin that the National renders the membership a most important tax service in the form of digests of rulings of the federal tax commissioner and opinions of the solicitor of internal revenue and decisions of the U. S. Board of Tax Appeals and of the federal courts which concern operators of coal mines. Since June, the bulletin has carried more than 100 statements from the traffic bureau.

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Coal Industry Battles for Bigger Business

Electrification Is Its Best Friend and Worst Enemy—Railroads Increase their Use of Electric Power — Anthracite Briquetting Grows — Fixation of Atmospheric Nitrogen Makes New Fuel Demand

IN THE LATTER PART of the past year the sale of coal was so active as to revive the drooping spirits of those who questioned what the future had in store for the coal industry. The country's call for coal is insistent and from a widening field of consumption.

The demands of the public utilities are growing so fast that the cut in coal consumption which their fuel economies made will be largely overcome by their own volume of business. For August of this year 16 per cent more energy was used than in the same month the year before, in September 14.8 per cent more and in October 14.7 per cent. At the beginning of 1917 the daily energy generated was a little less than 65,000,000 kw.-hr. and at the end of 1925 it had reached about 180,000,000 kw.-hr., an advance of nearly 170 per cent in nine years or a little less than 20 per cent per annum.

However, one might draw more comfort from this fact than the actual conditions justify, because some of this business has been obtained by the dismantling of uneconomical isolated power plants that used to be large consumers of coal. Economies in central-station practice and economies due to the purchase of power from central stations are making dubious any attempt to get comfort from the growth of energy output from such plants, especially, as many of them are getting their coal from mines which they own or control. The increase in the demand for central-station power does, however, develop the demand for coal of small size and so decreases the necessity for careful handling of coal in mining and preparation.

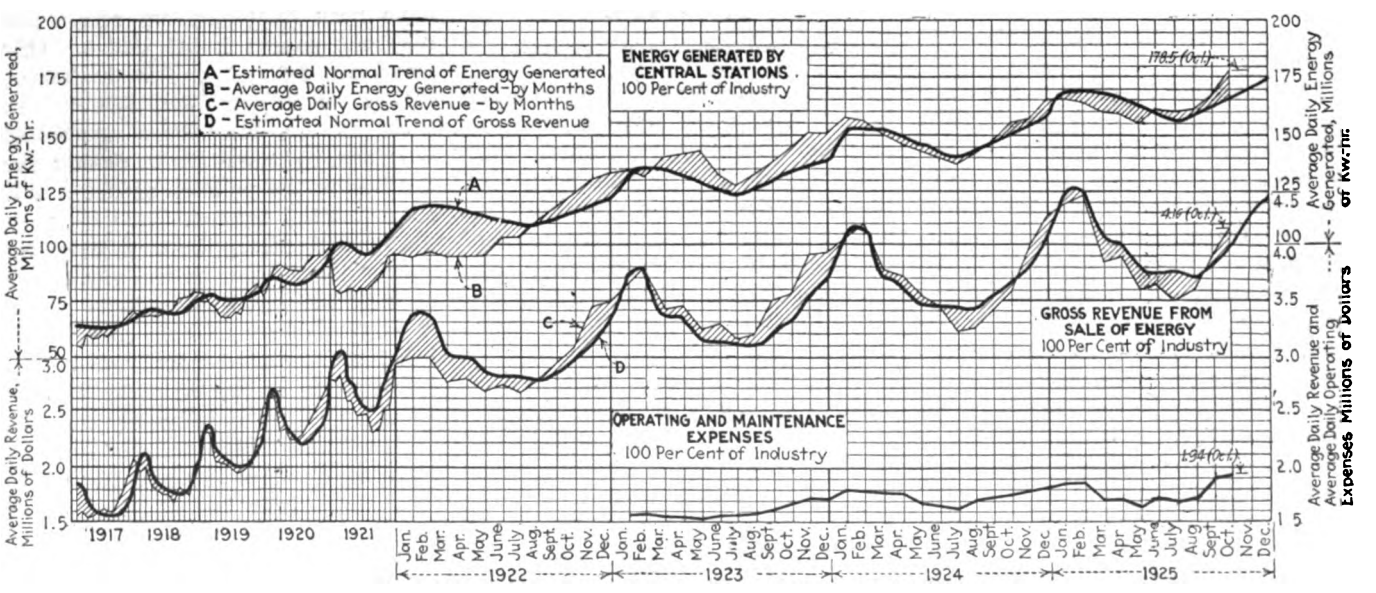
USE OF ELECTRICITY GROWS

It must not be forgotten, however, that 14,533,000 houses occupied by 63 million persons or 54 per cent of the population in the United States are supplied with electricity and all those who are using it in any form are disposed to increase that use from year to year. Illumination steadily grows more general, because of the safety, cheeriness and helpfulness of good light. It reduces accidents, it improves morale, and it makes many difficult operations easy. It also lessens eye strain.

The degree to which better lighting may be carried is hard to predict. The public slowly breaks away from parsimonious practices based on years of education in economy obtained when light was more expensive and less convenient. But the movement for better light is under way and at the same time is coming the refrigeration of buildings with relief from much of the misery accompanying existence in an atmosphere overburdened with moisture and in a temperature too near the blood heat. With that consummation an enlarged market for coal will be inevitable.

Coal has gradually been ousting oil in the production of steam for power purposes, though the anthracite strike put a crimp in this movement wherever anthracite fines were being used. However, the cream of the anthracite is in prepared sizes, and here unfortunately oil has made rapid strides in dispossessing coal since the strike started because of the uncertainty of anthracite supply and because of the ease with which oil can be burned.

A new cloud has arisen on the horizon, the Diesel electric locomotive, a unit deriving its primary power from liquid fuel of any kind and driving a motor which in turn drives the locomotive. This may be used only for switching purposes in



Courtesy, Electrical World

With This Graph the Steady Progress of the Central-Station Business Can Be Traced

The average daily revenue has progressed from about $1,800,000 in the beginning of 1917 to about $4,500,000 at the end of 1925, and the energy generated daily from about 65,000,000 kw.-hr. to 175,000,000 in the same length of time. The operating and maintenance expenses that were in January, 1923, about $1,600,000, were in Oct., 1925, a little over $1,900,000 daily. The growth of this industry, though attained partly as the result of absorbing the functions of the wasteful isolated station is one of the most hopeful answers to the question "Where will we find a place to put the increasing flood of coal?" "Cooling with coal" will draw up the summer sags in the gross revenue curve and make it look like a railroad grade.

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large cities where its smokelessness is in its favor, but it seems not unlikely that it may have a wider range of usefulness and be applied to main-line and branch line service, in which case it may reduce the railroad use of coal in an even larger degree.

As a result of the successful demonstration of one of these units, six roads will soon have similar locomotives in service. These roads are the Baltimore & Ohio, the Lehigh Valley, the Delaware, Lackawanna and Western, the Erie, the Chicago and Northern, and the Central of New Jersey. In addition, the Long Island is using a 100-ton unit which has power equipment consisting of two 300-hp. engines and generators with somewhat larger motors. Marked reductions in operating costs are considered possible by the much lower cost of fuel and the elimination of standby losses which are unavoidable with the steam locomotive.

New Motor Car

The gas-electric motor car is another development. It is said to be particularly well adapted to light-traffic branch lines where the volume of business is not sufficient to justify the high operating costs incurred with steam locomotives. Performance data on a number of roads indicate that the cost per mile of operation is as low as 40c. or less per train-mile, as compared with $1 to $1.75 for a steam train and crew.

About 50 of these cars have now been built and more than half of them have been in daily service for a sufficient period to give accurate data on operating costs.

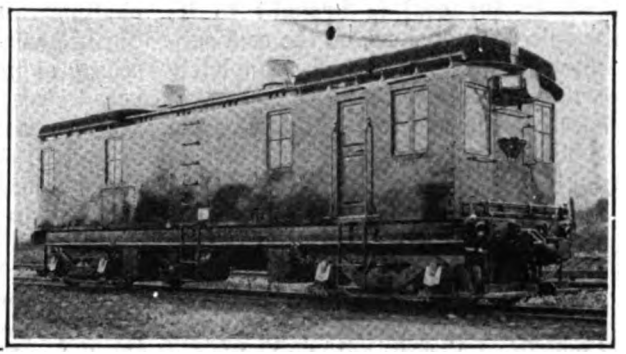
In the application of the oil engine to the propulsion of electrically driven motor cars, the Canadian National Ry. practically completed in 1925 seven single cars each approximately 60 ft. in length, equipped with a 185-hp., 700-r.p.m., oil engine direct connected to a 600-volt, direct-current generator.

A remarkable demonstration recently was made by one of these cars traveling from Montreal to Vancouver in three days. Not only were all records broken as to actual schedule, but the car was credited with making the longest non-stop run ever made by any engine. The route of 2,937 miles was covered in an actual running time of slightly under 67 hr. with an average speed of 43½ m.p.hr. During this time the oil engine was running continuously.

Another installation using the same principle is being made by the New York Central R.R. using a 200-hp. oil engine direct connected to an electric generator.

New Oil-Electric Locomotive

Engines like this 100-ton type resemble in their flexibility the storage-battery locomotives of the coal mines and are receiving much attention from the railroads. They are a new and dangerous invasion of the coal market, for they burn inferior oils.



Progress has been made during the past year in the electrification of railroads, and the advance promises a reduced use of coal due to the economies which accompany operation by electricity. The Staten Island Rapid Transit Ry., a part of the Baltimore & Ohio R.R., has been electrified from St. George to Tottenville, South Beach and Port Ivory, a distance of 21.6 route miles making 50 miles of actual trackage. The Long Island R.R. has been electrified during the past year from Jamaica to Babylon, a distance of 28 route miles. An extension of the Long Island electrification system to Mineola and over the Oyster Bay and Hicksville branches is projected.

Virginian Ry. Electrifies

The Virginian Ry. during the past year completed 14 miles of electrification from Elmore to Clark's Gap and eventually it is to be electrically operated from Roanoke to Mullens. The New York, New Haven & Hartford R.R. finished the electrification of 24 miles with 31 miles of track in 1925 and the Norfolk & Western Ry. completed an extension of its electrification system over a distance of 20 miles between Farm and Iaeger. The Detroit, Toledo & Ironton R.R. began the electrification of 15 miles between Flat Rock and Detroit (Fordson). This, of course, is part of a much larger scheme.

The Great Northern Ry. is working on a 24-mile section, and the Illinois Central R.R. has projected for the present year the electrification of 37.4 miles with 122 miles of track all within 28 miles of the Chicago terminal. Under the Kaufman Act all railroads entering New York must be electrified within the city limits. The Pennsylvania R.R. is considering the extension of its electrification so as to make possible the operation of electric trains between Philadelphia and Wilmington, Del. During 1925 the electric street railways system increased in length by 236 miles.

So many have been the savings which electricity has made possible in all the industrial enterprises that purchase coal that the coal operator will do ill if he does not continue to seek similar savings by the entire electrification of all his operations.

The mercury boiler that has promised efficiencies greater than can be obtained by the use of the steam boiler and that has given such excellent results at Hartford, Conn. is being improved by W. L. R. Emmett, the inventor. To facilitate cleaning and inspection the boiler will now be built in sections. Designs have been prepared for units of 9,000-kw. capacity in the mercury turbine and 12,000-kw. in the steam unit. With the 70-per cent efficiency which is anticipated and with 70-lb. gage pressure for the mercury vapor a kilowatt-hour should be delivered to the switchboard on 10,000 B.t.u. or a little less than the number of heat units in a pound of somewhat inferior fuel.

Pulverized Coal Up Front

Pulverized coal continues to make progress. River anthracite is being used at the Holtwood station of the Pennsylvania Water & Power Co., and the same concern is contracting for the erection of another installation at its Pine Grove station. During the year important installations have been made at the Bruno Island Plant, of the Duquesne Light Co., the Columbia power station of the Columbia Power Co. and the Gould Street station of the Consolidated Electric Light & Power Co., of Baltimore. Some coal operators look with anticipation to the further introduction of pulverized coal systems as they make possible the use of clinkering coal and coal of inferior quality. When coal is used for non-metallurgical purposes the disadvantage of

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ash in the coal is brought to its smallest dimensions, as the coal substance can be burned completely without loss and the drawbacks consist only in the cost of hauling the non-combustible, pulverizing it and taking away the ash.

During the year the estimated production of pig iron in the United States reached 36,750,000 gross tons which was almost as great as in 1920 when the output was 36,926,000 gross tons. Steel, however, showed a bigger output than in 1920 and in 1923—both big years. In 1925, 45,250,000 gross tons of steel were produced. These facts have much to do with the strong market in the close of the past year, for it must be remembered that the production of iron and steel is an index of activity of the industries which make use of it.

MINE MAKES ONLY LARGE SIZES

In the course of the year the St. Clair Coal Co., which has a mine near Minersville, Pa., put in operation a briquetting plant and it intends to supply a product for the domestic market. It will take sizes above buckwheat from the coal as it passes through the breaker and will treat the finer sizes so that they will be saleable for domestic use.

The briquets which are made by the Mashek Engineering Co.'s method with sulphite pitch and asphaltum are known in the trade as Super-Anthracite and are said to be selling at prices above those of prepared sizes. The coal is cleaned by the Chance process. Because the briquets neither clinker nor smoke and because they burn more completely than true anthracite, hold fire more readily and require less air, because of better distribution, they sell at better prices than the natural coal. The capacity of the St. Clair plant is about 22½ gross tons per hour.

ANTHRACITE BRIQUETTING ACTIVE

The activity in briquetting has been largely in the preparation of anthracite. Thus the Anthracite Fuel Corp., of Baltimore, Md., has erected a briquet plant of 15 gross tons per hour; the Philadelphia & Reading Coal & Iron Co., one of 7 gross tons at Schuylkill Haven; the Grasselli Chemical Co., one of the same size briquetting iron ore and coal. The Mines Department of Canada is to build one of 7 tons per hour capacity, the location of which is not yet announced. All these are briquet plants of the Mashek type.

Another expanding use for coal in this country is in the manufacture of ammonia. Lazote, Inc., one of the du Pont industries, is completing a plant at Belle, W. Va., (about 12 miles from Charleston) for nitrogen fixation, using bituminous coal as a source of power and raw material. The first unit of the plant is designed to turn out 25 tons per day of pure anhydrous ammonia. The French Claude process will be used, the nitrogen of course, being taken from the air. Steam will be blown over red-hot coal or coke to form water gas. This will be purified, and the hydrogen taken out by a liquification process. A portion of this hydrogen will then be burned with a definite quantity of air leaving the free nitrogen.

The nitrogen so obtained is mixed with the correct proportion of hydrogen. The mixture is then compressed to an extremely high pressure and exposed to the action of a catalyzer forming ammonia. The carbon monoxide which is taken from the water gas in the process of isolating the hydrogen is burned under the boilers in conjunction with coal. It is rumored that if the first unit of the plant is as successful as expected, three additional units will be constructed in the near future.

Thus the uses of coal are constantly widening and former industrial demand is strongly maintained by vast business activity throughout the land in spite of new economies that are accomplished in fuel consumption and despite the inroads of substitutes.

Coal Produced in Montana, New Mexico and Oklahoma in 1924[a]

(Exclusive of product of wagon mines)

State and County	Net Tons: Loaded at Mines for Shipment	Sold to Local Trade and Used By Employees	Used at Mines for Steam and Heat	Made Into Coke at Mines	Total Quantity	Value: Total	Value: Average per Ton	Number of Employees: Underground: Miners b	Underground: All Others	Surface	Total	Average Number of Days Worked	Average Tons per Man per Day
Montana:													
Carbon	987,939	43,790	57,485	.....	1,089,214	$3,742,000	$3.44	733	338	225	1,296	175	4.80
Cascade	499,836	28,938	9,865	.....	538,639	1,417,000	2.63	447	165	119	731	150	4.90
Fergus	.....	3,800	.....	.....	3,800	15,000	3.95	4	3	3	10	187	2.03
Musselshell	946,847	14,890	13,944	.....	975,681	2,586,000	2.65	550	278	111	939	177	5.88
Richland	18,618	10,806	.....	.....	29,424	113,000	3.84	24	20	7	51	229	2.52
Sheridan	300	11,659	.....	.....	11,959	28,000	2.34	18	2	2	22	178	3.05
Other counties c	197,296	56,707	2,645	.....	256,648	695,000	2.71	76	17	54	147	219	7.98
Total	2,650,836	170,590	83,939	.....	2,905,365	8,596,000	2.96	1,852	823	521	3,196	173	5.26
New Mexico:													
Colfax	1,478,975	15,666	13,758	136,212	1,644,611	5,480,000	3.33	1,223	486	661	2,370	190	5.66
McKinley	844,377	20,869	24,581	.....	889,827	3,241,000	3.64	868	265	174	1,307	214	3.18
Rio Arriba	31,020	42	600	.....	31,662	95,000	3.00	29	7	9	45	238	2.96
San Juan	.....	4,414	.....	.....	4,414	9,000	2.04	6	1	.....	7	224	2.81
Other counties d	195,066	8,010	12,473	.....	215,549	949,000	4.40	290	92	95	477	241	1.87
Total	2,549,438	49,001	51,412	136,212	2,786,063	9,774,000	3.51	2,416	851	939	4,206	204	3.25
Coal	27,011	1,340	898	.....	29,249	$136,000	$4.65	72	33	28	133	96	2.28
Haskell	67,426	1,876	3,545	.....	72,847	364,000	5.00	25	8	92	125	151	3.86
Latimer	238,739	1,363	13,922	.....	254,024	945,000	3.72	477	206	120	803	138	2.29
LeFlore	145,157	12,991	4,991	.....	163,139	652,000	4.00	354	169	93	616	96	2.77
Okmulgee	814,380	752	3,551	.....	818,683	2,514,000	3.07	1,032	379	186	1,597	118	4.34
Pittsburgh	683,290	4,732	29,772	.....	717,794	3,061,000	4.26	1,337	936	286	2,559	122	2.31
Tulsa	166,217	10,759	.....	.....	176,976	611,000	3.45	26	8	146	180	222	4.44
Other counties e	94,717	2,186	.....	.....	96,903	307,000	3.17	1	1	129	131	174	4.25
Total	2,236,937	35,999	56,679	.....	2,329,615	8,590,000	3.69	3,324	1,740	1,080	6,144	124	3.85

a Note that the coal statistics of the Geological Survey for a given year include only the mines that had an output in that year. Many mines that operated in 1923 produced no coal in 1924; moreover, many of the mines that did produce in 1924 worked for a short time only. The number of active mines of commercial size in Montana was 48 in 1923 and 68 in 1924; in New Mexico, 42 in 1923 and in 1924; in Oklahoma, 115 in 1923 and 94 in 1924.

b Includes also loaders and shotfirers.

c Blaine, Chouteau, Custer, Dawson, Gallatin, Hill, Judith Basin, Pondera, Rosebud, Toole and Wibaux.

d Lincoln, Sandoval, Santa Fe and Socorro.

e Includes Craig, Muskogee, Rogers and Wagner.

Statistics issued by U. S. Bureau of Mines.

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Anthracite Operators by Management Cut Costs While Seeking Labor's Aid in So Doing

By H. S. Gilbertson*
Approved by
S. D. Warriner
Chairman of the Anthracite Operators' Conference

THAT THE ANTHRACITE industry is not in the "hard-boiled monopoly" class has been made clear to those who are willing to read the signs, in the comparative complacency with which the public has accepted the recent strike, and satisfied its wants with low-volatile bituminous coal, coke and oil. Long before the strike, competition made itself unmistakably and increasingly felt as the prices of anthracite were forced to higher levels. Many of those who would like to have burned anthracite burned substitutes, just as many of those who would like to have driven Pierce Arrows have contented themselves with Fords.

Competition forced down prevailing prices of the domestic sizes at the mines, so that even after the beginning of the 1925 strike, they were from 10 to 30c. lower than in September, 1924. From which it is evident that by no such monopoly formula as "cost-plus" may the industry "help itself" to "enormous profits."

What the public has completely overlooked is the sharp drop since the period immediately following the war in prices of steam sizes, which always have sold at less than the cost of production and comprise from 20 to 50 per cent of the output of the various companies.

Considers Management

Thus has a severe pressure been applied on margins of profits from the revenue side. And from what follows it should also be clear that rather than following, or seeking to follow, the path of wage reductions, *the industry has put the first and chief burden of adjustment upon management.*

From the cost direction comes a pressure from countless sources which can only be appreciated by those who are actually in the production end of the business.

To a large extent the future cost problem inheres in the very nature of the physical conditions of mining. Taken as a whole the industry is in the stage of second mining; in many cases third mining. Many years ago, with the application of the comparatively crude mining methods then in vogue, the cream was skimmed off, leaving for the present and future generation the thinner seams and old workings which require a larger amount of timbering, yield a larger percentage of the poorer sizes and necessitate a more thorough treatment in the breakers, and the disposal of a larger amount of refuse.

Conserving Resources

To face these conditions squarely and make the best of them is as much in the interest of the public as of the owners. It is conservation of natural resources. The percentage of recovery in mines which, thirty or forty years ago were considered completely worked out has been increased from an original of less than 40 per cent to as high, today, as 70 per cent. Reflecting these increasing mining difficulties, and possibly other factors, the daily output of the men at the face has decreased, according to data compiled for this magazine, from an average of 7.5 tons in 1877 to 4.0 tons in 1922. During the last 25 years the wage rates of all mine workers has steadily mounted.

The alternative to remining is to tap the lower levels, which involves increasingly greater drainage, ventilation and timber costs. This entrance into new territory also, of course, involves heavy charges for the sinking of new shafts and driving new tunnels.

Thus, the anthracite management problem is a two sided one, with the public on one side insisting on lower prices for its fuel, and labor, which constitutes 70 to 75 per cent of f.o.b. mine cost, with labor on the opposing side insisting upon a stable or even an increased wage rate. That the industry is attempting to meet this double pressure with due consideration for, and, if possible, actual accommodation to the desires of both the public and labor, should be evident from a recital of recent accomplishments.

It may seem paradoxical that the industry is undertaking to increase revenues, and at the same time reduce prices. The explanation, however, is simple, when one realizes the enormous spread between prices obtainable for a product the units of which at all times are substantially the same in heat and cleanliness values and differ only in the size. If, with the same total tonnage an increasingly larger proportion can be moved up from the low-revenue to the higher revenue classes, the desired results will be obtained.

Effort begins at the working face. Experiments have proven beyond a doubt that with the better placing of shots a smaller amount of explosive power can be utilized to bring down an equal tonnage, but a tonnage richer in prepared sizes. Some of the coal companies, with the very able assistance of the powder manufacturers are making extensive scientific tests along this line, with encouraging results.

Not Suited for Machines

In some portions of the anthracite field, where the veins are practically horizontal, undercutting machines are used, eliminating in part the need for powder and increasing the percentage of larger sizes. In some few instances also mechanical conveyors from the face to the gangway are employed to prevent breakage. Unfortunately, however, these devices are not available in a large portion of the anthracite field because of the pitch of the veins. Through the introduction of such mechanical devices as rotary dumps, spiral chutes and mechanical systems of loading into railroad cars the campaign for bigger sizes goes on at the loading point in the mine, at the breaker dump and through the breaker to the railroad cars.

Turn now to the other end of the business, and we find the anthracite industry attacking the problem of fine sizes from the sales point of view. It took the better part of a century for the public to come around

*Director of Personnel, Lehigh Coal & Navigation Co., Lansford, Pa.

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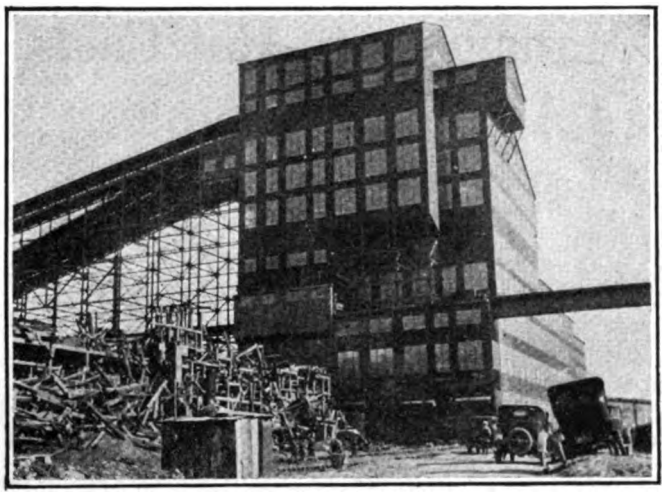

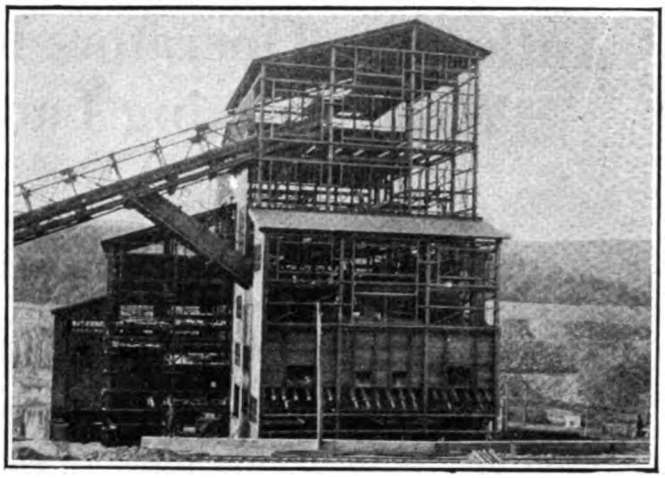

These Two New Breakers Indicate a Trend Toward Modernization in Anthracite

More than 10,000 tons of material can be handled in a day in the new colliery shown at the left. Towering more than 200 ft. above the ground level this breaker of the Lehigh Coal & Navigation Co., at Lansford, is a giant in size and capacity. The only steam used around here is for heating, all equipment is electrically operated. The wood piled in the left foreground marks the spot where the former colliery stood. The new breaker being built by the Repplier Coal Co. and shown at the right is in the lower anthracite region. By using the most modern equipment available and eliminating wastes, operating costs can be reduced.

to the practice of using, domestically, anything smaller than chestnut. Everything smaller went out to the culm banks. Even of later years the acceptance of the smaller sizes has been a matter of extremely slow growth. Under the pressure of high costs and public demand for lower prices, the industry has found it imperative to stimulate their use. To this end the operators established, in 1924, the Anthracite Coal Service, a co-operative agency to educate the public in the fact that economies can be effected without loss of service by utilizing the buckwheat sizes.

BIG SAVINGS MADE

In the first ten months of 1924 this service estimates that it has saved to the anthracite industry a tonnage of 803,444. Individual companies have rendered a similar service to the small users, particularly in large centers near the source of production. Their demonstrators go to the schools and churches and to private homes and give instruction in the economical use of No. 1 Buckwheat.

The gradual increase in the use of the small sizes has justified and encouraged much better preparation, and should result in even better sales results as time goes on. Modern jigs and concentrator tables have been installed in most of the modern breakers. New processes have made it possible to put on the market a cleaner No. 4 buckwheat product suitable for industrial uses.

In the direction of general cost reduction many changes have been effected both in the inside and outside operations, designed to eliminate labor and to speed up the movement of the coal. Electric haulage, including the use of storage battery locomotives, has been rapidly displacing other forms of transportation. The size of rails has been increased and steel and roller bearing mine cars are replacing the wooden ones; automatic doors are replacing door tenders, and shaker conveyors are in many instances replacing coal pushing. Mechanical loading, in a number of mines is displacing a disagreeable form of manual labor.

In the outside operations anthracite progress is visible in the replacement of many old wooden breakers by those of steel construction. In a number of instances a consolidation of breakers has resulted in substantial reduction in labor force. Another outstanding achievement is the automatic remote control of fans and pumps, which in all cases eliminates attendants. General electrification of the operations appears to be the ultimate goal of all the progressive companies which are in a position to undertake the initial expenditure.

Reduction in cost is frequently tempered by considerations of safety. High power electric fans furnish enormously increased volumes of air at the working face. Electric firing batteries have been extensively installed in gaseous mines, and permissible explosives (at the expense of prepared sizes), have been generally adopted as a substitute for the slower but more dangerous black powder. First aid work has been stimulated by the U. S. Bureau of Mines and heartily supported by the coal companies and the men. While the introduction of safety devices and measures occasion an apparently unproductive outlay, it has its economy reward in a substantial decrease in fatal accidents per million man days and in tons produced per fatality.

INDUSTRY IS PLANNING

It is often said in disparagement of business organizations that they seldom have within themselves the capacity for developing improved methods and procedure and that the main impetus for improvement comes from outside agencies which have something to sell. While it is true that very many of the changes, particularly in the mechanical field which have been utilized to advance the anthracite industry, have come from manufacturers of supplies and equipment, it is also true that *the industry itself is doing much thinking and planning. At least one large company has a well organized and effective research department.* At the present time it is conducting detailed studies of outside labor forces, inside transportation control, cleaning and closing gates on railroad cars, treatment of mine timber, analysis of clerical functions at the several collieries, excessive overtime, and several automatic devices at various points in the operations.

Important and promising as are the efforts of the companies in the direction of greater mechanical efficiency, sales service, and elimination of abuses in taxation, all these matters sink into insignificance in comparison to the human factor. It is not a question of "taking it out of labor," but rather of promoting an enlightened and farseeing attitude of

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self-interest on the part of labor. The committee of prominent engineers and economists who addressed the operators' and miners' negotiating committee were right: the vital problems of the industry can and should be solved by a joint effort of management and men. In the case of the high-cost, low-realization companies the only alternative may prove to be ruin for both parties. The plain economic facts of the industry cannot continue to be ignored.

The human problem in the mines is, of course, as complex as human nature. It cannot be analyzed here. From an operating standpoint the important aspect of it is not so much wages as it is discipline. Discipline in the anthracite mines, whatever may be the cause, is frankly unsatisfactory at all times. The periodical strikes by which the public is reminded of the industry are but an acute manifestation of daily operating conditions concerning which the outside public hears little.

Workers Are Antagonistic

No doubt the ultimate cause of much of this condition lies in the inability of operators and managers to strike a proper note in dealing with their men. No doubt serious mistakes were made many years ago by those in charge of the mines, and the memory of those mistakes is still potent. On the other hand there is no doubt that the advent of unionism in the form known to the anthracite industry has contributed largely to the difficulties. It is a part of the permanent, underlying conscious strategy of the United Mine Workers to create not only a diversion of loyalty from but a positive, active antagonism toward, the employer.

Aside from this more or less peculiarly anthracite phenomenon there are certain tenets of unionism generally that militate against changes that even remotely affect the so-called rights of the workers. In the old inefficient days prior to 1900 when the mines were under an unsatisfactory system of supervision, a form of workers' independence grew up that in many ways was of immediate or seeming advantage to the individual. According to the philosophy of the union, rights thus acquired through long usage may not be taken away except by agreement. This doctrine, in fact, is deeply embedded in the award of the Anthracite Strike Commission of 1902 and in subsequent agreements.

The principle is not without much sound justification: genuine rights which are really and ultimately beneficial to the workers should not be arbitrarily taken away, nor should they be bargained away lightly. The real complaint of the operators is that it is so often extremely difficult to strike a bargain on such matters even when the terms are extremely generous. For instance, there are many mines in the anthracite region where there is no checking of workers' time, for the simple reason that such a system was not in effect in 1902. The workers have a vested right in inefficient accounting!

Nor can there be any doubt that under union methods there has been a definite restriction of output at a number of points. This is most clearly shown in the short day worked by most of the miners in parts of the field. Whereas, the present agreement bases compensation upon a full 8-hr. day at the working place, compliance with this provision, on the part of contract miners, is the exception rather than the rule. (The last investigation of the U. S. Department of Labor shows an average of 6.3 hr.) Threats and fines have been imposed in numerous instances upon individuals who did nothing more than produce the daily output which they were fully capable and willing to produce.

It is true that a reversal of these policies and particularly greater productivity and amenability to discipline would bring results of immeasurable value not only to the operators and to the public but in equal measure to the workers themselves.

Solution Is Difficult

To state the labor problem is simple. To formulate, much less to effect, a solution is by all odds the most difficult undertaking in anthracite operation. What seems to be required on the part of everyone concerned is a more complete understanding. This may sound like the threadbare, cant phrase that crops out so often in industrial discussions, but the thought in mind is something definite, as exemplified by the program of one of the companies.

This company, which probably faces more than the average mining and commercial difficulties, has chosen to lay the facts of its situation with complete frankness before its supervisory forces, the mining community and the rank and file of the workers. It has broadcasted the facts concerning its profits and losses, its costs, its margins. It has pointed out, not in general terms, but in specific detail, the common interest of all in preserving a satisfactory market.

Building upon this basis of better confidence and understanding, the company in question is also taking definite measures to tap hitherto undeveloped resources among the operating executives. More specifically, it is undertaking to take hold of the "practical" men of the organization, those who are right next to the big problems of industry, and bring them into contact with the larger aspects of the business.

Conferences Prove Successful

The particular procedure employed is the "foreman conference" which, by the way, is designed more especially for the assistant foreman than for his chief. Twice each month these operating men meet, discuss and report upon assigned problems of operation, costs, safety, organization, the handling of men, etc. The results of this effort have far exceeded expectations and, in addition to making available to the whole organization much valuable information and experience, are in a new but very real sense taking these important keymen into the management.

It is through such constructive means that the industry may hope to solve both revenue and cost problems without recourse to what, in some industries, is the easy but, in the long run, unsatisfactory route of wage reductions—*provided*, organized labor can be persuaded to use its imagination and become a party to that program of joint effort which the committee of economists and engineers suggested.

Organized labor, in this industry, as in others, does well to take a vigorous and determined stand against ruthless levelling of wage scales and living standards. In doing so it promotes its own interest but also performs a service of inestimable importance to the whole economic community. The first responsibility *for any adjustments to meet price conditions undoubtedly rests upon capital and management. But these factors cannot bear the whole burden.* For labor to fail in making its contribution to efficiency or, if necessary, to refuse to make some temporary sacrifice in compensation standards is suicidal.

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Strike Dominated Anthracite History of 1925

No Public Clamor for Hard Coal Rose Because Consumers Stocked Up Heavily in Advance and Accepted Well-Organized Plan for "Substitutes"

THE STRIKE, which started on Sept. 1, 1925, and still continues with no signs of an early approach to a settlement, is the overshadowing feature of anthracite history for 1925. Inaugurated as a demand for increased wages and improved working conditions, the struggle has developed into a bitter fight over the question of arbitration as a road to permanent peace in the industry. The situation has been further complicated by proposals for legislative action at Washington and the intervention of Governor Pinchot of Pennsylvania, who is now trying to induce the state legislature to declare the industry a public utility.

The demands of the mine workers were formulated at the tri-district convention of the anthracite districts of the United Mine Workers, held at Scranton, Pa., the week ending July, 4, 1925. The report of the scale committee made the following demands:

(1) A two-year contract terminating Aug. 31, 1927, with full union recognition, including the check-off.

(2) A ten per cent increase to contract workers, an increase of $1 per day to day men and the restoration of differentials existing prior to the award of the Anthracite Coal Commission in 1920.

(3) Uniformity and equalization in day rates, consideration rates equal to contract miners' earnings, and the payment of the "standard" recognized rates in the region to skilled mechanics.

(4) Payment for coal on a gross tonnage basis, establishment of permissible percentages of refuse and abolition of existing system of dockages and penalties.

(5) Payment for props, forepoling, etc., free jackhammers and air and free electric lamps and batteries.

(6) Minimum rates of 20c. per inch for refuse in all kinds of mining up to 10 ft. wide and 30c. for blasting top and bottom rock.

(7) Crediting of all cars at working place, continuous employment for maintenance men, five-day week, seniority rules, more prompt adjustment of grievences.

Joint conferences between the miners' committee, headed by John L. Lewis, international president of the United Mine Workers, and the operators' negotiating committee, William W. Inglis, chairman, began at the Hotel Traymore, Atlantic City, N. J., July 9. Following the formal presentation of the demands, S. D. Warriner, chairman of the Anthracite Operators' Conference, in a public session, declared that the competitive situation was such that the industry could not stand further increases in the cost of production.

THE COST OF STRIKES

From Sept. 1 to Dec. 31, 1925, striking anthracite miners sacrified over $100,000,000 in wages, the operators lost the sale of approximately 23,500,000 gross tons of coal and the business interests of the anthracite region untold millions. Production to Sept. 1, when the strike began, was estimated at 55,000,000 gross tons, as compared with 78,506,127 tons for the full calendar year preceding. Worse still, the industry faces the permanent loss of a share of its markets to other fuels.

To assure the public that there would be no interruption in the flow of coal, he asked the miners to join with him in an agreement to continue work after Aug. 31, if no contract had been signed by that date and also suggested that subjects upon which the conferees were unable to agree be submitted to arbitration. This offer of arbitration, renewed several times during later conferences, was rejected by the miners.

LEWIS ENDS CONFERENCE

The conference was abruptly terminated by Mr. Lewis on Aug. 4 before the miners had completed the presentation of their case because the operators refused to agree to the wage increases. It was estimated that the granting of the demands would add 30 to 35 per cent to the cost of coal.

A last-minute effort, engineered by business interests of Scranton and Wilkes-Barre, to prevent the strike failed. Disputes over the status of the maintenance men were ironed out a few hours before the suspension became effective and these men continued at work. Later during the strike some of the local unions started agitation for the calling out of these men, but their demand was ignored by district and international officers of the union.

GOVERNMENT STAYS OUT

From the outset the federal government at Washington adopted a hands-off policy. It has held to this policy consistently, although President Coolidge, in his message to Congress in December, urged a reconsideration of the recommendations of the United States Coal Commission and several bills have since been introduced to effect government intervention.

Governor Pinchot, whose settlement of the strike of 1923 occasioned widespread criticism, stepped into the picture at an early date. He invited representatives of the miners and the operators to discuss the situation with him, but made no public recommendations until Nov. 28. At a public meeting in Harrisburg on that date he proposed an eleven-point peace program, providing, among other things, a five-year contract, for a general investigation, price-fixing, a modified check-off, and arbitration to determine whether wages should be *advanced.*

MINERS FOR PINCHOT PLAN

The miners promptly accepted his plan as a basis of settlement and the operators promptly rejected it. In their rejection the producers made public the fact that a union emissary had come to them several days earlier and that they had submitted terms of settlement providing an immediate return to work at the old wages, and a five-year contract, subject to annual revision by a board of seven members, including three representatives of the public. Later a number of legislators from Luzerne County submitted a proposal along somewhat similar lines and the operators expressed a willingness to negotiate on the Luzerne basis.

Region business interests and the

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mayors and burgesses of the anthracite belt again became active. The Governor invited the municipal officials to confer with him, but they refused to bind themselves to an indorsement of his plan. In the meantime, the Governor issued a call for a special session of the state legislature to meet Jan. 13, 1926, to consider, among other things, the enactment of legislation regulating the industry as a public utility and authorization to enter into interstate compacts with consuming states to control prices and distribution.

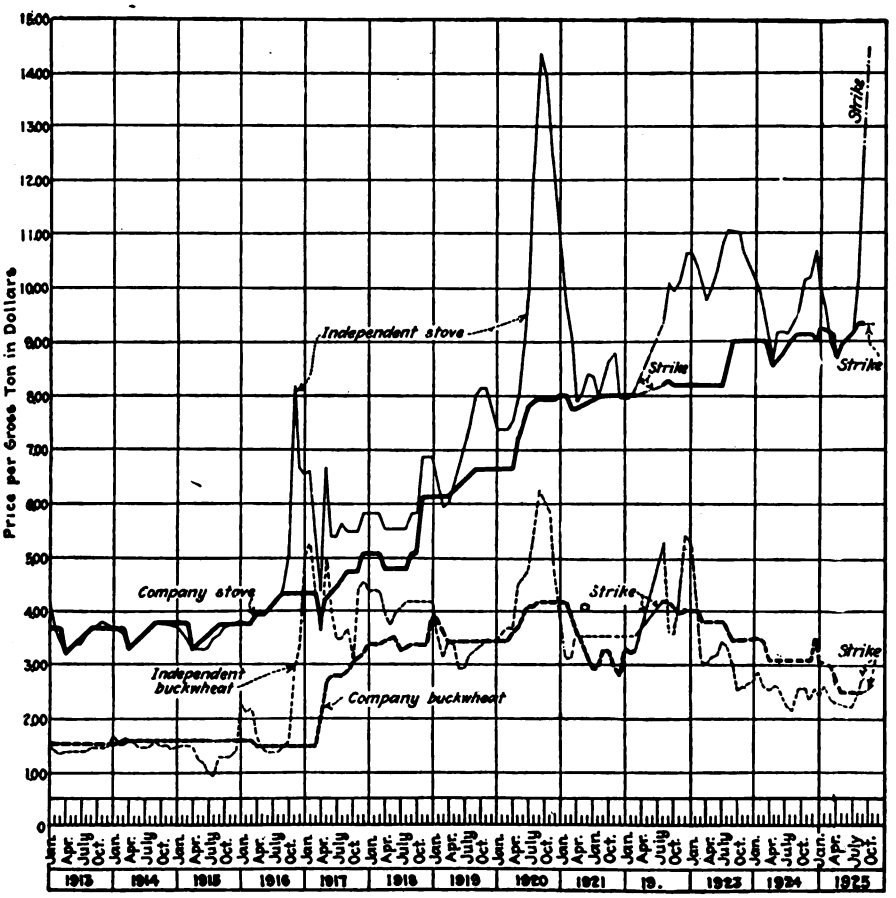
MARKLE SUBMITS PLAN

Christmas Eve, following the failure of a mayors' committee to effect a resumption of negotiations between operators and miners, Alvan Markle, chairman of the conference, issued a call for a meeting at the Union League Club, New York, on Dec. 29. At the opening session, he, too, submitted a plan, which was printed in full in *Coal Age*, Dec. 31, 1925. This plan also was rejected by the miners because of its arbitration features. Mr. Lewis and his associates again presented the Pinchot program and it was summarily dismissed by the operators. Later the miners incorporated many of its provisions in what they designated as a "revised Markle plan." The suggestion that the issues he left to Charles Evans Hughes was voted down by the miners.

On Jan. 11, Major Inglis, for the operators, offered a plan which he said represented the utmost that the producers could go in the way of concessions. This plan, rejected by the miners, called for a five-year contract at the old wages, subject to annual reconsideration by the Board of Conciliation. In the event of a deadlock in the Board, a board of three arbitrators would be named to decide the dispute. The next day the conference was again adjourned *sine die*.

DEMAND NOT URGENT

Unlike the course of events during previous strikes, there has been little clamor by the public for hard coal. This is due to two facts—heavy stocking in anticipation of the strike and a well-organized campaign to teach the consumer how to burn soft coal and coke. The Interstate Commerce Commission issued orders, establishing all-rail rates on prepared sizes from the West Virginia low-volatile fields. The scope of these orders was subsequently extended to cover shipments from the high-volatile districts and from Virginia to New England and the Middle Atlantic states. The West Virginia smokeless operators, encouraged by the New England Governors' Fuel Committee, opened demonstrating stations in Boston and other New England cities. New York City also established instruction centers.



Anthracite Prices for Thirteen Years

This diagram shows in dollars per gross ton the average company circular prices and average spot quotations on "independent" stove and buckwheat sizes of Pennsylvania anthracite at the mines. Prices shown are averages of the range as quoted on the New York market.

Up to Dec. 31, it was estimated that the smokeless operators had shipped over 250,000 tons of prepared coal all-rail to the New England and Middle Atlantic States and the Kanawha district approximately 112,500 tons. Demand for coke has taxed the capacity of by-product ovens in the Northeast and the supply available from those sources has been supplemented by erratic shipments from the Connellsville region and some lots from ovens as far distant as Alabama.

In addition to these sources of supply, communities accessible to the seaboard have turned to foreign countries. Coke and coal have been imported from Germany and Scotland, anthracite from Wales, Scotland and Germany and bituminous from the British Isles and Canada.

Figures for the eleven months ended Nov. 30, 1925, compared with the corresponding period in 1924, show an increase of 67,233 gross tons in the imports of anthracite coal, 137,636 tons of bituminous and 56,088 tons of coke. In the three months beginning Sept. 1, 1925, compared with the corresponding period in 1924, anthracite imports increased 74,025 gross tons; bituminous coal 96,172 tons and coke, 30,245 gross tons.

BETTER MERCHANDISING

The year just closed witnessed considerable expansion in the program of better merchandising for anthracite coal. The industry adopted uniform standard sizing requirements which give the retailer and consumer opportunity to check on the preparation. The engineering service of the producers has been further extended to help anthracite hold and recover markets. Dealer helps have been pushed. The latest development calls for series of lectures to retail groups on coal and efficient combustion.

The old spirit of "take it or leave it" is dead.

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Labor History Traces Decline of Union Tonnage From 70 to 34 per Cent of U. S. Total

By Sydney A. Hale
Special Contributor, *Coal Age*
New York City

AT THE CLOSE of the World War over 70 per cent of the bituminous tonnage mined in the United States was produced by union labor and under contractual relations between the United Mine Workers of America and the operators. Last year less than 34 per cent of the tonnage came from union mines. Had it not been for the general improvement in soft coal demand incident to the anthracite strike during the final quarter of 1925 the percentage of union-mined tonnage would have been still smaller.

This assertion is fully borne out by the figures in Table XI. The shift of districts and entire states from the union to the non-union column is striking. Equally significant is the rapid increase in the output from the non-union districts of the Appalachian Region. Maryland and the skeleton-organized Tennessee, which is really non-union and is so treated here, are the only exceptions. Central Competitive Field tonnage has suffered a marked decline since the war-time peak. The Virginias, the non-union areas in Pennsylvania, Kentucky and Alabama, on the other hand, are forging ahead and the 1925 output for those sections establishes new records. And yet, great as these gains have been, they by no means test the productive capacity of the non-union fields.

How and when these changes took place was traced in the preceding chapters in this history of the decline of union influence. Why there has been such a recession in union power remains to be considered. It is possible, of course, to give new twists to the many theories which have been advanced from time to time to explain the collapse of union control, but, upon analysis, they all resolve themselves into two underlying causes:

(1) Dissatisfaction with and hostility to the set-up and policy of the United Mine Workers of America, and,

(2) Competitive conditions.

Hostility finds its fullest expression, perhaps, in southern West Virginia, the Somerset field of Pennsylvania and in Alabama. In many respects unionism is the antithesis of individualism — and there are hundreds of strong individualists in the states named. West Virginia, in particular, early rebelled against a union policy which closed down mines in that state to help organized labor win a battle in some other part of the country. Dependent almost wholly upon interstate markets to sustain their enterprise, the pioneering coal producers matched the militancy of the growing union with a militancy as virile and as ruthless.

WHAT PRICE OBSTINACY?

The impetus given non-union development by the stand-pat wage policy of the United Mine Workers has placed the operations not recognizing the union in a position to supply 85 per cent or more of the normal bituminous coal requirements of the country. Organized labor in the coal fields, given a real start by the abuse of power by capital, is now menaced by the results of its own abuse of power.

Oversteps the Bounds

Even in those fields in which hostility to organized labor is a minor factor, there has been a growing dissatisfaction with and a rising resentment against union policies which seem to the operators affected to penalize them for dealing with the United Mine Workers. The petty strike, which the head of the union himself admits his organization cannot completely eradicate, is naturally a sore point. Infringement by local union officials upon the province of management is another cause of complaint. Irresponsible district leadership also has been added to the burdens under which unionized mines have been compelled to operate.

The chief grievance of the outlying districts, however, has been their lack of autonomy. In the perfection of its control over the Central Competitive Field the union has adopted a program which makes all the other districts and their problems subsidiary to that field.

"It has become increasingly evident by reason of the accumulative experience over a number of years," declared the commercial operators of the State of Washington when they severed union relationships, "that the policy of the United Mine Workers of America is not one of consideration for the interests of the industry and its members in this district, but one under which those interests are sacrificed to the interests of that organization in remote districts."

This complaint merges into the broad question of competitive conditions. Without violence to the facts it may be stated that some of the pre-war breaks between operators and the United Mine Workers were due to the inherent hostility between two opposing conceptions of the basis upon which labor relations should rest. For the most part the reverses which the United Mine Workers has met since 1918 have been due to refusal to recognize the competitive conditions confronting the producers.

Whatever may have been the humanitarian considerations which persuaded the operators in the Central Competitive Field to enter into relations with the union and to assist in creating a strong labor organization by granting the check-off, the desire to stabilize conditions within their own sphere of activity and the hope that that stabilization would be extended to other districts were controlling factors in their decision. Within that field and within the outlying districts as they came into the union fold that stabilization, insofar as it applied to basic labor costs, was effected.

But the defeat of the union's efforts to enforce that stabilization in other competitive districts has made the union operators question

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Concluding article in a series describing the changes in the labor status of the different bituminous coal producing districts of the United States in recent years. Preceding articles in this series appeared in *Coal Age* Sept. 25, Oct. 1, 8, 29, Nov. 19, Dec. 31, 1925, and Jan. 14, 1926.

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the price paid for stabilization. So long as demand was at a peak there was no complaint because the basic wage scales in effect in the union districts set the standard for wages in competitive non-union fields. In periods of depression, however, the unorganized districts have taken full advantage of their power to readjust wages to reduce the cost of production and to maintain an undiminished tonnage.

This is strikingly illustrated in the tonnage records of central Pennsylvania and the Pocahontas region of West Virginia. In 1920, when the total bituminous output of the United States was 563,490,845 tons, the Pocahontas region produced 18,037,736 tons and central Pennsylvania, 58,172,416 tons. The following year production for the country as a whole decreased 147,538,955 tons, or 26.2 per cent; central Pennsylvania output declined 19,009,342 tons, or 32.6 per cent. But the tonnage loss for the Pocahontas region was only 587,917 tons, or 3.2 per cent!

Table XI—Dwindling Union Tonnage

Union-Controlled Tonnage at Peak of Power Compared with Union Output in 1925 and Non-Union Potentialities in 1926

(Figures in Net Tons)

	1918*		1925†		1926‡
	Union	Non-Union	Union	Non-Union	Potential Non-Union Output
Alabama	9,241,000	10,011,000	.....	21,238,000	27,500,000
Arkansas	2,227,000	.....	450,000	965,000	2,028,000
Colorado	6,824,000	5,584,000	.....	10,157,000	13,936,000
Illinois	89,291,000	.....	68,997,000	.....	.....
Indiana	30,679,000	.....	22,074,000	50,000	.....
Iowa	8,192,000	.....	4,818,000	.....	.....
Kansas	7,562,000	.....	4,105,000	.....	.....
Kentucky	18,065,000	13,548,000	.....	52,906,000	69,886,000
Maryland	4,282,000	215,000	.....	2,085,000	3,068,000
Michigan	1,465,000	.....	735,000	.....	.....
Missouri	5,611,000	17,000	3,058,000	.....	.....
Montana	4,079,000	454,000	2,670,000	.....	.....
New Mexico	603,000	3,420,000	.....	2,484,000	3,120,000
North Dakota	216,000	504,000	.....	1,110,000	1,976,000
Ohio	46,055,000	.....	31,382,000	230,000	500,000
Oklahoma	4,813,000	.....	140,000	2,525,000	3,640,000
Pennsylvania	109,029,000	69,522,000	23,082,000	104,939,000	131,060,000
Tennessee	6,831,000	.....	.....	5,866,000	8,060,000
Texas	1,131,000	1,130,000	.....	879,000	1,092,000
Utah	.....	5,137,000	.....	4,624,000	5,980,000
Virginia	723,000	8,318,000	.....	12,274,000	14,716,000
Washington	4,082,000	.....	1,216,000	1,216,000	1,830,000
West Virginia	44,386,000	45,550,000	4,334,000	125,797,000	161,980,000
Wyoming	9,438,000	.....	6,951,000	.....	.....
Total	414,845,000	163,410,000	174,012,000	349,345,000	449,280,000
Union Percentage	71.7		33.2		

*Division between union and non-union tonnage based on areas affected by general strike of 1919.
† Total tonnage estimated from weekly coal production figures.
‡ The estimates in this column were fixed by multiplying by 52 the maximum weekly production of each state during recent months of 1925.

Wage Handicap Heavy

Union mines in central Pennsylvania at that time were paying $1.1431 per net ton for pick mining, as compared with 50@53c. in the Pocahontas district, 59.11c. in New River and 55@85c. in Westmoreland County. Non-union mines in central Pennsylvania were paying 90.31c. Skilled inside labor at the union mines was getting 93.75c. per hour, as compared with 47@67c. in the competing non-union districts; the low union rate on outside labor was 82.5c., as compared with non-union rates of 30@64c.

Under such handicaps, it is easy to understand how and why union production in the outlying and semi-organized districts has steadily shrunk and why, as in western Pennsylvania, southern Ohio and Indiana, the movement to operate independent of the union has spread. This independence, however, was not sought until after the operators had exhausted all efforts to induce the union to accord them some relief.

Western Kentucky, which competes with both the Central Competitive Field and the Appalachian Region, is typical of this situation, Muhlenberg, Ohio and McLean counties were completely organized for many years and partial recognition in Henderson, Union, Hopkins and Webster counties was a condition of long-standing. Like other outlying districts, western Kentucky felt the burden of competition growing heavier year after year. When it came to a question of renewing the 1920 scale in 1924 under the Jacksonville agreement terms, the operators refused to sign up. To suggestions from their own district organization that a modification be made, the international officials of the United Mine Workers turned a deaf ear.

The result of this stand-pat policy was the loss of the entire district. The operators re-established the 1917 scale, reducing the base pick-mining rate from $1.699 per ton on lump coal to $1.25, the minimum outside day labor rate from $6.06 to $3.56 and skilled and semi-skilled inside labor from $6.59@$7.20 per day to $4.09@$4.45 per day. Under these rates, western Kentucky has been able to become a strong com-competitor of Illinois for business which a few years ago was competition-proof.

In defense of a stand which has cut the percentage of union-mined coal over 50 per cent, the United Mine Workers offer two alleged justifications. Mr. Lewis and his associates grow eloquent in upholding the sanctity of the contract signed at Jacksonville two years ago and vehement in their denunciation of those signatories who have sought their commercial salvation outside of the union fold. Pressed further, the union officials will argue that their stand has had a stabilizing effect upon wages and intimate that to consent to a downward revision would only open the door to further reductions in non-union wages.

The first defense, of course, conveniently overlooks the fact that the operators, when conditions were reversed, consented to an upward revision of the rates in existing contracts. The second defense is problematical. The majority of the union operators would like to see some evidence of consideration of the wage situation in the light of the developments since 1923—something more than a fiat that nothing will be done.

That the union has served a useful purpose in the past is not to be denied. In an industry with the developed capacity for overproduction existing in bituminous coal, some check against a return to the conditions of forty or fifty years ago is necessary. Some of the militancy with which the union fought to prevent the worker from being the helpless victim of a nickel-slashing scramble for business was justifiable.

Such a check is still needed. But a policy which makes it increasingly difficult for operators who recognize the union to survive cannot be upheld. Since the war, and more particularly since the signing of the Jacksonville agreement, a strong reaction against the United Mine Workers has set in. If the union is to escape the fate of its predecessors, it must demonstrate that it recognizes its obligations to the operators with whom it deals. Otherwise the drift to non-unionism will continue at an increasing rate of speed.

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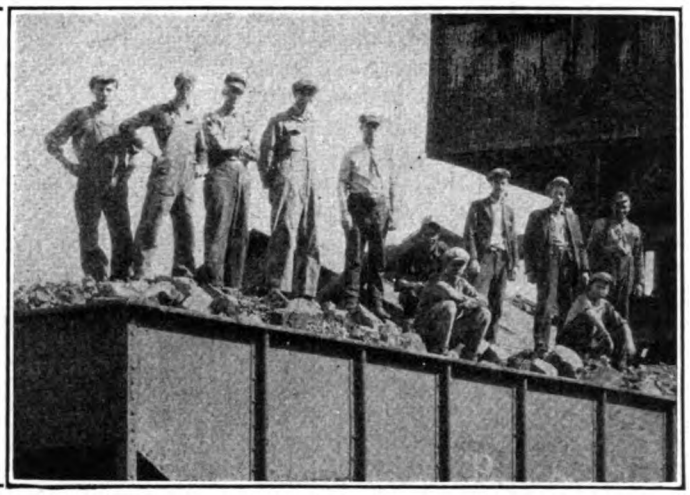
"Pittsburgh Plan" Puts 16 Mines Back Into Operation

Movement Advances Slowly in Western Pennsylvania and Ohio with Little Violence of Labor



They loaded out the first car at Banning No. 2

By Arthur R. Friedman
Pittsburgh, Pa.

"THE Pittsburgh Plan," as the effort to resume mine operations in western Pennsylvania and eastern Ohio on approximately the wage scale of 1917 is called, has passed through its initial period of eight months and now, at the beginning of 1926 it is possible to summarize what has been done. In western Pennsylvania the Pittsburgh Coal Co. is alone in the movement, except for the Ellsworth Collieries Co. and the Pittsburgh & Erie Coal Co., but in the Pomeroy Bend region of Ohio four other companies stand with it. There are now 16 mines working under the Pittsburgh arrangement — nine in Pennsylvania and seven in Ohio. The Pittsburgh Coal Co. employs about 1,600 men. The maximum daily production of the company is 6,187 tons.

During the entire period of operating mines under "The Pittsburgh Plan" there has been a minimum of disorder. This has been one of the surprises of the movement. It is a fact which gives the proponents of the idea encouragement for the forthcoming year.

Results of Plan

Two of the outstanding facts about the operation of the plan are: The general lack of active support which coal operators have given the originator of the scheme—the Pittsburgh Coal Co.—and the surprising readiness of union miners to return to work at 1917 wages in fields that have been so strongly organized.

Economic conditions compelled the adoption of the "Pittsburgh plan." The two factors that had been strangling the western Pennsylvania and eastern Ohio coal trade during the past few years were labor and freight rates. In the minds of the operators, one was as bad as the other, and correction of one would not entirely counterbalance the detrimental effect of the other.

The Pittsburgh and the No. 8 Ohio districts were slowly losing their best market, the lake trade, because of the alleged preferential freight rates granted to southern West Virginia and Kentucky fields, and the non-union labor conditions in effect in those districts. Southern fields were selling coal up the Lakes cheaper than it could be mined in western Pennsylvania and Ohio. The two fields found themselves unable to recoup their lake losses in other markets.

Situation at Standstill

There the situation rested for a time. In the words of C. J. Goodyear, commissioner of the Pittsburgh Coal Producers' Association: "When a business concern finds itself unable to sell its goods; when the market price drops and a huge inventory remains; that concern either cuts the price and stays in the market, or it goes bankrupt. The union theorized about the situation. The operators dealt with it in a practical way. They tried alone to handle the situation in 1924, but failed. The union refused to cooperate in 1925."

So the new plan was started. The first "1917" mine was opened by the Pittsburgh Coal Co. on May 3, 1925. The mine was known as Dark Hollow and is situated near Pomeroy, Ohio. A handful of men started to work in the operation which had been shut down for many months. Wide attention was directed to this experiment. The tipple was picketed by union men and union sympathizers, but there was no violence. After the usual cleaning-up period, production was started and it has continued uninterrupted to the present time.

Nearly two months later, after it was apparent that Dark Hollow was likely to continue as a producer, the second mine was started by the company in Ohio. This is known as Thomas mine and was opened on June 17, 1925. On June 27, the third Ohio mine was opened, known as Syracuse. The latter two are also situated near Pomeroy. The three have been working ever since.

A summary of the Pittsburgh Coal Co. mines working in Ohio, giving the approximate number of men at work at the present time and the average daily tonnage follows:

Mine	Opened	Men	Av. Daily Output Tons
Dark Hollow	May 3	207	759
Thomas	June 17	129	418
Syracuse	June 27	156	432

It is evident from this summary that the Ohio mines of the Pittsburgh Coal Co. are producing an average daily rate of 1,609 tons of coal, with 492 men at work.

Opens Pennsylvania Mine

After waiting until later in the summer the company opened its first mine in western Pennsylvania. The growing success of the Ohio operations paved the way for the starting of those in the other state. The location of the first Pennsylvania operation was kept a close secret at first.

Finally, on Aug. 20 the company announced it had started operations at Banning No. 2 mine at Whitsett Junction, eight miles from Fayette City. A total of 36 men went to work the first day. The company claimed all the men were former em-

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ployees of the company and also former members of the United Mine Workers, and had petitioned the company that they be allowed to go back to work after a long period of idleness. About 100 pickets took up their positions the first day. On the second day, the force of men at work had increased to 52, but there were still 88 pickets at the pit. On the third day the first car of coal was shipped when 66 men were at work.

The first movement toward the establishment of a new union was taken by the men at work at this mine on Aug. 29. The men organized Local No. 1 of a new union, elected officers and prepared to carry on in the same manner as the United Mine Workers.

On Sept. 16, the Pittsburgh Coal Co. started its second mine in western Pennsylvania at Banning No. 1, located on the Pittsburgh & Lake Erie R.R. at Van Meter, on the Westmoreland-Fayette county line. This mine is two miles from the first mine started. The first day's force consisted of 29 men. Seventeen pickets were on hand the first day. On the second day the working force had increased to 105 men. By this date, also, 205 men were at work at Banning No. 2 mine, and the company also had shipped 573 tons of coal that day.

SURPASS 1,000 TONS OCT. 3

The first goal of the company, production of 1,000 tons a day, was surpassed at Banning No. 2 on Oct. 3 when 225 men produced 1,188 tons. The mine produced for the week ended Oct. 3, a total of 5,225 tons, while the same week's total at Banning No. 1 was 2,472 tons with 165 men at work.

For the week ended Oct. 10, production from the two mines was 8,711 tons. That date was pay day, also, and the company distributed $26,131.26 representing a two-weeks' pay. At Banning No. 2, 208 men participated in $17,046.51 and at Banning No. 1, 151 workmen shared $9,084.77.

With 107 men at work, the company reopened the third Pennsylvania mine, Midland No. 1, on Oct. 17. This mine is three miles from Canonsburg and 27 miles from Pittsburgh. The company at this time also announced that it had 37 other mines still idle, but that any of them would be reopened upon petition of the men. Two days later, the first coal was mined at Midland with 162 men at work. On the preceding Saturday, Banning No. 2 set a new daily production record of 1,228 tons.

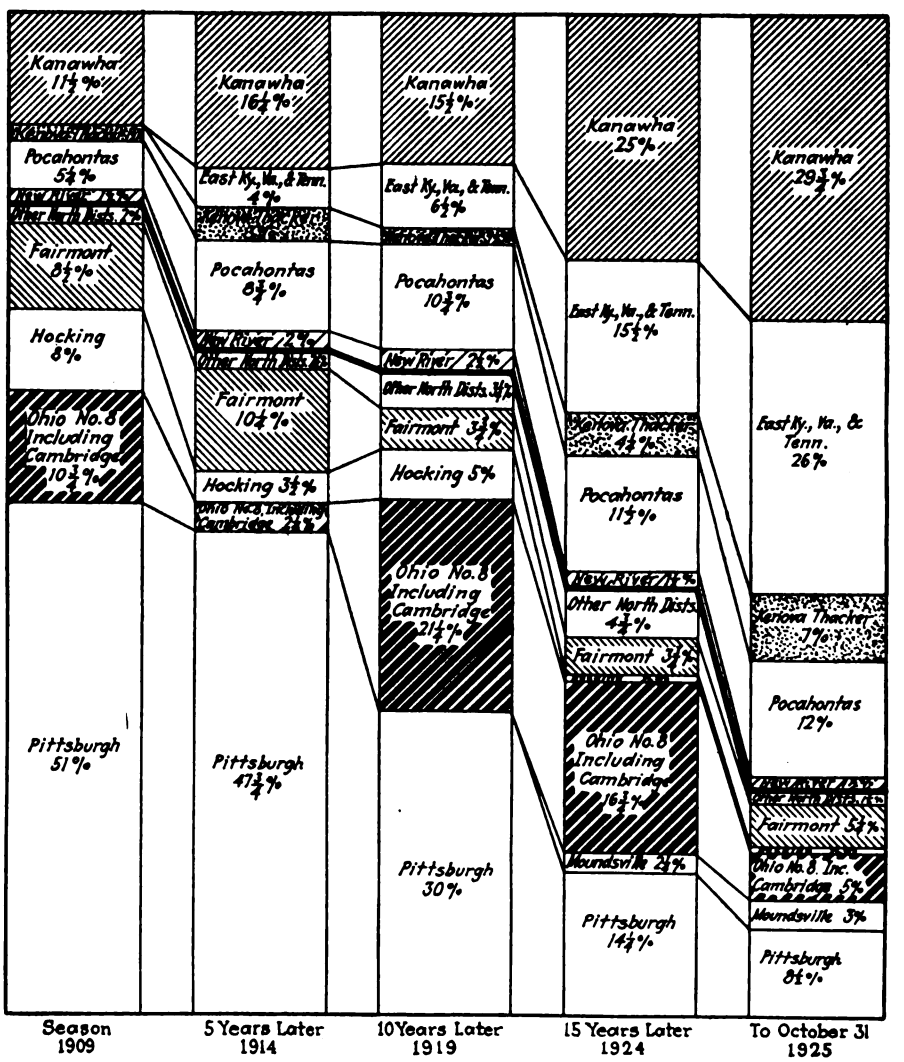
First evidences of disorder were uncovered at Midland, when deputies found 10 sticks of dynamite against the side of one of the mine buildings on Oct. 23. On the night of Oct. 24, a man was killed in a cutting affray when union sympathizers attacked a number of the company workmen. At this time the Pittsburgh Coal Co. issued a statement indicating it would give all protection to its men who were the victims of unwarranted and unjustifiable attacks.

For the week ended Oct. 24, production at the three mines of the company reached 12,669 tons. The company had 557 men at work.

Two more mines were opened in quick succession. The first was Montour No. 10 at Library, in Allegheny County, and a few days later, on Nov. 12, the fifth mine was started in Scott township. This operation is known as the Mansfield mine. It was opened to supply the citizens of Carnegie with coal. By this time the company had 905 men at work.

On Nov. 23, the company announced a new maximum daily production of 3,364 tons from the five mines and on Dec. 1, it was said a total of 1,000 men were at work in the mines. On Dec. 9, the daily rate

Loss of Markets Started the "Pittsburgh Plan"



Percentage of Lake Cargo Coal by Origin Districts 1909, Five, Ten and Fifteen Years Later Compared with Season of 1925 to Oct. 31

The figures for 1909 and 1925 illustrating the decline of the union-wage coal and the increase of non-union-wage coal and upon which this graph was drawn follow:

	1909		1925	
	Tonnage	Percentage	Tonnage	Percentage
Pittsburgh District	7,842,971	51.09	1,923,966	8.53
Other North Districts	4,447,428	28.97	3,459,358	15.33
Kanawha District	1,776,986	11.58	6,694,922	29.67
Other South Districts	1,283,174	8.36	10,486,614	46.47
Total	15,350,559	100.00	22,564,860	100.00

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Pittsburgh Coal Co. Operations Working In Pennsylvania

Mine	Location	Opened	Men at Work	Maximum Weekly Tonnage	Maximum Daily Tonnage	Date
Banning No. 2	Whitsett	Aug. 20	260	7,192	1,312	Dec. 8
Banning No. 1	Van Meter	Sept. 16	240	4,632	937	Dec. 5
Midland No. 1	Houston	Oct. 17	275	5,780	1,211	Dec. 8
Montour No. 10	Library	Nov. 8	210	3,698	938	Jan. 5
Mansfield	Carnegie	Nov. 12	60	670	180	Dec. 18
Warden	McKeesport	Jan. 4	150	.....	.....	.....
Dickson	Imperial	Jan. 13	74	.....	.....	.....

was again exceeded with a total of 4,069 tons of coal.

On this same day, a woman was killed at Montour No. 10 mine at Library when a driver of the company, stoned by a mob, let his machine run wild and it crashed into the crowd. At almost the same time, a miners' house was dynamited at Midland mine.

On Saturday, Dec. 12, a payroll of $60,043.37 was distributed and the production for that week had reached 20,942 tons. The Dec. 24 pay was $72,535.36, the highest of the entire operating period.

The sixth mine of the company was opened Jan. 4, when Warden mine, at Douglas station, on the Youghiogheny River, was started. A force of 120 men went to work in this plant, which is the most modern of the company's properties. On this same date, the company had a total of 1,244 men at work.

The seventh Pennsylvania mine—Dickson, three miles from Imperial, Pa.—opened Jan. 13 with 74 men. The company's grand total tonnage for the week ended Jan. 9 was 24,820.

In the accompanying table showing operations of the Pittsburgh Coal Co. in western Pennsylvania is included the average number of men at work in recent weeks, the maximum weekly tonnage from each mine, which occurred during the week of Dec. 7 to 12, and the maximum daily tonnage. These tonnages have not changed much since then.

FEW PENNSYLVANIA FOLLOWERS

The Pittsburgh Coal Co. had only one follower in western Pennsylvania—the Boggs mine of the Montour & Lake Erie R.R. which ran for two days beginning Aug. 24—until the first week of November when the Ellsworth Collieries Co., a subsidiary of the Bethlehem Steel Co., opened its Marianna mine in Washington County, on the 1917 scale. This mine now has 175 men at work, but while working conditions are now reported as favorable, this mine found greater difficulty in getting started than any of the Pittsburgh Coal Co. properties. This concern also has men working in its Acme mine at Cokeburg, preparing for resumption of operations, but coal has not yet been run.

The only other mine reported working 1917 scale in western Pennsylvania is Summer No. 2 of the Pittsburgh and Erie Coal Co. at Braznell, in Fayette County. Seventy-five men are at work there.

In the Ohio field since the first stage of the "Pittsburgh" movement, mines of other companies have proceeded under the plan. In that district each of the following companies now has one mine operating: The Stalter-Essex Co., the Vulcan Coal Co., the Blackstone Coal Co. and the Rutland Coal Co.

It is fair to say, after eight months' trial, that the 1917 wage plan in western Pennsylvania and Ohio has had neither phenomenal success nor dismal failure. It has produced coal when nothing else would produce it in a region overwhelmed by non-union competition and the movement is still expanding slowly with hope high for a broader spread during this year.

Coal Produced in Pennsylvania in 1924[a]

(Exclusive of product of wagon mines)

County	Net Tons: Loaded at Mines for Shipment	Net Tons: Sold to Local Trade and Used By Employees	Net Tons: Used at Mines for Steam and Heat	Net Tons: Made Into Coke at Mines	Net Tons: Total Quantity	Value: Total	Value: Average per Ton	Number of Employees: Underground: Miners [b]	Number of Employees: Underground: All Others	Number of Employees: Surface	Number of Employees: Total	Average Number of Days Worked	Average Tons per Man per Day
Allegheny	12,658,439	1,716,678	122,708	.....	14,497,825	$33,090,000	$2.28	12,914	3,643	2,194	18,751	187	4.12
Armstrong	3,336,434	191,291	105,894	.....	3,633,619	7,446,000	2.05	3,985	924	753	5,662	146	4.39
Beaver	176,582	59,875	306	.....	236,763	503,000	2.12	154	27	100	281	214	3.93
Bedford	230,884	13,214	7,900	28,195	280,193	772,000	2.76	726	216	117	1,059	78	3.39
Blair	36,219	22,795	729	11,944	71,687	174,000	2.43	221	45	35	301	104	2.28
Bradford	3,413	740	.....	.....	4,153	12,000	2.89	13	3	3	19	94	2.31
Butler	1,292,007	43,236	17,111	.....	1,352,354	2,877,000	2.13	1,489	421	343	2,253	168	3.56
Cambria	14,307,443	2,031,476	165,097	135,652	16,639,668	42,050,000	2.53	16,219	4,326	2,316	22,861	178	4.08
Center	748,890	65,156	650	.....	814,696	1,936,000	2.38	1,127	283	186	1,596	204	4.27
Clarion	1,169,429	124,090	4,868	.....	1,298,387	2,655,000	2.04	1,615	400	257	2,272	179	3.19
Clearfield	4,931,916	241,647	76,573	60,868	5,311,004	11,984,000	2.26	7,270	1,771	1,167	10,208	149	3.49
Clinton	276,389	19,808	3,729	.....	299,926	598,000	1.99	134	48	140	322	235	3.97
Elk	1,083,618	18,674	35,277	.....	1,137,569	2,842,000	2.50	1,321	227	181	1,729	213	3.08
Fayette	16,252,397	260,188	515,149	8,404,399	25,432,133	57,081,000	2.24	11,873	9,571	4,235	25,679	207	4.78
Greene	3,602,335	33,446	48,630	63,118	3,747,529	7,680,000	2.05	1,587	1,129	638	3,354	237	4.71
Huntingdon	727,195	14,808	21,854	.....	763,857	1,940,000	2.54	1,001	271	128	1,400	207	2.64
Indiana	6,504,277	206,370	44,132	287,805	7,042,584	15,923,000	2.26	8,441	2,069	1,435	11,945	145	4.06
Jefferson	2,504,377	68,869	49,587	321,243	2,944,076	6,559,000	2.23	3,543	891	579	5,013	159	3.70
Lawrence	183,785	37,966	12,412	.....	234,163	788,000	3.37	249	91	54	394	229	2.59
Mercer	274,273	10,565	15,231	.....	300,069	910,000	3.03	389	128	78	595	182	2.77
Somerset	8,173,394	154,864	108,478	.....	8,436,736	18,118,000	2.15	7,272	2,094	1,525	10,891	191	4.06
Tioga	251,726	35,462	5,910	.....	293,098	961,000	3.28	672	151	146	969	120	2.51
Washington	17,338,959	427,558	121,045	50,278	17,937,840	39,050,000	2.18	14,220	4,524	2,491	21,235	186	4.53
Westmoreland	14,064,798	758,852	350,653	2,628,348	17,802,651	38,907,000	2.19	12,195	5,024	3,114	20,333	181	4.84
Other counties [c]	111,642	8,108	1,443	.....	121,193	308,000	2.54	143	35	22	200	262	2.31
Total (bitum.)	110,240,821	6,565,736	1,835,366	11,991,850	130,633,773	295,164,000	2.26	108,773	38,312	22,237	169,322	180	4.27
Anthracite	77,247,499	3,043,939	7,635,424	.....	87,926,862	477,231,000	5.43	76,035	43,328	40,646	160,009	274	2.00
Grand total	187,488,320	9,609,675	9,470,790	11,991,850	218,560,635	772,395,000	3.53	184,808	81,640	62,883	329,331	226	2.94

a Note that the coal statistics of the Geological Survey for a given year include only the mines that had an output in that year. Many mines that operated in 1923 produced no coal in 1924; moreover, many of the mines that did produce in 1924 worked for a short time only. The number of active bituminous mines of commercial size in Pennsylvania was 2,868 in 1923 and 2,122 in 1924.

b Includes also loaders and shotfirers. *c* Fulton, Lycoming, McKean and Venango.

Statistics compiled by U. S. Bureau of Mines.

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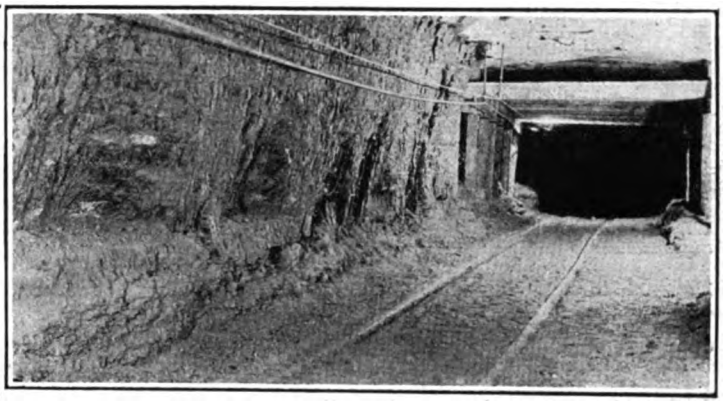
Records Show 1925 Rivals 1920 as "Coal's Safest Year"



Death Rate per Million Tons Is 3.68—Improvement Over 1924 Was Only in Soft-Coal Mines—Gas and Dust Explosions Are Reduced—Rock Dusting Helps

By W. W. Adams
Statistician, U. S. Bureau of Mines, Washington, D. C.

THE CHIEF POINT of interest in the coal mining industry in the year 1925 from the standpoint of mine safety or accident-prevention, was the marked reduction in the accident-cost of the coal: that is, in the death rate per million tons. An absolute reduction in the loss of life was to be expected because of the idleness of the anthracite mines during one third of the year, but there was a further reduction of about 12 per cent in the combined anthracite and bituminous death rate per million tons during the period of actual operations. The decrease was in the rate for bituminous mines; the anthracite rate was higher than in the previous year.

This net reduction for the industry as a whole was equivalent to a saving of nearly 300 lives. In other words, if the 1924 rate of 4.19 deaths per million tons for the entire industry had continued through 1925, the number of lives lost last year would have been about 300 more than the number actually reported. The estimated 1925 rate per million tons is 3.68. Only 1920 has had a lower rate than this in the whole record history of coal mining in the United States.

The number of fatalities at all coal mines during the half-decade ending with 1925 is shown in Table I.

The fact that fewer lives were lost in 1921 and 1922 was largely due to idleness or part-time operation of many mines during those two years.

In the headpiece is shown an example of one hundred-per cent dusting. This entry in a Phelps Dodge Corp. mine at Dawson, N. M., is treated with dust both wet and dry, and at the right is a battery of V-troughs loaded and ready to dump its contents into the air upon the arrival of the pioneer wave ahead of any approaching explosion.

In 1921 the industrial depression prevailing in many parts of the country had the effect of greatly curtailing the output of coal at bituminous mines; in 1922, the great strike in both the bituminous and anthracite fields closed many of the mines during a large part of the year. Much of the reduction in the number of fatal accidents in those two years was, therefore, simply due to the fact that the mines were not in operation. The loss of life indicated by the foregoing figures resulted in yearly death rates per million tons as shown in Table II.

These figures clearly show the material reduction in the per million ton death rate in 1925 as compared with the rate for 1924. Barring unexpected revelations by the reports for December over and above the two major disasters already known to have occurred, it may be stated that the "accident-cost" of the Nation's fuel supply was lower in 1925 than in any of the last five years. Moreover, except for 1920 when the rate was 3.45 per million tons, records now available indicate that the 1925 rate will be as low as, if not lower than, that of any year in the recorded history of coal mining in the United States.

In this connection it should be emphasized that the per-million-ton death rate represents only the accident cost of the coal; that is, the price paid in human life for the coal produced. The per-million-ton death rate does not indicate the relative hazards of coal mining as compared with other industries of occupations; it does not indicate the hazards of mining in one State or district as compared with those in another State or district; nor does it represent the

SHALL ROCK-DUSTING GET THE CREDIT?

Mr. Adams, being a careful statistician and not a propagandist, scrupulously avoids saying that the steadily expanding program of rock-dusting in American coal mines is to be credited with last year's good showing in the record of accidents. However, he does cite the outstanding case of the June 8 explosion at Sturgis, Ky., where rock dust certainly saved the lives of 130 men. He points out that 1925 had more major explosions than 1924 but that the fatalities were 44 per cent less. In other words the death dealing opportunity was there but in many instances so was rock dust. In September 211 mines producing 11 per cent of the nation's bituminous coal were rock-dusted. This means something.

Table I—Fatalities at All Coal Mines, 1921-1925

Year	Anthracite	Bituminous	Total	Per Cent Increase or Decrease from Previous Year
1921	547	1,440	1,987	—12.5
1922	300	1,679	1,979	— .4
1923	509	1,949	2,458	+24.2
1924	496	1,900	2,396	— 2.5
1925 (est.)	400	1,740	2,140	—10.7

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Table II—Yearly Death Rates per Million Tons

Year	Deaths	Rate per Million Tons	Per Cent Increase or Decrease from Previous Year
1921.....	1,987	3.92	+13.6
1922.....	1,979	4.15	+ 5.9
1923.....	2,458	3.74	— 9.9
1924.....	2,396	4.19	+12.0
1925 (est.)..	2,140	3.68	—12.2

risk of mining from the point of view of the miner or the insurance company.

The miner and the insurance carrier are primarily concerned with the probability and degree of the employee's personal freedom from accidental injury or death while in the mine, and the insurance company carrying the risk must have a sound basis for measuring the hazard to which the mine employees are exposed. Probably the best basis for measuring the miner's personal risk or for comparing the relative hazards of mining and other occupations and thus affording a sound basis for establishing equitable insurance premium rates, as between industry and industry, is the accident frequency and accident severity rates based on man-hour or man-year exposure, preferably the former.

Two Distinct Rates

It is indeed possible, that with the increasing mechanization of mining operations and the consequent rise in the average daily production per man employed, that the death rate per million tons might decline while the death rate per man hour might increase. It is essential, therefore, that the two kinds of rates be not confused when the subject of mine accidents is under consideration. The rates represent two distinctly different things.

The 2,140 fatalities in 1925, which include an estimated figure for December to supplement actual returns for the period January to November, may be classified by causes, with comparative figures for 1924 as shown in Table III.

These figures for 1925 are subject to such slight modification as final returns may require.

The marked reduction in the fatality rate per million tons in 1925 as compared with the previous year, that is, from 4.19 to 3.68, was due mainly to the smaller loss of life from explosions of gas and coal dust, particularly those explosions classed as "major." A major explosion is defined as one in which five or more lives were lost. During the year just closed 13 major explosions occurred with an aggregate loss of 262 lives. In the previous year only 10 major explosions occurred but a much larger number of deaths resulted from them; the record showed that 459 men were killed by the 10 explosions. The per-million-ton death rate based exclusively on these major explosions was 0.45 in 1925 as compared with 0.80 in 1924, the decline indicated by the rate for the past year representing a reduction of about 44 per cent. In addition to the 262 deaths from the 13 major explosions in 1925, the records show that 82 men were killed by local or minor explosions, that is, explosions in which less than five lives were lost.



Safe Lamps Save Lives

This type of electric cap lamp is one of those approved by the Bureau of Mines for use in gassy mines. The acceptance of electric lamps underground is widening and no doubt adds something to the safety factor of the whole industry.

Because of the absence of reports it is not possible to state what part was played by rock dust in preventing many of these minor explosions from spreading through larger areas of the mines and thus, with the attending greater loss of life, entering the class of the so-called major disasters. However, an illustrative example of the value of rock dust in confining an explosion to or near its place of origin is afforded by the disaster at Sturgis, Ky., on June 8, 1925, in which 17 men lost their lives.

According to a recent report[1] this explosion originated in an entry which had not yet been rock-dusted. A miner drilled into a strong gas feeder, which was ignited by his open-flame lamp. When the resulting explosion reached the rock-dusted entries it was stopped and the lives of 130 men working in rock-dusted parts of the mine were saved.

The same report states that 211 bituminous mines were using rock dust in September, 1925 and that the output of coal from these mines was about 11 per cent of the entire production of bituminous coal in the United States in 1924. The efficacy of rock dusting, as demonstrated in the explosion at Sturgis, gives substance to the hope that the adoption of rock dusting by an increasing number of mines will prevent the occurrence in the future of such disastrous explosions as have marred the record of past years.

Over a period of years major explosions similar to those listed in Table IV have caused an average of about 10 or 12 per cent of all accidental deaths from all classes of accidents in the coal-mining industry, the figures varying from less than 2 per cent in 1921 to more than 19 per cent in 1924. In 1925 the 13 major explosions caused about 12 per cent of the total number of deaths from all causes at the mines.

Fifty per Cent Due to Falls

Falls of roof and coal usually cause nearly half of all fatal accidents at coal mines. The average percentage over a ten-year period (1914-23) was 48; in 1925 it was 49. The 1,045 fatalities from this cause in 1925 represented a per-million-ton death rate of 1.80 as compared with 1.86 in the previous year. Haulage accidents underground resulted in 345 fatalities and represented a fatality rate of 0.59 per million tons as against 0.61 in 1924. About 17 per cent of all coal-mine fatalities are caused by haulage equipment.

Accidents resulting from blasting or handling of explosives usually account for about 4 per cent, exclusive

Table III—Fatalities for 1924-25 Classified by Causes

	1924	1925	Increase or Decrease
All causes.....	2,396	2,140	—256
Surface accidents.....	138	115	— 23
Shaft accidents.....	29	34	+ 5
Underground accidents..	2,229	1,991	—238
Falls of roof or coal...	1,062	1,045	— 17
Haulage.....	350	345	— 5
Gas and dust explosions.....	536	344	—192
Electricity.....	81	82	+ 1
Explosives.....	100	89	— 11
Miscellaneous.....	10	86	— 14

Table IV—The 13 Major Explosions During 1925

Date	Killed	Mine	Location
Jan. 15	6	Diamond No. 1	Providence, Ky.
Feb. 20	52	City	Sullivan, Ind.
March 17	33	Barrackville	Barrackville, W. Va.
April 26	5	Hutchinson	West Newton, Pa.
May 22	7	Woodward	Edwardsville, Pa.
May 27	53	Farmville	Coal Glen, N. C.
May 31	6	No. 2	Piper, Ala.
June 8	17	No. 9	Sturgis, Ky.
July 23	10	Rockwood	Rockwood, Tenn.
Aug. 3	10	Dorrance	Wilkes-Barre, Pa.
Nov. 13	5	Finley	Madisonville, Ky.
Dec. 10	53	Overton No. 2	Acmar, Ala.
Dec. 14	5	Wilkeson	Tacoma, Wash.

[1] Bulletin 18, Methods and Costs of Rock-Dusting Bituminous Coal Mines; Carnegie Institute of Technology, Pittsburgh, Pa., 1925; p. 1.

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Oxygen-Apparatus Crew

These men, at the Consumers Mining Co.'s Harmar mine near Pittsburgh, Pa., form one of the ever increasing number of rescue teams in this country. Not only is the coal industry's defence against explosions being raised higher but more men everywhere are trained in the vitally important business of what do when trouble occurs.



of those major gas or dust explosions in which explosives were the agents of ignition. In 1925 accidents from explosives caused 89 deaths, indicating a per-million-ton fatality rate of 0.15; in the previous year the rate was 0.17.

Electricity was directly responsible for 82 deaths during the past year, the fatality rate per million tons being 0.14 as compared with the same rate for the preceding year. Deaths from miscellaneous causes underground numbered 86 and represented a fatality rate of 0.15, as compared with 0.17. Shaft accidents caused 34 deaths, the fatality rate being 0.06 as against 0.05. Accidents from all causes above ground resulted in 115 deaths and represented a fatality rate of 0.20 as compared with 0.24.

Thus the record for 1925 shows that while the industry operated under certain handicaps during the year, the country's coal supply was obtained at a lower cost in human life than that shown by the record of previous years, with the single exception of 1920.

Coal Produced in Kentucky in 1924

(Exclusive of Product of Wagon Mines.)

County	Net Tons: Loaded at Mines for Shipment	Net Tons: Sold to Local Trade and Used By Employees	Net Tons: Used at Mines for Steam and Heat	Net Tons: Made Into Coke at Mines	Net Tons: Total Quantity	Value: Total	Value: Average per Ton	Number of Employees a: Underground: Miners b	Number of Employees a: Underground: All Others	Number of Employees a: Surface	Number of Employees a: Total	Average Number of Days Worked a	Average Tons per Man per Day
Eastern District													
Bell	2,279,928	35,070	15,859	.....	2,330,857	$4,462,000	$1.91	2,402	908	584	3,894	171	3.51
Boyd	65,025	3,018	50	.....	68,093	177,000	2.60	114	61	33	208	156	2.10
Breathitt	163,622	6,728	1,780	.....	172,130	306,000	1.78	151	69	39	259	180	3.70
Carter	70,943	36,432	73	.....	107,448	199,000	1.85	157	71	40	268	176	2.28
Clay	184,767	2,818	1,890	.....	189,475	338,000	1.78	253	105	60	418	158	2.88
Floyd	3,700,270	47,268	53,630	.....	3,801,168	7,081,000	1.86	2,406	1,254	732	4,392	197	4.39
Harlan	9,340,731	64,431	43,038	123,835	9,572,035	19,579,000	2.05	5,183	2,638	1,571	9,392	209	4.87
Johnson	813,920	10,567	17,337	.....	841,824	1,841,000	2.19	716	276	183	1,175	176	4.08
Knott	340,509	3,536	.....	.....	344,045	598,000	1.74	147	66	37	250	185	7.45
Knox	427,607	7,158	8,596	.....	443,361	769,000	1.73	412	102	99	613	197	3.67
Laurel	81,981	2,600	50	.....	84,631	162,000	1.91	108	37	26	171	212	2.34
Lee	35,000	2,320	1,000	.....	38,320	79,000	2.06	26	9	15	50	243	3.16
Letcher	4,653,204	61,839	50,063	.....	4,765,106	8,620,000	1.81	2,386	1,216	713	4,315	209	5.27
McCreary	827,715	17,283	1,764	.....	846,762	1,679,000	1.98	796	272	124	1,192	167	4.26
Martin	420,079	2,519	.....	.....	422,598	728,000	1.72	186	107	69	362	191	6.11
Morgan	20,862	3,160	3,542	.....	27,564	101,000	3.66	69	22	50	141	235	.83
Perry	5,450,646	76,068	3,228	.....	5,529,942	9,886,000	1.79	3,037	1,447	872	5,356	207	4.99
Pike	5,756,226	53,024	63,522	22,959	5,895,731	10,602,000	1.80	3,284	1,981	1,319	6,584	193	4.64
Whitley	604,439	12,038	13,230	.....	629,707	1,447,000	2.30	817	259	182	1,258	159	3.14
Other counties c	15,261	1,000	75	.....	16,336	20,000	1.22	18	9	9	36	74	6.13
Total	35,252,735	448,877	278,727	146,794	36,127,133	68,674,000	$1.90	22,668	10,909	6,757	40,334	195	4.58
Western District													
Daviess	73,270	75,628	991	.....	149,889	$253,000	41.69	148	41	24	213	183	3.85
Henderson	338,591	70,251	18,769	.....	427,611	699,000	1.63	316	163	61	540	181	4.38
Hopkins	3,337,234	155,068	59,506	.....	3,551,808	6,029,000	1.70	2,036	884	846	3,766	171	5.53
McLean	45,757	4,000	445	.....	50,202	92,000	1.83	74	28	56	158	46	6.96
Muhlenberg	1,331,403	50,631	20,747	.....	1,402,781	2,592,000	1.85	3,401	1,345	592	5,338	42	6.19
Ohio	484,517	10,560	11,667	.....	506,744	925,000	1.83	921	313	340	1,574	59	5.48
Union	1,020,074	27,648	34,214	.....	1,081,936	2,026,000	1.87	789	443	202	1,434	178	4.24
Webster	1,780,165	13,225	33,139	.....	1,826,529	3,404,000	1.86	1,419	532	282	2,233	176	4.65
Other counties d	19,436	3,135	.....	.....	22,571	39,000	1.73	92	45	39	176	161	.80
Total	8,430,447	410,146	179,478	.....	9,020,071	16,059,000	$1.78	9,196	3,794	2,442	15,432	115	5.06
Total all Kentucky	43,683,182	859,023	458,205	146,794	45,147,204	84,733,000	$1.88	31,864	14,703	9,199	55,766	174	4.67

a Note that figures of men employed and days worked do not include mines that operated in 1923 but were idle the entire year 1924; they do include many mines operated for a short time only in 1924. The number of active mines of commercial size in eastern Kentucky was 663 in 1923 and 496 in 1924; in western Kentucky it was 172 in 1923 and 164 in 1924; in the state it was 835 in 1923 and 660 in 1924.

b Includes also loaders and shotfirers.

c Lawrence, Magoffin and Wayne.

d Caldwell, Christian, Crittenden and Hancock.

Statistics compiled by U. S. Bureau of Mines.

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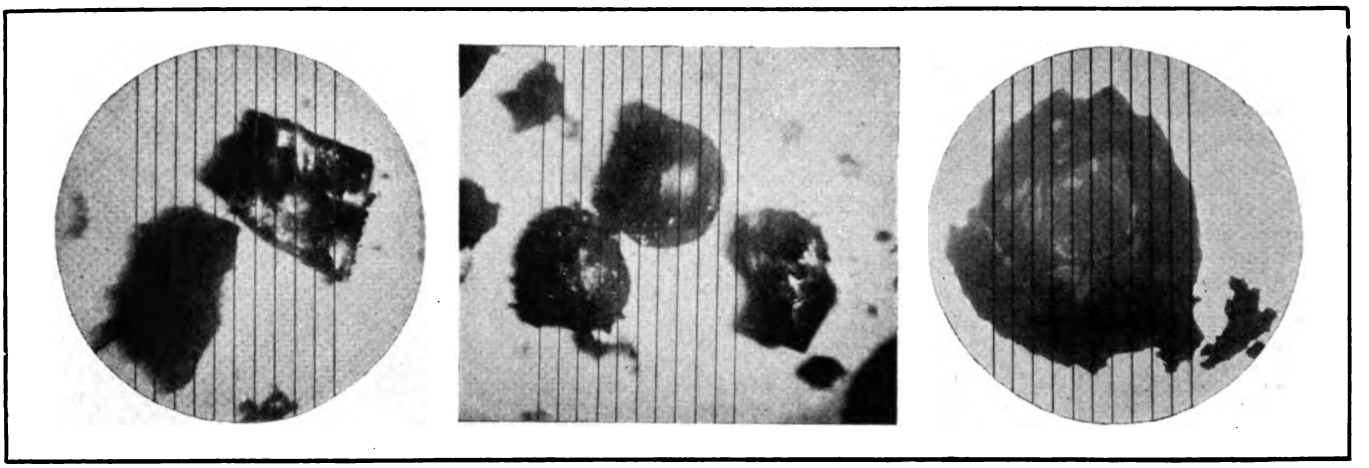

Low-Temperature Semi-Coking Benefits Coal

Toledo Plant Manufactures Amalgam—Rhode Island Field Prepares to Produce a Carbonized Product—Charring Coal Dust in Suspension Is New Venture

By R. Dawson Hall
Engineering Editor, *Coal Age*,
New York City

THE STRUGGLE for survival in the coal industry may not depend, entirely upon reducing the cost of production and raising the quality of raw coal. It may demand also upon the improvement of coal by processing. Some advances in that direction were made in 1925. During the past year the Trent, McEwen-Runge and the McIntire processes have been showing the most lively progress. Not much has been heard from the Piron and old Ben Coal Corp. plants at Detroit, Mich., and Waukegan, Ill., respectively, so nothing will be said of them in what follows.

The Trent process of making amalgam is still in operation in Toledo, Ohio, where the product is being sold in bulk and in the form of 22-lb. paper-wrapped blocks. Bulk amalgam which is the product shipped without shaping is still on the market. In transit in railroad cars it becomes shaken into mass form. When thrown in the furnace it softens and can be spread, it is said, so as to cover the grate area. It is used industrially and being clean by reason of the amalgam process and being of extremely high heating value because of the oil in the product, it gives, it is reported, a superior heating value and less clinker trouble than unprocessed coal.

The amalgam in packages is being sold in Toledo, parts of Ontario and in Duluth and Superior. It is distributed by the Citizens Necessities Co. From 50 to 70 tons of packages, are said to be produced daily, and the expectation is that package machines will be installed that will increase the output to 300 tons per day. But the ultimate intention is to add three ovens for baking so that some of the oil in the amalgam may be driven off after briquetting in small bulk and the product sold as Superfuel in competition with anthracite.

SHIP SCREENINGS ONLY

The coal used is largely produced from the mines of the company at Middlesborough, Ky., and formerly owned by L. C. Gunter, a leading stockholder. Only the screenings are shipped to Toledo for treatment. Not much has been done recently with the plan for using the amalgam as pulverized fuel.

The plant being built to manufacture Rhode Island anthracite into Superfuel is not yet quite complete. It is designed to produce ultimately 1,000 tons daily in four units. From latest reports one unit is nearly ready for operation and another is two-thirds complete. The plant is operated by the Anthracite Superfuel Co., and is financed by the owners of the Eastern Coal Co., a coal-selling organization of Providence, R. I. Much depends on the success achieved in the operation of the ovens at this plant where the first large scale attempt is being made to turn amalgam into Superfuel. If it is as successful as is expected it is likely that the Moundsville (W. Va.) and Clearfield (Pa.) plants and perhaps the one at Spokane, Wash., may be equipped for the conversion of amalgam into Superfuel. These plants are at present idle, because, it is said, the oil costs are too high and the bituminous content in the product too great to make it possible to place the output in the most advantageous position in the market. An English firm, it is said, awaits also the success of the bake ovens at Providence.

The Moundsville plant had to buy oil from the Atlantic coast and the shipment of the oil in bulk to the plant and back in the amalgam to points in the East make the expense excessive. The coal also has 40 per cent of volatile matter and the addition of oil, without distillation, makes the product of high volatile content. As one addition leading to the production of Superfuel at Moundsville

In the headpiece is shown pulverized coal, highly magnified. At the left are unheated particles pulverized for the McEwen-Runge process and magnified 100 diameters. The parallel lines were ruled on the object glass and were spaced one one-thousandth of an inch apart. The angular shape of the particles can be seen clearly. The center picture shows the particles after they have been heated to 600 deg. F. The coal still retains about 30 per cent of its volatile matter but has become blistered, rounded and opaque. At the right the result of higher temperature carbonizing is shown. The particles have a surface like that of a transparent window of many small panes. This characteristic disappears upon ignition.

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the unit for the distillation of the raw coal is now being installed. When the successful distillation is accomplished it will be necessary to add an amalgam baking unit.

The Lapugnoy plant in France has a capacity of 500 tons per day. Its first baking unit is planned to prepare 100 tons of Superfuel daily. The briquets, which are not subjected during the latter part of the process to the oxidizing action of the air, are a trifle unclean to handle, but otherwise seem of excellent quality, burning smokelessly. Contracts are reported to have been let in Brazil and India.

The "amalgamation" of coal with oil may be made of increasing value by the use of the practices discovered and known as "selective flotation." The pyrite which has a tendency to float can be scored on its faces by aluminum sulphate and cyanide after which it will be thrown down in the amalgamation tank just as gangue is deposited in a flotation cell. Thus the pyritic content can be lowered to a minimum. Of course, the humic and resinic sulphur cannot be so reduced, and the question what to do with such impurities remains as one of the great unsolved problems.

TRENT PROPOSES SOLUTION

A proposed solution for this metallurgical problem is that advanced by W. E. Trent in a patent dated July 14 of last year. It must be remembered that the function of limestone in a furnace is partly to provide a flux and partly to convert the sulphur in the coke and iron to a calcium sulphide so that it may be removed by slagging. In the blast furnace the contact between the coke and the limestone, the patentee believes not to be sufficiently intimate to effect the elimination of the sulphur in proper degree and so he would grind the limestone to a fineness about that of the coal used in his process and by incorporating it in the amalgam he hopes to obtain in the Superfuel product that intimate contact that he is seeking.

But limestone is a gangue and will not float with coal in making amalgam unless it is dry and oil coated, so the plan is to mix the oil with limestone and stir the mixture in with the wet amalgam. The limestone being covered with oil will float, but the other gangue being wet will sink. Enough limestone will have to be added of course to remove the sulphur in what oil remains after the amalgam is carbonized in the baking process.

The trouble with distillation of coal whether at high or low temperature, but especially at the latter, is that it is difficult to pass heat through a body of coal, not because the carbon is so impervious to heat but because the volatile gases remove the heat as it is received by the coal. When the gases are driven off in part, the coal is left in a cellular condition and that, as is well known, is one resisting the passage of heat, as is well illustrated by the heat insulation afford by the many kinds of cellular brick on the market. Consequently inventors have endeavored to use thin sheets of coal as in the Piron process where they are laid on a conveyor the palettes of which travel over a bed of molten lead.

COAL DUST IS CHARRED

Today the McEwen-Runge process, owned by the International Combustion Engineering Co., is seeking to meet this difficulty with every hope of success by grinding the coal to a dust and by charring it in fluid suspension. Coal dust is readily coked in a mine explosion, though heat is of only momentary duration. It is easy to understand how dust can be charred at a relatively low temperature in a somewhat similar way. A plant for preparing 200 tons of char daily is being constructed at Milwaukee. The char will be used under boilers and the oil from the coal will be drawn off as vapor, condensed, scrubbed and marketed.

The coal will first be broken down in a crusher and passed through a screen. The fine material will then go to a pulverizer and be blown in a pipe to an elevation of about 100 ft. where it will enter a cyclone collector, and be dropped into a hopper from which it will be fed into the "primary" retort which is a big 30-ft. tube or tower of steel, lined with refractory material. This has an internal diameter of 6 ft., 9 in. Here it will come into contact throughout its fall with inert gases which will be fed into the bottom of the tube at a temperature of 600 or 700 deg. F. The gases will lose their heat as they pass upward and finally leave the tube through a pipe in which is placed an exhauster which will vent them to the air.

The temperature of the gases being at all times low, the coal in this primary or "preheating" retort will drive off only inert gases such as water vapor and carbon dioxide. The discharge to the air, therefore, will be gas having no thermal value except that of sensible heat. The coal powder will be not in any sense a char but it will be changed in appearance by the process it has undergone. No longer will it be more or less rectangular. It will have become hollow, rounded and opaque.

The heat for this primary retort will be provided by the hot char which is the ultimate product of a "secondary" retort to be described later. This hot char, however, will not be allowed to come in contact with air that it preheats as that would result in its combustion. In the primary retort, as stated, no coking will take place and the product will neither agglomerate nor stick to the side of the retort but fall freely into a hopper below.

Thence it will pass to the secondary or carbonizing retort, which is of 6 ft. internal diameter. Here the product of the primary tube will fall another 30 ft. meeting on its way inert gases which will enter at a temperature of about 1,500 deg. F. and leave at a temperature of about 600 deg., the average temperature being about 1,050 deg. The treatment of the dust in each tube will be completed in about 35 sec. and the whole process will take only 6 min. So rapidly will the conversion to semi-coke be performed that about 200 tons can be obtained in a day's run.

PIPES CONVEY GAS

The gas which passes off the top of this retort will be taken by pipes to a hydraulic main and thence to a gas cooler, a gas exhauster, a tar extractor, a final cooler, gas scrubbers and a gas holder. Some of this gas may be used for the air preheater of the primary retort thus adding to the heat afforded by the hot char. It also will be used partly to furnish the heat for the secondary retort.

The product can be stored when cooled without fear of firing, and it can be transported in tank cars or wagons or blown direct to boilers for use as pulverized fuel. It can be loaded on locomotive tanks and blown into the furnaces of the locomotives. It can be piped like oil to ships' bunkers and used as pulverized fuel under the boilers. Extensive work in Great Britain is belived to justify the most favorable expectations.

The gas distilled from bituminous coal at low temperatures has a greater heating value than that pro-

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duced at high temperatures, the thermal value being approximately 750 B.t.u. The gas has a small percentage of hydrogen and a high percentage of methane hydrocarbons. The gas, therefore, should be suitable for delivery to gas companies, or as a substitute for producer gas, water gas, carburetted water gas or some of the many industrial gases, or it may be used in internal combustion engines or be burned under boilers for power generation. Should the installation be a success seven other like units will be erected at the same location.

PLANT GIVES GOOD SERVICE

A plant that has given excellent service is that designed and operated by C. V. McIntire with Messrs. Coverdale & Colpitts, as consulting engineers. The experimental work has been done by the Consolidation Coal Products Co., a subsidiary of the Consolidation Coal Co. This plant has a low-temperature carbonizing retort which may be classified as a stationary, horizontal, externally heated and internally agitated, furnace of cylindrical form and measuring 16 ft. 3 in. in length and 8 ft. 6 in. in diameter.

In the center of the cylinder is an agitator shaft which oscillates through an arc of 270 deg., and to it are attached paddles which move through the coal mass, close to the heated surface. These revolve so that the coal is moved every 30 sec. The cylinder is heated so that the surface adjacent to the coal is kept at 1,200 deg. F. a temperature somewhat above that desired for steady carbonizing but such as has been found desirable when the coal is agitated, as described, every 30 sec.

The gases in the retort above the coal are at a temperature between 650 and 750 deg. F., and the coal itself is believed never to reach any higher temperature than 800 deg. except in the periods of short duration in that part of the coal that rests against the high temperature lining.

The lower part of the retort has modified V- or U-shaped grooved sections of specially resistant iron which are fitted together with flanges to break joints. The upper part is a portion of a cylinder and is constructed of light boiler plate protected by sil-o-cel. This can be lifted bodily off the lower half whenever it is necessary to open the cylinder for necessary repairs or cleaning of the retort.

CARBONIZES 50 TONS DAILY

The product is a fine soft coke too fine to use on an ordinary grate. As it reaches the end of the retort it drops into a hopper where it is cooled by steam but it is found necessary to quench it further with water. Needless to say this char can either be used as a pulverized fuel or made into briquets. About 10 to 12 per cent of volatile matter still remains in the product after it has been subjected to the carbonizing process. With higher temperatures the coke would be harder and more gritty, but that would add to the pulverizing cost. About 50 tons of coal can be carbonized by one of these units in a day.

DAILY PROFIT OF $5,920

Using the high volatile coal of the Fairmont district the process is said to yield per net ton of coal 10 lb. of ammonia as ammonium sulphate, 28 gal. of crude tar, 1,000 cu.ft. of surplus gas and 1,500 lb. of coke. Judson C. Dickerman, assistant director of the Giant Power Survey, whose description has been utilized, states that an 8,000-ton plant after all charges for interest, depreciation and taxes at 15 per cent, on a plant cost of $800 per ton daily capacity, would yield a profit of $5,920 per day. He adds that "the prevailing estimates of practically all the low-temperature carbonizing processes are about $600 investment per ton of daily capacity, against known figures for standard byproduct coke ovens of $1,800 to $2,400 per ton."

The New Caryville Coal Co. Secludes Itself in the Hills of Tennessee



Above is shown the steel tipple of the New Caryville Coal Co., Caryville, Tenn. This company is one of seven affiliated with the Southern Mining Co., the main offices of which are at Williamsburg, Ky. It is unusual to see a modern steel tipple in such a shaded nook. Large trees almost surround the structure.

The lower illustration shows G. W. Pickle, superintendent, (left), and E. M. Denham, chief engineer, aboard the 15-ton monitor ready to ride down the 7,000-ft. plane at the mine of the New Caryville company. Some time ago a salesman wanting to go "up on the hill" boarded the empty monitor but instead of staying on the seat he climbed inside. When the monitor stopped at the top he failed to climb out soon enough and was partially covered with coal before his presence was discovered.



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New Types of Preparation Equipment Attack Problem of Cleaning in 1925

Dry Cleaning, Sand-Flotation and Launder Separation Make Further Progress — Several Plants Introduce Quicksand Method — Two Breakers Use Rheolaveur

COAL preparation engineers in 1925 showed a disposition to try out various new forms of cleaning equipment, not based on the jigging principle. The most aggressive of the new agents in the coal-cleaning field are the dry-cleaning table, the Chance washer, the Rheolaveur, the Deister table for the larger sizes and the Hydrotator.

Dry-cleaning equipment, as constructed by Roberts & Schaefer Co., has been installed by the Covel Smokeless Coal Co., at Covel, W. Va.; the Gulf Smokeless Coal Co., at Tams and Hotcoal, W. Va.; the Winding Gulf Colliery Co., at Winding Gulf, W. Va.; the Premier Red Ash Co., at Red Ash, Va., and the West Canadian Collieries, Ltd., Blairmore, Alta., Canada. In 1926, it is said a large plant will be constructed for the Algoma Coal & Coke Co., near Northfork, W. Va., and one for the Berwind White Coal Mining Co., at Windber, Pa. This latter will have a capacity of 400 tons per hour.

The West Canadian Collieries plant treats only four sizes ⅛ in. to ¼ in.; ¼ in. to ⅞ in.; ⅞ in. to ¾ in.; ¾ in. to 1⅝ in. Everything below ⅛ in. and over 1⅝ in. is not treated. As the smaller of the two untreated sizes constitutes 19 per cent and the over 1⅝-in. 26 per cent of the tonnage, only 55 per cent of the output passes over the tables or 110 tons per hour as against 200 tons of total tonnage.

During the past year the American Coal Cleaning Corp. has made experiments at the Ohio State University and as a result has now a table that will clean coal that passes through a 4-in. bar screen and is retained on a 2-in. square mesh rotary screen and will do it at a cost slightly less than for the smaller sizes and at the rate of 60 tons per hour. At one plant the range of sizes to be treated has been raised to include coal between 2-in. and 3-in. thus making unnecessary the services of four men on the picking table.

Different Principle Involved

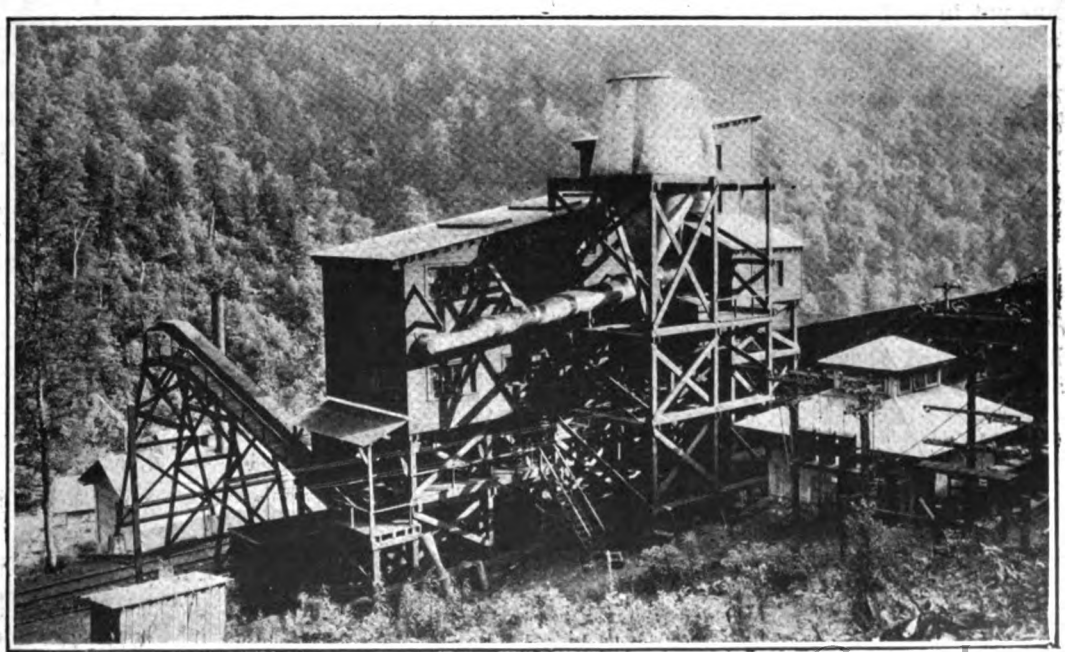
In the older type the coal is separated from the impurities on a single pervious, riffled deck, the impurities which correspond to concentrates in the metal mining being collected on one side and finally discharged from the separator at a point as distant from the feed as the discharge of the clean coal. In the new type the concentrates or impurities are collected in the *central* portion of the deck and the coal discharged on both sides.

As its name implies, the Y-type separator is shaped like the letter Y with the Y set in a horizontal position. The raw coal is fed to it at the base or foot of the Y. This portion contains riffles extending in the general direction of the intersection of the upper portion or arms, and terminating at the central portion which is raised. The sides of the leg of the Y are inclined downward. The arms are practically miniature separating tables, or decks, similar to those constituting the older type separator. The running gear is identical with the older type. The head motion likewise is in the general direction of the riffles.

The coal is received at the base or foot of the Y, the lightest or least dense particles, the upper strata of the mass, is immediately discharged by the force of gravity to either side, and the less dense which then becomes the topmost strata, is discharged farther along the sides of the legs, thus space for more coal is provided and the capacity increased. The heavier or more dense particles, the lower stratum, not having been floated by the air current above the riffles, are retained between them and concentrated in the central portion of the leg of the Y. This portion feeds these lower stratum on to two minia-

Coal Winnowing Plant

The air-cleaning plant of the Covel Smokeless Coal Co. at Covel, Wyoming County, West Virginia. One of the preparation equipments built in 1925. The product is shipped over the Virginian Ry. Much activity in coal cleaning by air has been manifested in Wyoming County, where the early seed planted at McComas has thrived and brought forth abundantly, there being plants at Hotcoal, Tams, Wyco and Winding Gulf as well as at Covel.



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ture decks forming the arms of the Y, and they are here treated as on the older type of separator. Here what takes place may be termed a recleaning operation for that portion of the product which requires it. The area of discharge of this separator is twice that of the older type, thereby permitting a stream of coal twice the size to be discharged from it in a given time. The coal is retained on the separator only a sufficient length of time to separate it from the impurity after which it is immediately discharged. In addition to separating the impurities from the coal due to an improved system of air baffles and control, the unit also grades the coal into sizes. In other words, the finer sizes are treated and disposed of first and the cleaning operation continued with a steadily increasing sizes toward the intersection of the arms of the Y. This feature has permitted a range of sizes 100 per cent greater than that formerly thought possible.

As a result of these changes the new separator is said to have twice the capacity of the old and to reduce the necessity of fine sizing to an important degree. Aspirators have also been developed to permit the successful sizing of fine coals passing the ⅛-in. screens. It is claimed that the floor space and the height formerly required have both been reduced and the dust-collecting system has been made less extensive. Less middlings are produced and the charges for investment, power, labor and supplies have been decreased.

REDUCES ASH 45 PER CENT

The McComas plant, of the American Coal Co. of Allegany County, has put in aspirators so as to obtain a sized coal running from ⅛ to 3/16 in. Obtaining an ash reduction of 45 per cent by cleaning this coal it was decided that five Y-type separators should be installed, that the two old separators treating the ⅛ to 1/16 in. size should be removed, as also the 1/16-in. screens or about one-third of the entire screening equipment of the plant. These can be used at another installation. These changes will be completed about Feb. 15. The sizes treated will be 3 to 1½ in.; 1½ to 1 in.; 1 to ½ in.; ½ to ¼ in.; ¼ to ⅛ in; ⅛ to 3/16 in., and 3/16 to 0 in. (aspirated). The capacity will be 275 tons per hour.

A dry concentrating plant is being erected for the International Coal & Coke Co., at Coleman, Alta, Canada, having a capacity of 300 tons passing the 3-in. screens. The sizes, 3 to 1⅝ in.; 1⅝ to ¾ in., and ¾ to ⅜ in. will be treated on the older type of pneumatic separators and the ⅜ to 1⅛ in. and the through ⅛ in. will be treated on the new Y type.

The Birtley Iron Co., Birtley, County Durham, England, is erecting a plant at the Wardley Collieries which will screen to five sizes and treat 150 tons hourly pneumatically, only the coal under one inch being subjected to the pneumatic separators of which there are six. Prior to this it had erected a similar plant at Heworth Collieries screening the coal into three sizes and using only coal under one inch. Four pneumatic separators were used. The Premier Red Ash Corp., at Red Ash, Va., has put in a separator to treat nut sizes (2 to 1 in.).

SAND FLOTATION PROGRESSES

The Chance process has made much progress during 1925. Sand flotation has been applied successfully to the washing of bituminous coal, the first plant of that type being placed in operation on Oct. 1. It shipped over 150,000 tons in the three months following. The patentees claim that the yield of coal of prepared sizes has been demonstrated in plants located in the southern anthracite field and that a mixture of buckwheat, rice and barley can be washed in a separate cone to produce steam coal of any desired ash content without change in the preparation standards of the domestic sizes. This method has been adopted at four of the plants erected.

It is stated that the process will produce uniformly low-ash coal in machines of high capacity without loss of pure coal in the refuse. Where the coal is boney or laminated the larger refuse can be and has been crushed, thus releasing the coal from the interlaminated slate so that it can be rewashed in a separate, or in the original, cone. The refuse from two cones can be handled by a common conveyor and slate shaker. The sand sumps and de-sanding shakers have been redesigned so as to reduce sand losses to a minimum, the loss in the case of bituminous-coal cleaning being reduced to less than 2 lb. of sand per ton of coal, according to the patentees. A list of such sand-flotation plants is given in the accompanying table.

The construction of Rheolaveurs during 1925 at no American plant reached a stage making operation possible except at one plant of the Hudson Coal Co. where, it is said, coal has been washed by this process. The Glen Alden Coal Co. during the latter part of the year commenced the reconstruction of its Loomis breaker, but this work has been delayed by the strike. A 3,000-ton Rheolaveur unit is being erected and as soon as this unit is in successful operation another of equal size will be added, thus entirely replacing the original equipment.

At the Hazleton shaft of the Lehigh Valley Coal Co. a unit capable of cleaning 2,000 tons in 8 hr. is under construction. Other plants which, it is said, will be erected in 1926 are those of the Montevallo Coal Co., at Aldrich, Ala. and of the American Smelting & Refining Co., at Cokedale, Colo., both bituminous plants.

Experiments have been made at coal mines with the Hydrotator, a settling tank in which the solids are kept sufficiently in motion for stratification by revolving water jets. Trials of the availability of the process for coal washing have been made at the Oak Hill Colliery, Minersville, Pa., and at a mine in Alabama. Developments in other industrial fields have been quite active, however.

Concentrating tables have, hitherto, been used only for the cleaning of small sizes from ⅝ in. to dust.

Sand Flotation Plant Construction Dur ing Year 1925

Plants Erected	Type	Cones Installed Ft.	In.	Sizes Washed
Anthracite				
Madeira, Hill & Co.	Breaker	4 —	13 6	Broken to barley (incl.)
St. Clair Coal Co.	Breaker	3 —	13 6	Egg to barley (incl.)
Repplier Coal Co.	Breaker	2 —	13 6	Egg to barley (incl.)
Northumberland Mining Co.	Breaker	2 —	13 6	Egg to barley (incl.)
Shamokin Coal Co.	Breaker	2 —	12 0	Egg to barley (incl.)
South Penn Colliery Co.	Breaker	2 —	7 8	Egg to barley (incl.)
Winton Coal Co.	Breaker	1 —	15 0	Egg to barley (incl.)
Moosic Coal Co.	Breaker	1 —	15 0	Egg to barley (incl.)
Suffolk Ant. Colliery Co.	Washery	1 —	15 0	Egg to barley (incl.)
Harleigh Coal Co.	Washery	1 —	15 0	Stove to barley (incl.)
Coleraine Coal Co.	Washery	1 —	13 6	Stove to barley (incl.)
John Ames Coal Co.	Washery	1 —	13 6	Stove to barley (incl.)
Hickory Run Coal Co.	Washery	2 —	12 0	Stove to barley (incl.)
Bituminous				
Rockhill Coal & Iron Co.	Tipple	2 —	10 0	4½ in. to ¾ in. (incl.)

The hourly capacity in output of clean coal is usually rated when operating on coal containing not more than 25 per cent of refuse, as follows:

Diameter of Cone, Ft.	Tons per Hour	Diameter of Cone, Ft.	Tons per Hour
7.5	50	13.5	125
12	100	15	150

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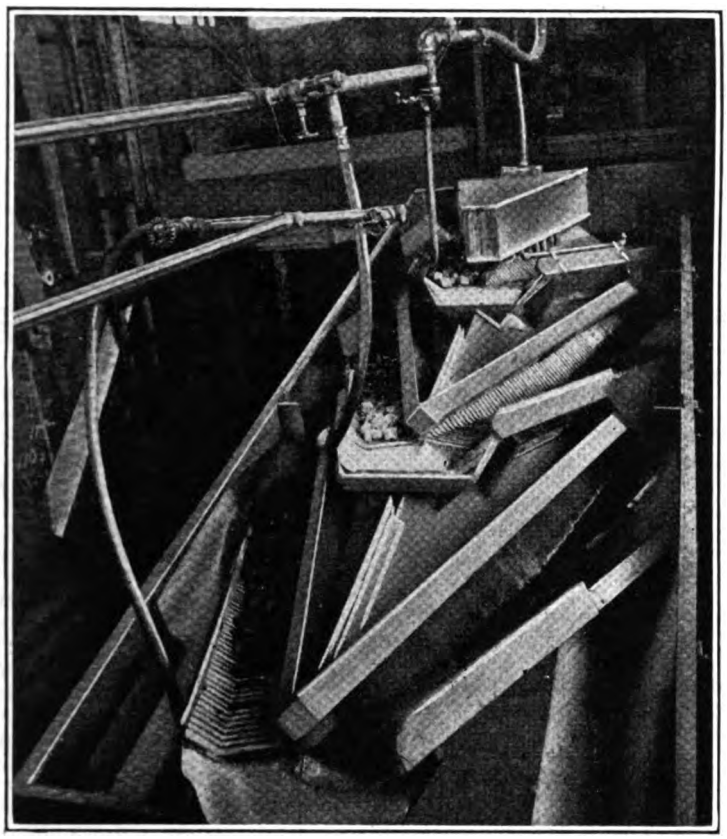

Table for Washing Coarser Sizes

It has always been assumed that tables were only suited to coal of sand size. This table washes nut-sized coal, and, it is said, does it effectively.

The larger sizes have been cleaned either by jigs, by dry methods of mechanical concentration or by hand picking. The Plat-O coal washer has in the past year been devised to clean large coal and to do it in full view of the operative.

Six Launders Employed

The washing operation is carried on in six launders, three on a side, set at an angle to the center line of the machine, which is also in the line of motion. These launders have an upward inclination of 1¼ in. per foot, with the exception of the last 15 in. at the refuse discharge end of each launder where this inclination is increased to 1½ in. per foot.

The deck of the machine is supported and operated on dust-proof, self-oiling slipper bearings and is reciprocated by a self-oiling head-motion similar to that used for tables of this type in the preparation of fine coal.

The decks of these machines are constructed throughout of cypress, and lined with heavy linoleum similar to that used as deck covers on coal and ore tables. All portions of the interior of the washer subject to wear are covered with heavy rubber. That on the washing launders is corrugated, the corrugations running transverse to the forward travel of the refuse. The corrugations are of the saw-tooth type with a long, easy slope in the direction of the travel of the material and a short, abrupt shoulder. These saw-teeth facilitate a rapid advance of the refuse, the steep upward slope of the washing launders holding back the clean coal. Wash water boxes, launders, and spray pipes are provided for supplying the necessary water for the washing of the coal.

The washer deck is reciprocated at a speed of 135 to 140 r.p.m. with a length of stroke of 2¾ in. The feed is delivered to the machine at the head end, or highest point, just back of the triangular wash-water box. The tendency of the material being washed is to travel in a direction parallel to the line of motion, but due to the angularity of the launders to this direction of travel the solids are given a circular or panning motion and the water a pulsating or jigging action.

After the coal has been washed in the first or upper set of launders it is rewashed in the second and third sets. In the first launders a large portion of the heaviest and coarsest of the refuse is removed together with a small portion of the lighter slate. In the second launders but little of the heavy refuse is left, while in the third launders the final washing has practically nothing to remove but slate and bone coal.

The refuse from each of the launder operations passes off at the forward ends of the washing launders through openings leading to the general refuse launder running along under the center of the deck. The clean coal is discharged on each side of the machine at the lower end.

The washed material as it passes from one launder to the next flows over a short length of brass screen which drains off the water into the adjacent wash-water box where it is used in the washing of the same coal. Fresh water may be added from spray pipes on the edge of the washing launders or driven up through screen-covered openings so that it passes through the bed of the refuse as it moves up the slope.

Washes 15 Tons Hourly

The capacity of the washer is approximately 15 tons per hour, and the wash-water requirements are 400 gal. (1¾ tons) of water per ton of coal treated. For continuous operation 2 hp. is required. If an individual motor drive is used a 3-hp. motor should be supplied for the purpose. The washer is in over-all dimensions 5 ft. 3 in. wide, 16 ft. 6½ in. long and 5 ft. 9¾ in. high to the top of the wash-water box. One of these washers has been operating at the plant of the Potter Coal & Coke Co. at Greensburg, Pa. Others are to be or have been installed in the Donetz coal field in Russia.

Concentrating tables for fine coal made further headway in 1925. The Lehigh Coal & Navigation Co. installing thirty Deister Concentrator Co.'s units at its new Lansford breaker, twelve of these having rubber deck-covers and riffles of molded rubber. They will be used for the treatment of buckwheat Nos. 1 and 2. An installation was made by the same company for the American Smelting and Refining Co., at Rosita, Mex. Vibrating screens are entering the Eastern fields, despite the greater dampness of the Eastern coals. Such screens have been installed for the Alabama Coal Corp., the De Bardeleben Coal Corp., at Empire, Ala., and the Alabama Fuel Co., at Overton, Ala.

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MARKET REVIEWS

Markets and Production in 1925 and Forecasts by Our Correspondents in Leading Coal Fields—Diagrams and Tables of Spot and Weighted Average Prices of Coal by Producing Districts

Midwest Market Had Quiet Year; Northwest Docks Regain Lost Ground

Except on Eastern Coals, Price Spread Is Narrow —Sharp Advance in Smokeless Sends Consumers Back to Midwest Coals—Labor Problem Is Vexing

By H. A. Requa

The year just closed was an uneventful period in the coal industry of the Middle West and Northwest. There was less spread in prices last year, perhaps than ever before, though some outside coals did fluctuate, which will be referred to later. But considering local coals—from Illinois, Indiana and west Kentucky — the twelve-month period showed little variation. This is true of both steam and domestic coal. Much the same situation prevailed at the coal docks on Lake Superior and Lake Michigan, where dock operators were engaged over the year in battling for their old markets against the inroads of all-rail coal from West Virginia and Kentucky. Eastern coals moving into the Middle West had frequent ups and downs, but as the Middle West is primarily interested in its own coals these variations did not cut such a tremendous figure.

Anthracite cut but little figure in the Midwest and Northwest market last year, principally because those interested in this fuel made their purchases early in the season while hard coal was plentiful. The docks still have large reserves, which they are selling, as the demand occasions, at reasonable prices. Some retail dealers also have some left, which they are holding for pet customers.

Right after the first of the year business was brisk and prices were firm, largely due to a spell of very cold weather all over the Middle Western and Northwestern states. About the middle of January the weather moderated, and the market tapered off until the latter part of February, when more cold weather brought a little impermanent relief. From then on until in April the market was uniformly poor.

After the first of May business picked up a little, owing to improved industrial conditions. Business lagged during the summer until late in August. About that time the public began to think there might be something to the anthracite strike talk, after all, and it might be a good idea to buy the family and factory coal supply for the winter. A much better market resulted, and from then on prices and production figures began gradually to climb. In October and November prices reached the top for the year, but tonnage figures kept on climbing. Indiana, Illinois and western Kentucky mines produced record tonnages, and many a dock company at the head of Lake Superior wired to Toledo or Cleveland for an extra cargo or so of coal.

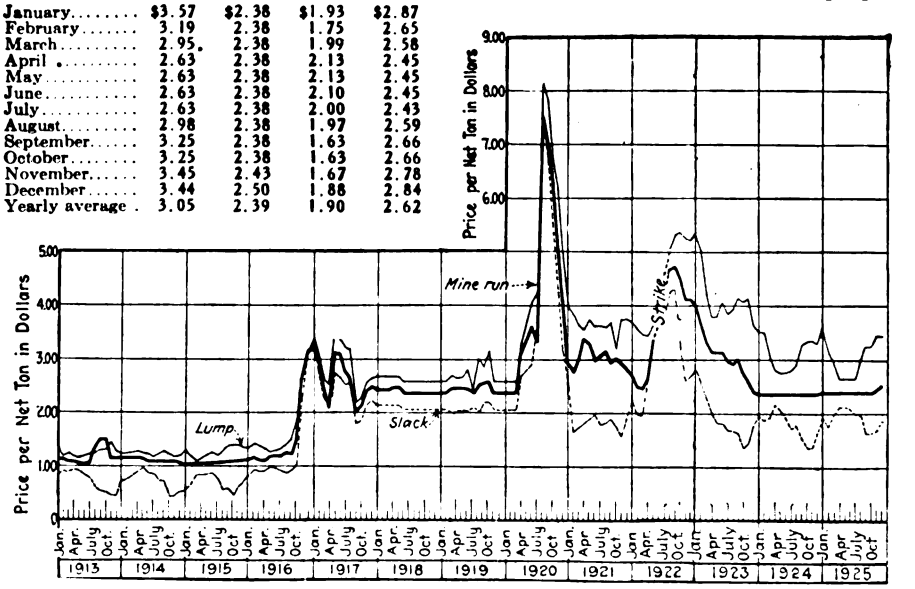
During the late fall and early winter months prices were at their best, but there was no runaway market on account of the anthracite strike, which surprised many engaged in the coal industry. They did not take into consideration that coal was being produced in such great quantities that a fuel shortage was impossible. The end of the year saw the Middle West and Northwest so full of coal that operators, in order to maintain their prices, were faced with the necessity of curtailing production sharply, and this, like wise men and sound merchants, they did. The end of the year saw the temperature over the whole territory around zero, but with adequate coal supplies at a very reasonable price available everywhere.

Normally a large annual tonnage of smokeless coal moves to the Middle West and Northwest, very much to the disgust of Midwest mine operators, who feel the market belongs to them. Last fall, on account of a real or fancied fuel shortage in New England, the smokeless people shipped their coal East and either utterly abandoned their friends of years standing in the Middle West or else charged them around $6.50 f.o.b. mine for prepared smokeless coals, although this same coal had been selling all spring and summer at prices ranging from $2.75 to $3.50. The Middle West was prepared to pay some advance on account of the hard-coal situation, but a boost of $3 per ton or more seemed a little unreasonable to them, especially as the Illinois, Indiana and west Kentucky producers kept their prices steady, with increases, if at all, not greater than 25c. or 50c. per ton. The dock operators, too, were farsighted enough to keep their prices down on all grades of smokeless coals. Much to the joy of Midwest operators, countless buyers gave up trying to purchase smokeless coals and came back to the local product. There is no doubt about it, the smokeless advance in price cost West Virginia many a good account. It is the opinion of disinterested observers that the smokeless people

Spot Prices, F.o.b. Mines, Southern Illinois (Franklin County) Coal, 1925

CHICAGO MARKET

Month	Lump	Run of Mine	Screenings	Weighted Av. All Sizes
January	$3.57	$2.38	$1.93	$2.87
February	3.19	2.38	1.75	2.65
March	2.95	2.38	1.99	2.58
April	2.63	2.38	2.13	2.45
May	2.63	2.38	2.13	2.45
June	2.63	2.38	2.10	2.45
July	2.63	2.38	2.00	2.43
August	2.98	2.38	1.97	2.59
September	3.25	2.38	1.63	2.66
October	3.25	2.38	1.63	2.66
November	3.45	2.43	1.67	2.78
December	3.44	2.50	1.88	2.84
Yearly average	3.05	2.39	1.90	2.62



Spot Prices, F.o.b. Mines, on the Chicago Market, of Coal from Southern Illinois

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Spot Prices, F.o.b. Mines, of Central Illinois Coal, 1925

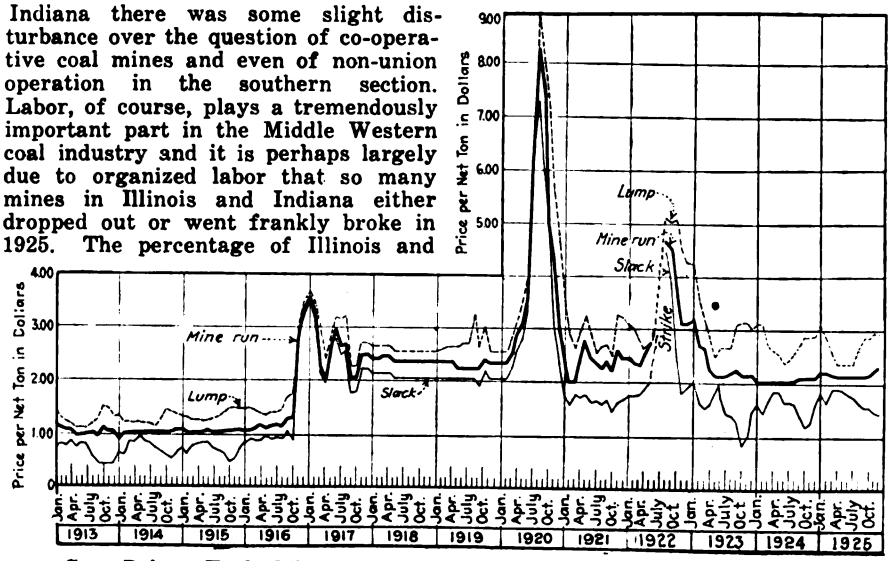
CHICAGO MARKET

Month	Lump	Run of Mine	Screenings	Weighted Av. All Sizes
January	$3.10	$2.20	$1.82	$2.56
February	2.88	2.20	1.63	2.42
March	2.60	2.15	1.90	2.32
April	2.38	2.13	1.90	2.20
May	2.38	2.13	1.88	2.20
June	2.38	2.13	1.80	2.18
July	2.38	2.13	1.74	2.17
August	2.68	2.13	1.61	2.30
September	2.88	2.13	1.55	2.38
October	2.88	2.15	1.55	2.39
November	2.95	2.23	1.48	2.44
December	2.94	2.30	1.43	2.45
Yearly average	2.70	2.17	1.69	2.33

will have to spend much sales energy before they begin to get back the accounts they have lost, especially as Middle Western operators are more closely in touch with the trade and intend to bend every effort to keep the business they have regained.

Dock operators, thanks to their aggressive efforts and business sagacity, have had a good year. In obtaining supplies for their docks last year they bought, as a rule, quality coal and gave it careful and excellent preparation. Comparatively speaking, dock prices have been very low, with the result that dock operators have won back in a large measure the business they had lost during the past three years to all-rail coal. Another consideration in favor of the dock operators has been the fairly prosperous condition of the territory they serve. For instance, the agricultural situation in Wisconsin, Minnesota, South Dakota and North Dakota has been good. The paper and pulp mills have run nearly every day, and business in the iron-ore districts has been brisk. Taken all in all, 1925 has doubtless proved a satisfactory season for the coal docks.

From a labor viewpoint, 1925 has been quiet. There was, to be sure, a little flurry in Illinois over the wages to be paid to the crews handling mechanical coal loading devices, and in Indiana there was some slight disturbance over the question of co-operative coal mines and even of non-union operation in the southern section. Labor, of course, plays a tremendously important part in the Middle Western coal industry and it is perhaps largely due to organized labor that so many mines in Illinois and Indiana either dropped out or went frankly broke in 1925. The percentage of Illinois and Indiana mines that can actually show an operating profit for 1925 is negligible. This is entirely due to the labor situation, as it can hardly be expected that an Illinois coal mine paying a union miner, say $8 per day for certain work can compete with a Kentucky mine paying a non-union miner only $4 per day for the same class of work. Therefore Illinois and Indiana operators cannot possibly hope for an even break against Kentucky and West Virginia producers until these differences are adjusted.



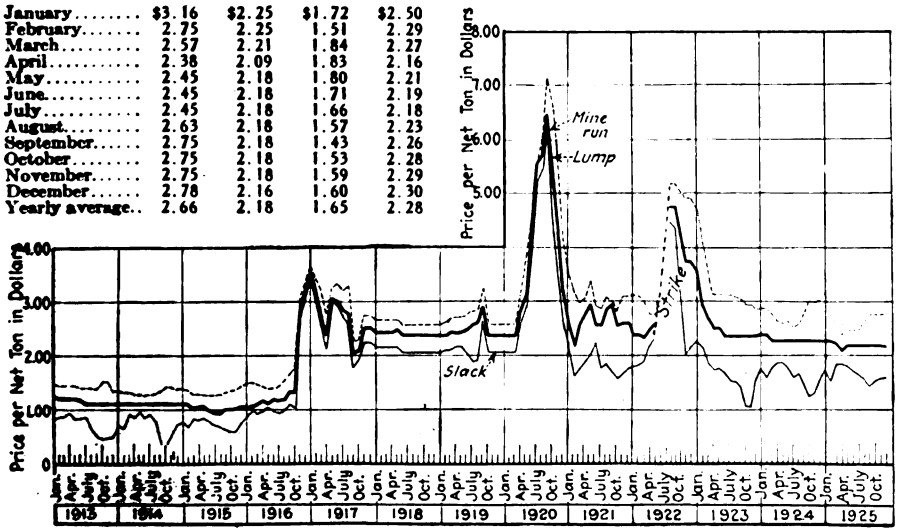
Spot Prices, F.o.b. Mines, on the Chicago Market, of Bituminous Coal from Central Illinois

As the Jacksonville agreement with the United States Mine Workers does not expire until April, 1927, it is expected that the Middle West mine operators, such of them as remain, will devote 1926 to setting the stage for the "big show" next year, when the marshaled forces of organized labor will meet with the inexorable forces of supply and demand. In the meantime, operators are waiting for some Moses to come and lead them out of the wilderness of their difficulties, or maybe it would be more fitting to say they are waiting for a super Babe Ruth to spring up and put in a few good, wholesome swats for them. They don't need any Colonel Mitchell to tell them there's something wrong, either.

Spot Prices, F.o.b. Mines, of Indiana, 4th and 5th Vein Coals, 1925

CHICAGO MARKET

Month	Lump	Run of Mine	Screenings	Weighted Av. All Sizes
January	$3.16	$2.25	$1.72	$2.50
February	2.75	2.25	1.51	2.29
March	2.57	2.21	1.84	2.27
April	2.38	2.09	1.83	2.16
May	2.45	2.18	1.80	2.21
June	2.45	2.18	1.71	2.19
July	2.45	2.18	1.66	2.18
August	2.63	2.18	1.57	2.23
September	2.75	2.18	1.43	2.26
October	2.75	2.18	1.53	2.28
November	2.75	2.18	1.59	2.29
December	2.78	2.16	1.60	2.30
Yearly average	2.66	2.18	1.65	2.28



Spot Prices, F.o.b. Mines, on Chicago Market, of Bituminous Coal from Fourth and Fifth Veins, Indiana

Northwest Coal Dock Business Above Average in 1925

Coal receipts at Duluth-Superior docks during the 1925 season showed an increase of 651,829 tons over 1924 and were 104,108 tons above the average for the past eight years, according to the U. S. Harbor Engineer's office at Duluth.

Bituminous receipts last season totaled 8,882,569 tons, an increase of 1,151,691 tons over the 1924 figures. Anthracite receipts came to 790,132 tons, a decrease of 491,862 tons as compared with the previous season.

Receipts of coal by months during the 1925 season were as follows, in net tons:

	Hard Coal	Soft Coal	Total
April	171,372	550,014	721,386
May	214,006	1,026,333	1,240,339
June	151,939	1,295,190	1,447,129
July	139,992	1,362,574	1,501,866
August	51,636	1,243,053	1,294,689
September	51,603	968,658	1,027,261
October	.....	1,242,816	1,242,816
November	3,284	976,978	980,262
Total for season	790,132	8,882,569	9,672,701

Comparative statement at close of season for past eight years:

	Hard Coal	Soft Coal	Total
1918	1,609,473	9,721,440	11,890,913
1919	1,795,257	7,079,840	8,875,097
1920	1,637,477	7,393,219	9,030,696
1921	1,844,642	8,320,207	10,164,849
1922	566,362	5,138,934	5,705,296
1923	1,419,984	11,268,337	12,688,321
1924	1,289,994	7,730,878	9,020,872
1925	790,132	8,882,569	9,672,701

Average total received during the past eight years 9,568,593.

Comparative shipments from Duluth-Superior coal docks during the calendar years 1925, 1924 and 1923, as compiled by the Western Weighing and Inspection Bureau, were as follows, in carloads:

	1925	1924	1923
January	27,693	25,984	13,683
February	17,666	17,188	13,969
March	16,388	13,619	10,826
April	9,210	15,683	7,555
May	12,302	13,728	7,964
June	11,955	13,401	15,157
July	14,693	15,301	18,911
August	20,778	18,589	23,914
September	24,032	24,373	23,174
October	31,685	26,418	23,436
November	27,411	28,705	23,699
December	25,735	29,615	17,215
Total	239,548	242,604	199,503

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Late Pick-Up in West Marks Year Of Ordinary Achievement

Output in Kansas Higher Than in 1924, Colorado About the Same, but Arkansas and Oklahoma Slump, Due to Labor Trouble—Lower Costs Sought

Just an ordinary year fittingly describes the developments of 1925 in the market regions served by Western and Southwestern mines. Output in Kansas, according to unofficial figures from authoritative sources, reached about 6,000,000 tons (which is about 1,500,000 tons more than in 1924) and Colorado's total just about equaled that of the preceding year. The increase in Kansas was due largely to reduced production in Arkansas and Oklahoma, where labor difficulties curtailed operations. Prices at the year's end were not far from the levels prevailing at the outset, and except for pronounced dips during the spring the market was without notable features.

Several cold spells last January rescued the market from the doldrums, but business dragged in February and the first break in the $5 price for Kansas lump took place March 1, when shaft lump was quoted at $4.50. By the middle of that month it was down to $4, with shading of from 50c. to 75c. as April approached. Except for a fleeting flurry due to cool weather late in April the market was sluggish until late August, when fall demand began to appear and prices advanced slowly until Kansas lump again reached the $5 level about Nov. 1. The fall and winter demand thus far has been spasmodic, dependent on the thermometer, and purchases have largely been only for immediate needs.

In Utah prices were unusually steady throughout the year, rumors of an advance to encourage summer storage having come to naught. Working time was down to two days a week from May until September, when conditions began to improve with the early appearance of fall weather. The late fall and early winter were unusally mild, however, and at the year's end the mines were averaging only half time or less.

Colorado lump and nut, which at the beginning of last year were $5.25 and $4.25 respectively, with a stiff cold spell prevailing, fell away badly in April, which was—until then—one of the worst months in the history of that market, but by June business had almost dropped out of sight. All consumers, apparently, were holding back until freight rate reductions became effective—early in August. The real pick-up began about the middle of the latter month and orders soon were coming in strong and from a much broader stretch of territory than usual, yet prices advanced only moderately, reaching $6 for lump and $5 for nut on Nov. 1, since which date there has been no change.

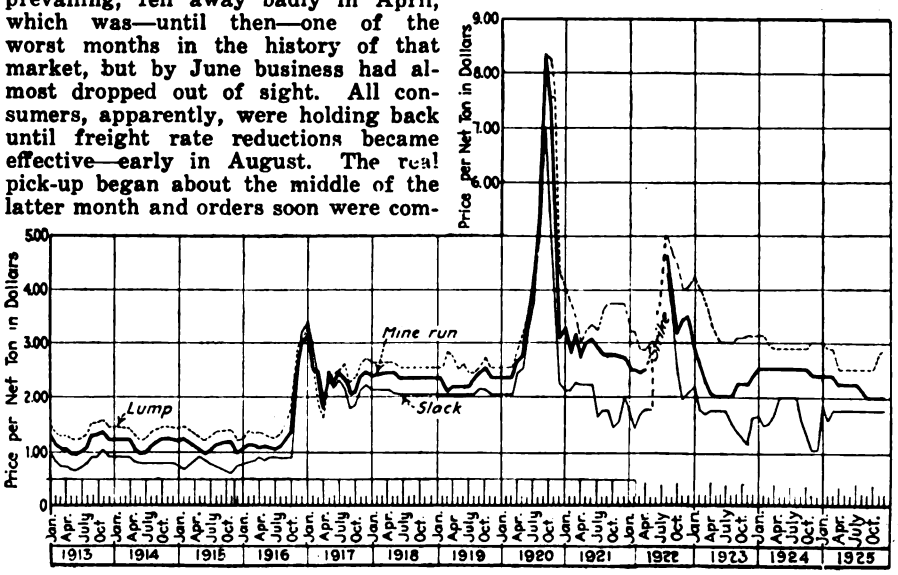
One of the most beneficial developments in the Colorado trade during the last year was a revision in the miners' wages, the workers agreeing to return to the 1917 scale, which is about 33 per cent less than the Jacksonville scale. Much dissatisfaction came to light when an attempt was made to introduce drastic changes in the mining laws in an effort to standardize practice, but the difficulty eventually was ironed out when the most objectionable features of the proposed changes were eliminated by a compromise between the operators and the chief mine inspector.

Oklahoma and Arkansas mines had a hard time throughout the greater part of the year, production being so restricted and uncertain as to have little effect on market conditions. The

Spot Prices, F.o.b. Mines, Coals of Mt. Olive District, (Ill.), 1925

ST. LOUIS MARKET

Month	Lump	Run of Mine	Screenings	Weighted Av. All Sizes
January	$3.00	$2.38	$1.83	$2.58
February	2.88	2.38	1.57	2.47
March	2.88	2.38	1.75	2.51
April	2.50	2.25	1.75	2.29
May	2.50	2.25	1.75	2.29
June	2.50	2.25	1.75	2.29
July	2.50	2.25	1.75	2.29
August	2.50	2.10	1.75	2.24
September	2.50	2.00	1.75	2.20
October	2.50	2.00	1.75	2.20
November	2.80	2.00	1.75	2.34
December	2.88	2.00	1.75	2.38
Yearly average	2.66	2.19	1.74	2.34



Spot Prices, F.o.b. Mines, on the St. Louis Market, of Coal from Mt. Olive District of Illinois

Bituminous Coal Loaded Into Vessels at Lake Erie Ports During Season of 1925

(In Net Tons)

Ports	Railroads	1925 Cargo	1925 Fuel	1925 Total	1924 Cargo	1924 Fuel	1924 Total	1923 Cargo	1923 Fuel	1923 Total
Toledo	Hocking Valley	*8,234,057	239,377	8,473,434	6,714,573	199,104	6,913,677	5,026,533	151,965	5,178,498
	Big Four	1,542,343	9,398	1,551,741	57,298	138	57,436	.....	.....	.....
	N. Y. C.-Ohio Central Lines	1,016,892	74,669	1,091,561	145,012	5,425	150,437	1,182,193	36,966	1,219,159
	Baltimore & Ohio	*3,219,638	96,902	3,316,540	2,256,187	69,919	2,326,106	2,891,967	84,402	2,976,369
Sandusky	Pennsylvania	6,122,103	183,699	6,305,802	4,205,493	126,145	4,331,638	3,008,096	95,726	3,103,822
Huron	Wheeling & Lake Erie	703,627	36,721	740,348	800,037	36,933	836,970	1,481,428	58,439	1,539,867
Lorain	Baltimore & Ohio	†1,588,520	156,970	1,745,490	2,227,761	158,610	2,386,371	3,667,957	196,569	3,864,526
Cleveland	Pennsylvania	390,050	172,653	562,703	1,414,865	176,709	1,591,574	1,870,527	201,470	2,071,997
	Erie	18,138	1,252	19,390	327,720	11,336	339,056	739,025	31,920	770,945
Fairport	Baltimore & Ohio	*969,013	114,520	1,083,533	556,243	84,556	640,799	912,131	82,236	994,367
Ashtabula	New York Central	331,047	83,397	414,444	871,569	113,659	985,228	3,380,040	255,746	3,635,786
	Pennsylvania	786,745	88,032	874,777	1,195,466	79,607	1,275,073	2,147,144	94,482	2,241,626
Conneaut	Bessemer & Lake Erie	1,124,109	214,425	1,338,534	1,514,457	198,039	1,712,496	2,783,640	242,057	3,025,697
Erie	Pennsylvania	284,561	60,138	344,699	688,310	87,381	775,691	738,103	96,532	834,635
Total		*26,330,843	1,532,153	27,862,996	22,974,991	1,347,561	24,322,552	29,828,784	1,628,510	31,457,294
Storage Loading		‡33,017	1,048	34,065	§182,060	4,940	187,000	.....	.....	.....

*Storage coal (included in above figures), H. V., Toledo, 49,425 tons; B. & O., Toledo, 2,842 tons; B. & O., Fairport, 7,875 tons

†Includes 42,005 tons cargo; 2,798 tons fuel dumped at Huron account fire at Lorain, June 12, 1925. Also includes 3,631 tons fuel dumped over ore docks at Lorain.

‡Coal loaded into vessels in December, 1924, after close of navigation and forwarded from Lake Erie ports during 1924.

§Coal loaded into vessels in December, 1923, after close of navigation and forwarded from Lake Erie ports during 1925.

Compiled by Ore & Coal Exchange, Cleveland; H. M. Griggs, manager.

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McAlester (Okla.) field began early in the year to slide from the 1924 scale, followed soon by the Wilburton, Hartshorne and Henryetta fields. The defection of the first three did not create much of a stir, but when Henryetta left the fold the union began active opposition. After several clashes between union and non-union men the Governor sent national guardsmen into the district to maintain order. When, in August, the Arkansas mines also began to slip the union leaders called a strike in District 21, embracing both states, effective Sept. 1. The response was almost unanimous, but many of the men later returned to work. Nevertheless, as the year came to a close the output of the two states was far below normal and the strike was still in effect.

Efforts to extend the 1917 scale into Kansas were met with prompt and vigorous opposition by union men, and with the state benefiting from trade formerly supplied by Oklahoma and Arkansas, new mines were opened in the autumn and some operations that had been idle since 1921 or 1922 resumed. Leon Besson, state inspector, announced in November that 100 more mines were operating than at the same time in the preceding year. Most of these are shovel mines, which incidentally, are said to be yielding bigger profits than shaft mines.

Early in December it was stated that a commission had been directed by John L. Lewis, president of the international union, to investigate conditions in the Southwest, and there were rumors that a general strike might be called in furtherance of the union cause in District 21, but Kansas operators incline to the belief that the strike will not materialize.

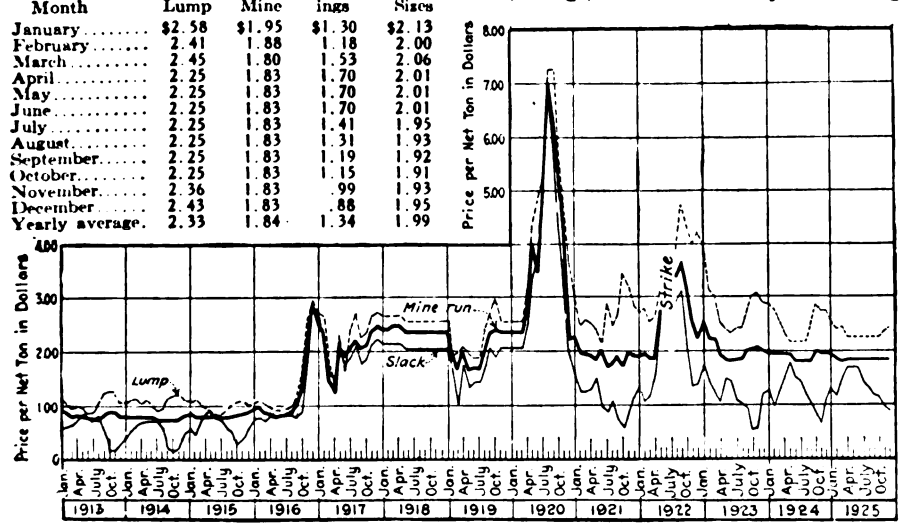
In Missouri, with no strike, high operating costs have curtailed production to such an extent that the state's influence is negligible.

Operators still decry high production costs due to high wages, and look for little relief while the Jacksonville agreement remains in force.

Spot Prices, F.o.b. Mines, Coal of Standard District (Ill.), 1925

ST. LOUIS MARKET

Month	Lump	Run of Mine	Screenings	Weighted Av. All Sizes
January	$2.58	$1.95	$1.30	$2.13
February	2.41	1.88	1.18	2.00
March	2.45	1.80	1.53	2.06
April	2.25	1.83	1.70	2.01
May	2.25	1.83	1.70	2.01
June	2.25	1.83	1.70	2.01
July	2.25	1.83	1.41	1.95
August	2.25	1.83	1.31	1.93
September	2.25	1.83	1.19	1.92
October	2.25	1.83	1.15	1.91
November	2.36	1.83	.99	1.93
December	2.43	1.83	.88	1.95
Yearly average	2.33	1.84	1.34	1.99



Spot Prices, F.o.b. Mines, on the St. Louis Market, of Coal from the Standard Field of Illinois

Cincinnati Market Has Year of Thrills

Start Is Quiet but Hectic Movement Follows—New Freight Traffic Record Set—West Virginia Coals Active—Southeast Kentucky Prices Hold Their Own

By Harold W. Coates

Almost all of the thrills that can be experienced in a coal man's year are written into the chronicle of 1925 so far as the Cincinnati market is concerned.

December of the year preceding (1924) had been rather fitful and hectic, but, following the shutdowns and slack time over the holidays 1925 dawned with a marked right-about-face. For a week or two it looked as if equilibrium would be recovered. Distress coal was cleaned up and "no bills" in the Russell, Stevens and De Coursey yards in Kentucky and at Portsmouth, Ohio, virtually disappeared.

Nobody, however, kept an eye on the barometer. Production in the non-union fields went on apace and by the time February rolled around many of the mines were balancing in red and the wholesalers here were cramped into a position where no one could make any money. Even zero weather failed to help. Prices were soft and crumbling in every direction. Slack was hardest to move and the low spot of the year, 65c. a ton, was reached here.

Overproduction Bare

The next sixty days witnessed all sorts of attempts to curb the overplus of coal. Most operators expected the other fellow to apply the remedy and kept their own mines working. Again the reservoirs were filled with "no bills" and consigned coal and the situation by April 1 resulted in loaded equipment being backed clear to the mouths of the mines of southern West Virginia and southeastern Kentucky.

May saw the situation still in bad shape with overproduction the bugaboo. The general idea was that the opening of the lakes might change the situation. Hazard operators declared against ruinous prices and placed their coal on a basis by which it would be advanced 15c. a ton each month until the opening of the fall business. Railway contracts for straight mine-run let in this period at $1.50@$1.60 in Kentucky and 10c.@15c. higher in West Virginia helped to give a little body to the market. Lake movement also added its influence, so that when the first rumble of trouble in the ranks of the English miners was carried to this market there was enough momentum already started to carry the values to a slightly higher and more satisfactory level.

Anthracite Strike Helps

In July, when the word came that the hard-coal miners intended to take a "vacation," the first firm ground for business of the year appeared. August saw the first of the fencing around to get under cover and an assured supply on the part of the big industries, and this helped the situation tremendously.

For the first half of the year there had been a tremendous "weeding out" process so far as the wholesale trade of Cincinnati was concerned. Several of the smaller firms that could not stand the gaff of a long pull against the current gave up the ghost. Consolidations put others out of the running. By midsummer the Florida lure caught others and the local coal trade contributed several who joined the "gold rush" to the South.

When September rolled around the stocks at the head of the lakes were moving out from the docks at such a rate that lake buyers became a large factor to this market. Production was on in full blast and week after week all records for the volume of loaded cars passing through the Cincinnati gateway were broken until in October over 16,000 cars—3,350 destined for the lakes—moved through in one week.

Mid-October saw a car shortage figuring for the first time since government control. The Chesapeake & Ohio cleared its situation by leasing open tops from the idle hard coalers in the East. The Louisville & Nashville, without any interlocking system to the north of the Ohio River, found itself in difficulties that were ironed out only through the good offices of the American Railway Association. This, however, caused another price stiffening.

Late November saw the "close of the

Spot Prices, F.o.b. Mines, Southern West Virginia Smokeless Run-of-Mine Coal, 1925

VARIOUS MARKETS

Month	Columbus	Chicago	Cincinnati	Boston	Average All Markets
January	$1.93	$1.97	$2.06	$1.56	$1.88
February	1.93	1.60	1.94	1.68	1.79
March	1.93	1.75	1.98	1.65	1.83
April	1.89	1.91	2.00	1.59	1.85
May	1.88	1.90	2.00	1.53	1.83
June	1.88	1.93	1.93	1.56	1.83
July	1.88	1.92	1.99	1.58	1.84
August	1.99	2.17	2.29	1.79	2.07
September	2.56	2.47	2.53	2.49	2.52
October	2.56	2.16	2.44	1.96	2.28
November	2.83	2.45	2.46	2.31	2.51
December	2.89	2.27	2.43	2.29	2.47
Yearly av.	2.18	2.04	2.17	1.83	2.06

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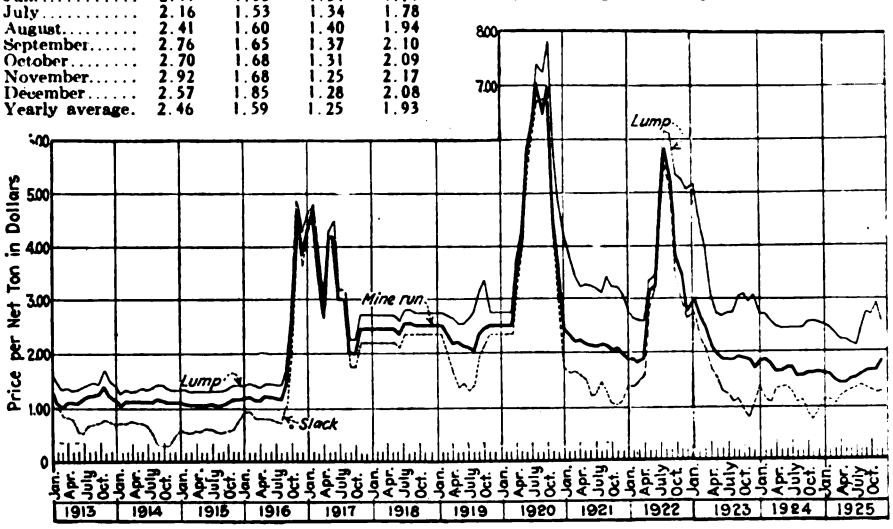
Spot Prices, F.o.b. Mines, Hocking District Coal, 1925

COLUMBUS MARKET

Month	Lump	Run of Mine	Slack	Weighted Av. All Sizes
January	$2.50	$1.63	$1.14	$1.94
February	2.48	1.60	1.12	1.92
March	2.35	1.48	1.07	1.80
April	2.26	1.44	1.19	1.77
May	2.25	1.45	1.26	1.77
June	2.19	1.53	1.31	1.79
July	2.16	1.53	1.34	1.78
August	2.41	1.60	1.40	1.94
September	2.76	1.65	1.37	2.10
October	2.70	1.68	1.31	2.09
November	2.92	1.68	1.25	2.17
December	2.57	1.85	1.28	2.08
Yearly average	2.46	1.59	1.25	1.93



Spot Prices, F.o.b. Mines, on the Columbus Market, of Bituminous Coal from the Hocking District

lakes" playing its old time havoc through the overplus of coal moving there or standing being thrown upon Northern markets until it affected the whole of the price fabric and caused general recessions. The balance of the year was devoted to a feeling-out process with large users taking sparingly rather than be caught with large stocks at a period when it seemed as if the anthracite trouble would be adjusted. With all its ups and downs the market closed for 1925 with a general advance of 50c.@$1 on all grades over the closing prices of 1924.

Smokeless Erratic

Smokeless had a changeable year; starting off at $4@$4.25 for lump and egg, $2@$2.25 for mine-run and $1.10@$1.15 for slack, it dropped by April 1 to a $3 circular price with some selling spot lump at $2.75 and with mine-run at $2 and screenings at $1.50. June saw a slight recovery with the quotations for the next month running $2.75@$3 for lump, egg down to $2.65@$2.75, mine-run at $2 and slack at $1.25@$1.35.

This level was maintained until toward the middle or last of August, when there came a rush of dallying retailers to build up reserves, and this demand automatically raised prices to $3.75@$4 for lump. In September seaboard and New England demand for egg and nut sizings sent these above the level of lump, with egg at $4.50@$5; nut $3@$3.50; mine-run, $2.50, and slack, $2@$2.25. The best period of the smokeless year came around Nov. 1, when spot egg touched $7.50 top; lump, $6.50, and nut, $7, under buying pressure from the East and tide. All rail freight rates to New England also entered into this. Mine-run at $2.50 and screenings at $1.90@$2 had the more even keel of the low-volatile list. Close of navigation threw tonnage on the Chicago and inland markets in sufficient volume to cause a break down to $3.50@$4 for lump, $3.75@$4.25 for egg, with a slight recovery for the end of the year.

West Virginia high-volatile coals labored much under the same conditions, starting off the year with a range of $2@$2.50 on lump, some of the large Logan County producers having held arbitrarily to a $2 top for their good coal for months previously. Egg was priced $1.75@$2; mine-run, $1.25@$1.35, and slack 75c.@$1. By April the down curve reached $1.75@$2.25 for lump; egg, $1.40@$1.75; steam mine-run, $1.15@$1.25; gas up to $1.40, and slack 90c.@$1. The first betterment was in July, when for the first time in months the price of lump passed the $2 mark, mine-run moving up to $1.25@$1.50 and slack to $1@$1.25. Lump held above the $2 mark until the end of the year, with $3@$3.50 recorded in October. Egg, under new demand because of the anthracite strike, reached $2.75@$3; some mine-run sold up to $1.75 and screenings up to $1.40.

Kentucky Picks Up

The Hazard, Harlan, Elkhorn and Big Sandy fields in southeastern Kentucky did not have such a bad year after weathering the first three or four nerve racking months at the beginning of the year, when block dipped from $2.75@$3 to $2@$2.25; egg from $2 to $1.40@$1.65 and mine-run from $1.50 to a low of $1.15. The 15c. per month advance that went into effect in May looked to be a hard matter to maintain during the deadly dull summer months but the Kentucky operators at least seemed to be moved by some spirit to meet a bad situation and met it determinedly. Throughout most of the year prices on block and egg held 15c.@25c. better than those of West Virginia, with mine-run and screenings on about the same level. Specialized coals from this district have been making their presence felt. Some of these have moved right in the trail of smokeless when the market was going in the right direction; $4.50 spot, top, was the price in October for some of this coal, which is sold on a quality argument.

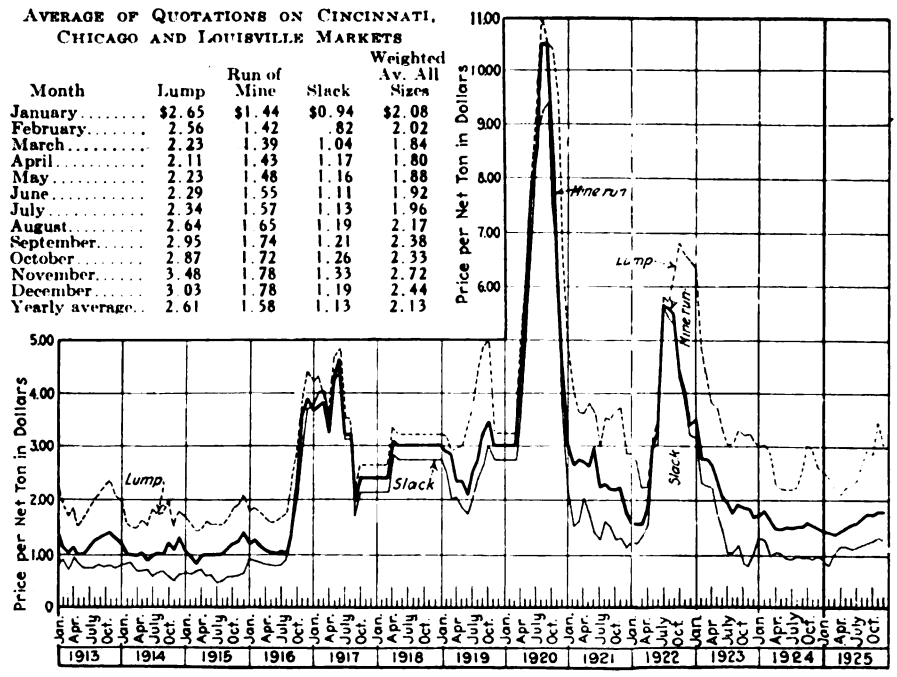
River Trade Satisfactory

River business, which takes in a sweep many miles up river and down, as a whole has been satisfactory. Neither the stage nor the weather has been severe and a healthy tonnage has been moved from the Logan County loading points with a slight diminution from the Kanawha field. With deepening of the river channel completed from Point Pleasant to Louisville the movement of coal should increase from now on in leaps and bounds.

Spot Prices, F.o.b. Mines, Southeastern Kentucky Coal, 1925

AVERAGE OF QUOTATIONS ON CINCINNATI, CHICAGO AND LOUISVILLE MARKETS

Month	Lump	Run of Mine	Slack	Weighted Av. All Sizes
January	$2.65	$1.44	$0.94	$2.08
February	2.56	1.42	.82	2.02
March	2.23	1.39	1.04	1.84
April	2.11	1.43	1.17	1.80
May	2.23	1.48	1.16	1.88
June	2.29	1.55	1.11	1.92
July	2.34	1.57	1.13	1.96
August	2.64	1.65	1.19	2.17
September	2.95	1.74	1.21	2.38
October	2.87	1.72	1.26	2.33
November	3.48	1.78	1.33	2.72
December	3.03	1.78	1.19	2.44
Yearly average	2.61	1.58	1.13	2.13



Spot Prices, F.o.b. Mines, on the Louisville, Cincinnati and Chicago Markets, of Coal from Eastern Kentucky

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Pittsburgh Trade Hard Hit by Inroads Of Non-Union Neighbors

Jacksonville Scale Diverts Business to West Virginia and Kentucky—Bessemer and Westmoreland Do Well —Connellsville Coke Region Busy at the Year's End

By B. E. V. Luty

If there were no coal miners' union the coal and coke trades of western Pennsylvania might have presented many interesting developments during the year 1925. As it was, the course of affairs was closely related to conditions produced by the United Mine Workers. These conditions were: (1) A high wage scale for the Pittsburgh coal district, making the cost of production much above that in the nearby non-union coal fields; (2) the anthracite suspension beginning Sept. 1, bringing about a heavy demand for Connellsville coke as a substitute for anthracite.

The Pittsburgh coal district is most commonly defined as the district having a uniform freight rate on lake coal shipments. This definition was ironical in 1925, as the district was unable to capture any lake trade, being underbid by other districts—non-union. A little Pittsburgh district coal did go into the lake trade, but it was produced at mines controlled by lake interests.

The distribution area of Pittsburgh coal was reduced, generally speaking, to a territory smaller than would be made by the points to which freights are the same from the district and from competing non-union districts. In other words, some non-union coal competed with Pittsburgh coal when it had considerably higher freights to pay. There were times, indeed, when Fairmont (W. Va.) coal stood at such f.o.b. mine prices that it could be delivered into the City of Pittsburgh on equal terms with Pittsburgh coal, but naturally it did not sell, as the preference of buyers was for the local product.

Roughly speaking, operation of the Pittsburgh district during 1925 averaged only 20 to 25 per cent of normal, whereas demand for coal in general would indicate normal production.

Much of the lost business went to West Virginia and Kentucky, but nearby regions had slightly better business than usual—the Bessemer district, particularly the portion north of Butler; also Westmoreland County. The Connellsville region got some gas-coal business, but not a great deal.

At the beginning of the year the opinion was rather widespread that the Pittsburgh district would have to get away from the Jacksonville scale, which had been signed for the three years to April 1, 1927. There was some hope that the officials of the United Mine Workers would see the point and would be unwilling to see the Pittsburgh district practically wiped off the commercial map.

As time passed opinion turned along the line that whatever the union officials might do eventually, they would do nothing until they had a settlement of the anthracite scale, which was to expire Sept. 1. Producers anxious to give their men an opportunity to work at such wages as could be paid were indisposed to try the matter out as long as the anthracite contest lay ahead. The Pittsburgh Coal Co., however, after closing the last of its union mines in the district in May, began in August to open mines on the scale of November, 1917, representing about a 25 per cent reduction. By November it had five mines in operation, without any violence, on this basis, and early in December production at the five mines ran 20,942 net tons in a week. This, however, was very small in comparison with the company's normal output, for in 1923 the company had 50 mines operating in the district, producing in the year 12,521,575 tons.

Steam mine-run coal in the open market averaged under $2 in the first nine months of the year, and a shade over that in the last three months. Youghiogheny gas coal averaged 10c. to 15c. a ton more than steam coal.

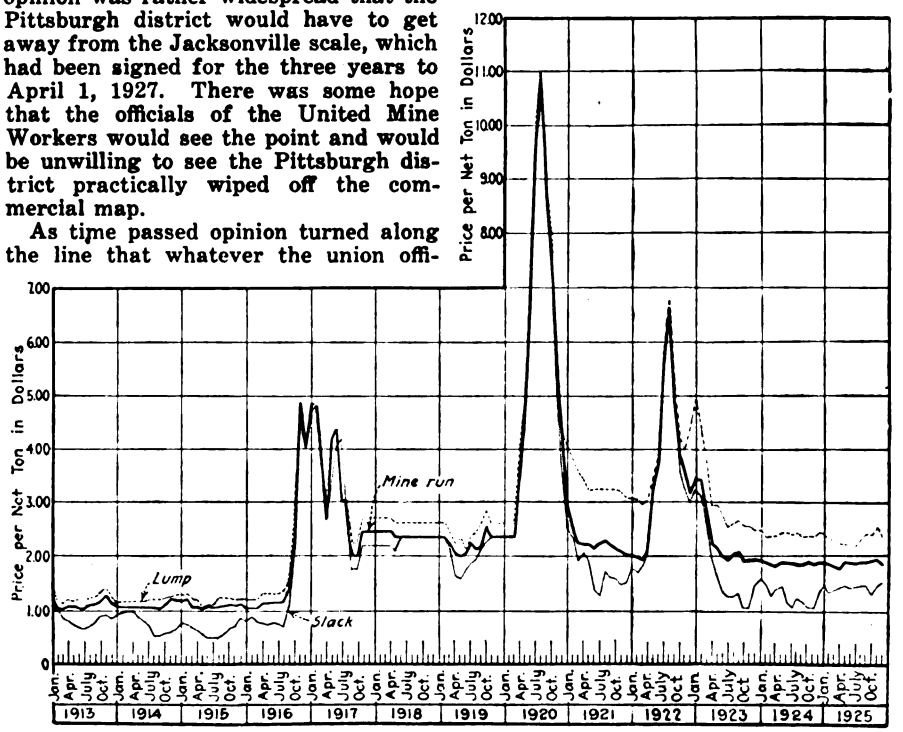
Coke Has Bright Start

The Connellsville coke region opened the year under very favorable auspices, having a large tonnage of coke sold to blast furnaces for the first quarter at very favorable prices—$3.25 and up to $4. By the end of the quarter blast-furnace activities were becoming marked for a decrease, and demand for Connellsville coke fell off rapidly. The region's coke, being beehive, performs chiefly the function of taking the peak of the load. When coke requirements fall off beehive production decreases sharply and byproduct production but little. Accordingly Connellsville coke

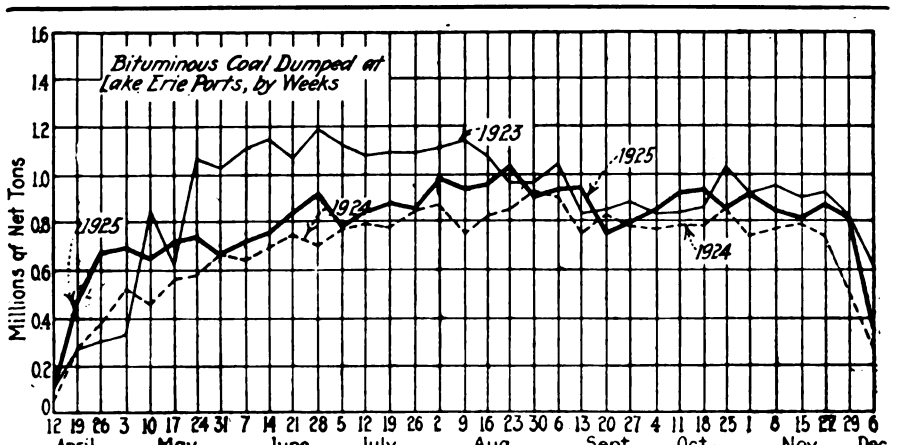
Spot Prices, F.o.b. Mines, Pittsburgh No. 8 Coal, 1925

CLEVELAND MARKET

Month	Lump	Run of Mine	Slack	Weighted Av. All Sizes
January	$2.40	$1.88	$1.44	$2.00
February	2.33	1.85	1.32	1.95
March	2.31	1.80	1.38	1.92
April	2.26	1.78	1.43	1.90
May	2.25	1.90	1.46	1.96
June	2.22	1.88	1.41	1.93
July	2.21	1.86	1.44	1.93
August	2.31	1.89	1.45	1.98
September	2.41	1.89	1.46	2.02
October	2.40	1.90	1.30	2.00
November	2.55	1.93	1.46	2.08
December	2.35	1.85	1.51	1.98
Yearly average	2.33	1.87	1.42	1.97



Spot Prices, F.o.b. Mines, on the Cleveland Market, of Coal from the Pittsburgh No. 8 District of Ohio



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production dropped to a low level for June and July, while shipments of coal to byproduct ovens decreased only slightly. Coke sold at less than $3, or at less than full cost of production. Those who operated merely felt they were losing less thus than by closing and losing overhead.

In August a little buying of Connellsville coke developed, in anticipation of an anthracite suspension Sept. 1, but the product went at low prices. Even in September there were sales at low prices to the end of the year. Then, about the middle of October, the market became very active. Eastern distributers bid against each other and ordinary run-of-oven furnace coke sold at up to $9. In a few days the market reacted, until a little pre-holiday movement took the price up to about $6.

Seek Domestic Market

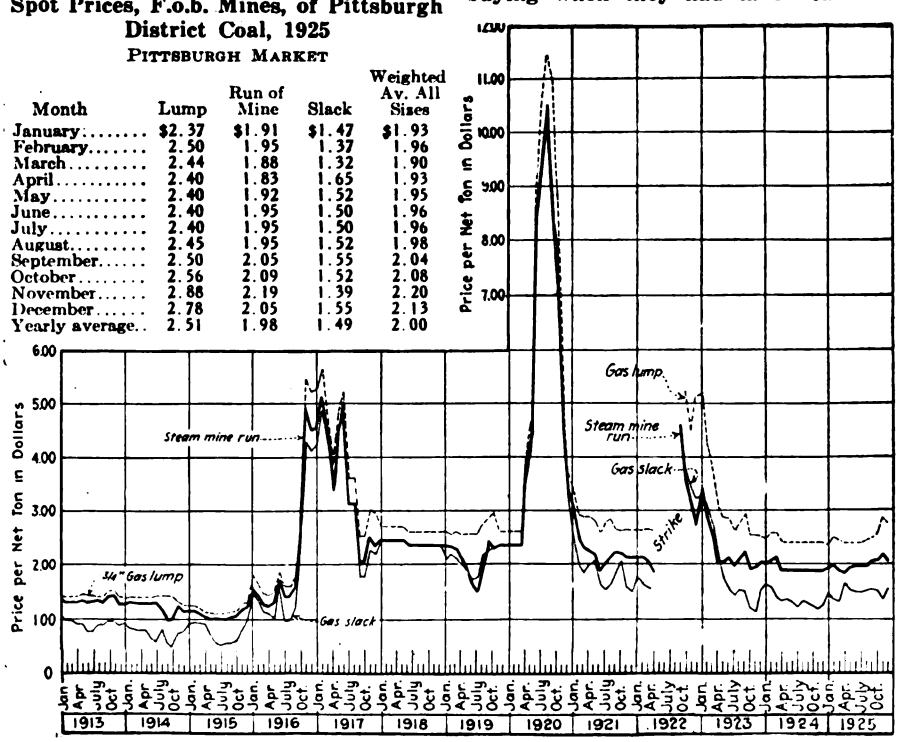
The Connellsville region makes practically no crushed coke as a regular operation, but various arrangements were made to prepare coke for domestic use, even to breaking coke with sledges. Some of the conveyors used in discharging ovens were rigged with crusher rolls, whereby "yard crushed" coke was produced. The various descriptions of prepared coke sold at $1 and at times even $2 above ordinary run-of-oven coke.

The merchant ovens of the Connellsville region were producing about 45,000 net tons of coke a week in July and August, representing requirements of their regular trade. These requirements increased to, say, 55,000 or 60,000 tons in the closing months of the year, when the merchant-oven production was running about 100,000 tons weekly. Thus it is a fair guess that the region supplied to the East 40,000 to 45,000 tons weekly of coke, prepared and run-of-oven, as an anthracite substitute.

Spot Prices, F.o.b. Mines, of Pittsburgh District Coal, 1925

PITTSBURGH MARKET

Month	Lump	Run of Mine	Slack	Weighted Av. All Sizes
January	$2.37	$1.91	$1.47	$1.93
February	2.50	1.95	1.37	1.96
March	2.44	1.88	1.32	1.90
April	2.40	1.83	1.65	1.93
May	2.40	1.92	1.52	1.95
June	2.40	1.95	1.50	1.96
July	2.40	1.95	1.50	1.96
August	2.45	1.95	1.52	1.98
September	2.50	2.05	1.55	2.04
October	2.56	2.09	1.52	2.08
November	2.88	2.19	1.39	2.20
December	2.78	2.05	1.55	2.13
Yearly average	2.51	1.98	1.49	2.00



Spot Prices, F.o.b. Mines, on the Pittsburgh Market, of Coal from the Pittsburgh District

New England Market Colorless Until Anthracite Cloud Appears

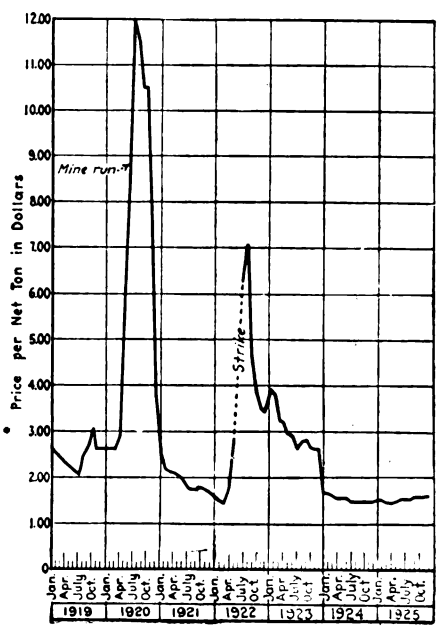
Output Easily Meets Moderate Demand for Hard-Coal Substitutes—Coke and Foreign Anthracite Preferred to Screened Bituminous—Better Selling Foreseen

By G. G. Wolkins

But for the anthracite strike the colorless state of trade in New England that marked 1925 to the beginning of August would have carried through to the end of the year. Production was ample during the whole twelve months; while operators wrestled with "unauthorized" wage scales the market was almost uniformly competitive, and except for possibly a fortnight in November wholesalers everywhere were under pressure to move coal. It was only in the autumn months that the clouds lifted and bituminous interests rushed to meet a mildly broadening inquiry for anthracite substitutes. Output increased, but even at the apex in early November all were aware that the current flow was more than sufficient. Mine labor kept at work as steadily as work offered, and it was only a matter of days when tonnage came forward in such volume that prices had to give way. The public was shown that northeastern consuming territory was anything but panic-sticken over the interruption in supply of its preferred household fuel.

The strategy of public officials here was timely, and effectively brought to bear. The merits of screened low-volatile were overemphasized, a flaw in procedure that promptly induced pyramiding, but Governor Fuller and his associates are none the less to be complimented for their firm stand at the right time. The buoyant upswing soon corrected itself; retail dealers stopped buying when they had taken on comfortable reserves, and when householders bought they bought sparingly. Operators who traded on a runaway market with a 3,000,000-ton anthracite shortage to support it paid for their experience, and in late December were still trying to place coal held at junction points that had been shipped in advance of sale. The blunt truth is that only a moderate proportion of householders felt called upon to use bituminous to help out; a much larger number turned to coke, foreign anthracite, foreign briquets and oil—all substitutes they preferred to soft coal—and far more than half the usual consumers of anthracite will have anthracite in their cellars to the end of the heating season. It is easy to see why the public is lukewarm either as to bituminous supply or a possible anthracite settlement.

Frequent cargoes of foreign coal are a factor in keeping supplied the less forehanded user. Welsh anthracite in sizes approximating our own had the call for several weeks until the supply was practically sold up, but Welsh large colliery screened, Welsh dry steam,



Spot Prices, F.o.b. Mines, of Fairmont Coal (Pool 54-64), 1925

PHILADELPHIA MARKET

Month	Mine-Run
January	$1.52
February	1.53
March	1.47
April	1.45
May	1.49
June	1.53
July	1.53
August	1.53
September	1.60
October	1.60
November	1.62
December	1.63
Yearly average	1.54

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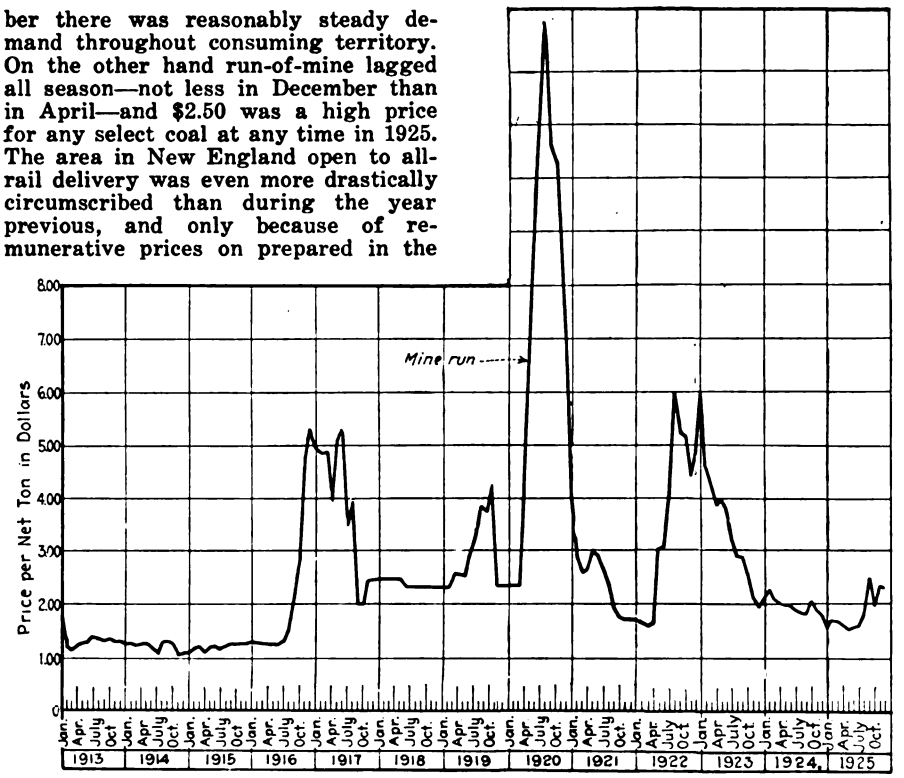
Westphalian nuts, French nuts, Welsh, Scotch, French, and Westphalian ovoids have all been shipped in comprehensive tonnages, and for those retail buyers attracted by lower prices the dealers have furnished lumps and run-of-mine through usual channels from Hampton Roads. Splints and other hard high-volatiles loaded over shaked screens also have come in for a considerable share in distribution, and if one in the trade may judge from surface indications there is not the least anxiety here for the remainder of the winter.

Bituminous displaced crude oil in a large number of plants, industrial and otherwise, during 1925. Final figures are not yet available, but gains in the use of bituminous in this field alone accounted for a relatively large tonnage.

Light oils continue to be competitive, especially in the larger cities. The perfect oil burner, we are told, is yet to be developed, and many of those using light oil in their residences regard it as a luxury fuel. The coal trade is not now greatly troubled by the inroads of petroleum.

From Pennsylvania, Maryland and the northern districts of West Virginia the traffic all-rail averaged higher than in 1924, but the weightier share of the increase was owing to prepared coal that began moving in volume early in August. For lump and egg sizes the range moved steadily upward from $2.50 per net ton at the mine until $6.50 was attained at first hands for high grade low-volatile. Later the market eased off to $4.50 for the same grades, less favorably known coals selling down to $3, but until the slump occasioned by renewed anthracite parleys in December there was reasonably steady demand throughout consuming territory. On the other hand run-of-mine lagged all season—not less in December than in April—and $2.50 was a high price for any select coal at any time in 1925. The area in New England open to all-rail delivery was even more drastically circumscribed than during the year previous, and only because of remunerative prices on prepared in the last quarter were mining losses less than expected.



Spot Prices, F.o.b. Mines, on Boston Market, of Mine-Run Coal from Smokeless Fields of West Virginia

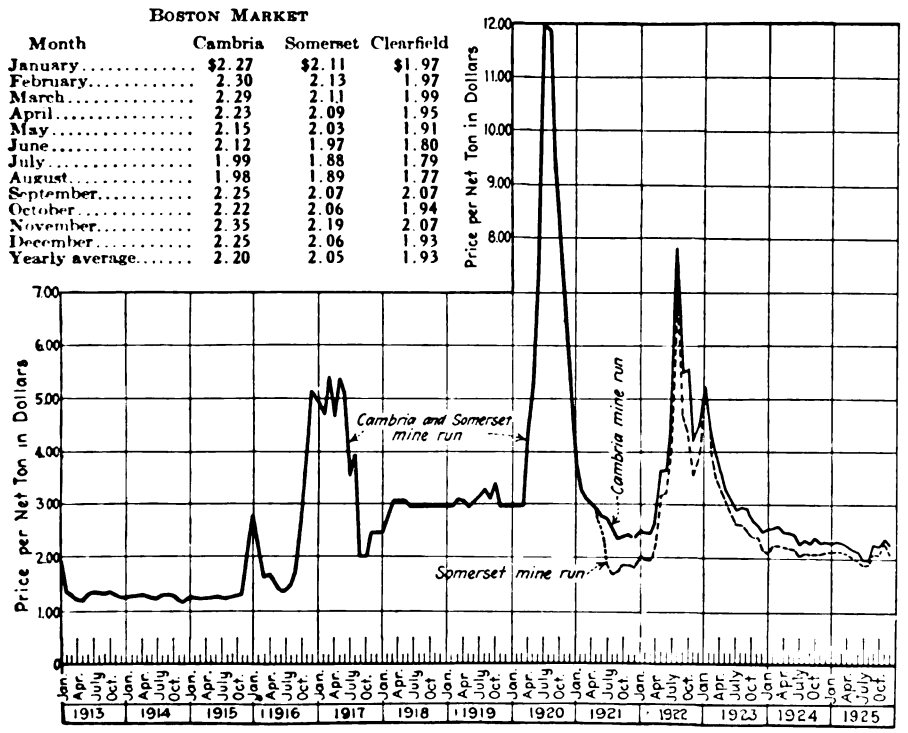
As in years prior to 1915, the water route from Hampton Roads is now the main avenue of supply for New England. Pocahontas and New River are the preferred grades of low-volatile, and while mining in the smokeless districts is uninterrupted the steam market here turns largely on the relation of demand to supply from those important sources. Industrially, 1925 was a year of meager returns. The paper, shoe and machinery trades were in continual conflict with fitful, not to say fickle markets, but the trend was toward economies and more flexibility as to kind and rate of production than was formerly the practice. Great textile units that for scores of years never omitted a dividend did so in 1925, and there were consolidations, widespread changes in class of output, and less wasteful merchandising—all improvements in method that ought to bear fruit. But it meant moderate, even restrained buying in 1925, an attitude shared of necessity by railroads and other utilities. A five-year option granted by producing interests to one of the railroads was a symptom of the none too optimistic view held by operators as they envisage the market forward to 1930.

From the beginning of the year the smokeless operators made it evident that $4.50 per gross ton f.o.b. vessel at Hampton Roads was the level they hoped to see maintained. Several times the price seemed pegged at that figure, only to yield to excess output invariably induced by an apparently firmer spot market. Potential production was always there to be reckoned with, and stiffly as groups might hold to a given level the stress of pier accumulation obliged them at times to eat their dish of crow. Until August there was but one short interval—in February—when it could fairly be said that the market even touched $4.50 for No. 1 Navy Standard, but toward the end of summer, when anthracite troubles were foreshadowed, the trend was upward, although not without setbacks when buyers could operate to their advantage. The producers' policy was not well enough articulated to keep surplus coal

Spot Prices, F.o.b. Mines, Mine-Run Coal, from Cambria, Somerset and Clearfield, 1925

BOSTON MARKET

Month	Cambria	Somerset	Clearfield
January	$2.27	$2.11	$1.97
February	2.30	2.13	1.97
March	2.29	2.11	1.99
April	2.23	2.09	1.95
May	2.15	2.03	1.91
June	2.12	1.97	1.80
July	1.99	1.88	1.79
August	1.98	1.89	1.77
September	2.25	2.07	2.07
October	2.22	2.06	1.94
November	2.35	2.19	2.07
December	2.25	2.06	1.93
Yearly average	2.20	2.05	1.93



Spot Prices, F.o.b. Mines, on Boston Market, of Bituminous Coal from Cambria and Somerset Counties, Pennsylvania

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in the ground, and substantially there were but two interludes—in September and two months later—when spot prices rose to $5.25@$5.50, in each case only to recede to a range 75c. lower almost the instant temporary pier shortages were overcome.

A consistent demand for prepared sizes opened the way for slack in increasing quantities. The larger steam users profited, slack having sold at from $1 to $1.40 per net ton at the mine, with contracts closed at prices not far from the minimum. Complaints were general that run-of-mine was unduly slack, but to the end of the year there was little or no improvement.

Mergers to the Fore

A few mergers were effected, and rumors are afloat that others are in process. Successive seasons of low prices are opening the minds of operators to the same economies that have been forced on New England textiles, and it is not unlikely that 1926 will exhibit progress toward concentration among bituminous interests.

For delivery inland from Boston and Providence the prices of smokeless coals on cars eased from $5.60@$5.75 per gross ton early in the year to $5 late in June. After an interval long enough to serve mill and utility buyers with winter reserves at the low price of the season the market advanced by regular stages to $6.50 in September, prices for the remaining months seesawing between $6 and $6.50 according to the pressure on rehandlers to make room for arriving cargoes.

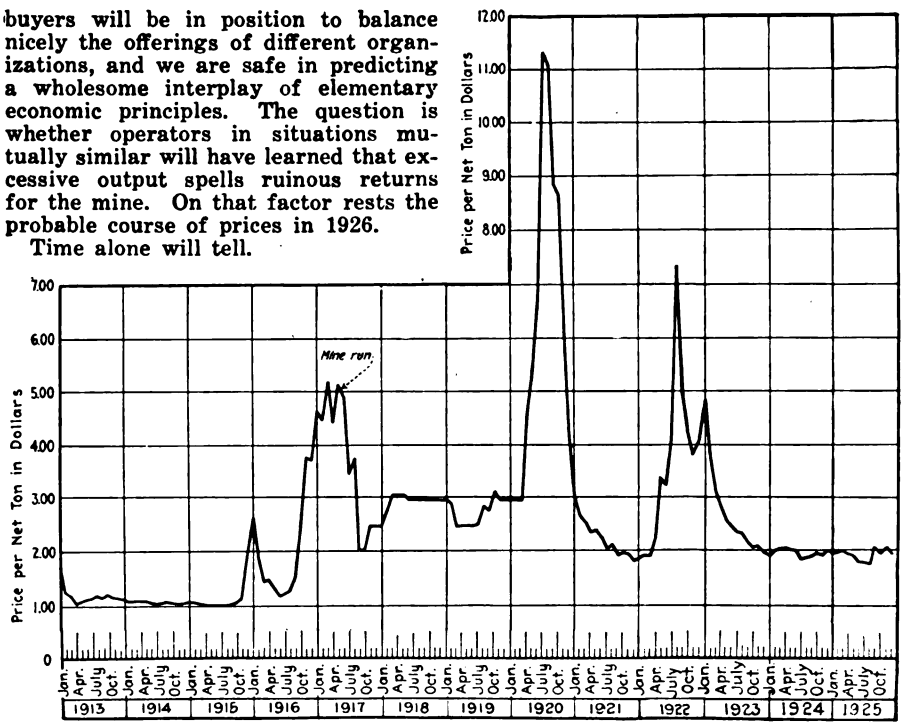
Boston retail prices were at a minimum, $5.75@$6 per net ton delivered within a wide radius, until September, when developed inquiry for household heating developed. In December $8.50 was the accepted figure for run-of-mine for steam use, with $11 the quotation for "lumpy run-of-mine" and $12 asked for "lumps" when desired for domestic use. The lion's share of the tonnage was placed at the low figures prevailing during spring and summer, dealers observing their usual policy of throwing away possible profits on bituminous and relying upon anthracite to see them through.

1925 a Drab Year

Bituminous in 1925 was visited with a few enlightening prospects. There were heavy gains in tonnage; the number of domestic heating plants permanently secured to bituminous was large; a beginning was made toward economies in distribution; promiscuous and wasteful dumping on the market was resorted to in much less degree; the great market to be opened by the all-rail cross-hauled route from lower West Virginia was proved more or less a will-o'-the-wisp; new emphasis was laid upon the normal—and economically cheaper—rail-and-water route; moreover, it was shown that the vast acreage of available bituminous is a buttress for the public in a campaign that any group seeks to wage against the general welfare.

The trade enters the new year hopefully. Houses will be put in order, and there will be competitive selling to a degree not equaled in 1925. Because of the wide scope of possible output buyers will be in position to balance nicely the offerings of different organizations, and we are safe in predicting a wholesome interplay of elementary economic principles. The question is whether operators in situations mutually similar will have learned that excessive output spells ruinous returns for the mine. On that factor rests the probable course of prices in 1926.

Time alone will tell.



Spot Prices, F.o.b. Mines, on the Boston Market, of Mine-Run Coal from the Clearfield District of Pennsylvania

Coal Aplenty at Low Prices All Year In New York Market

Anthracite Scarce and Dear in Later Months, but Large Supply of Substitutes Prevents Suffering—Coke Gains Popularity—Hard-Coal Expected to Come Back

By R. W. Morris

At no time in 1925 was there any unusual activity in the coal markets at New York. During the first quarter of the year domestic sizes of anthracite moved slowly although the Northern coal fields were tied up by a strike of some 12,000 mine workers and there were other so-called outlaw strikes in other sections of the hard-coal fields. These interruptions created a shortage of steam coals, which resulted in better prices.

During the last four months of the year New York felt the effects of the complete tie-up in the hard-coal regions. There was no suffering, however, because of the plentiful supply of substitutes and the efforts made by various bodies, including the New York State Fuel Commission, to educate consumers in their use. Notwithstanding the heavy use of various substitutes it is believed that anthracite is so well entrenched in the New York market that when hard coal again flows freely most of the market will be regained.

The soft-coal situation was not entirely unlike that of the anthracite market with the exception of the lack of coal. Soft coal was plentiful at all times but prices were at rock bottom nearly the entire twelvemonth.

With an inactive market for anthracite domestic sizes as the year opened independent operators had difficulty in moving egg and pea sizes and the harbor was dotted with many boatloads of independent product, some of which had been loaded since the previous November. Retail dealers were delivering small orders because of weather conditions. In the last half of January there was a reduction of 25c. in the prices of broken and egg and a similar advance in the price of pea coal by one of the companies.

Early in February cancellations were received and sellers settled down to a

Average Monthly Quotations for Domestic Sizes of Independent Anthracite at New York Market, by Months, Up to Aug. 31

	Egg	Stove	Chestnut	Pea	No. 1 Buckwheat	Rice	Barley
January..	$8.50-$9.00	$9.60-$10.05	$9.85-$10.40	$4.65-$5.50	$2.35-$2.80	$1.90-$2.30	$1.40-$1.60
February.	8.50- 9.15	9.20- 10.00	8.75- 10.00	4.50- 5.50	2.25- 2.90	1.90- 2.25	1.35- 1.60
March...	8.25- 8.75	8.50- 9.00	8.25- 9.00	4.25- 5.50	2.00- 2.80	1.85- 2.25	1.35- 1.60
April....	8.25- 8.75	8.50- 9.00	8.25- 8.75	4.25- 5.25	2.00- 2.75	1.80- 2.15	1.35- 1.55
May.....	8.50- 9.00	8.75- 9.20	8.40- 8.75	4.95- 5.50	2.00- 2.60	1.75- 2.10	1.35- 1.60
June.....	8.50- 8.85	8.85- 9.25	8.25- 8.60	4.80- 5.50	2.00- 2.45	1.75- 2.10	1.35- 1.50
July.....	8.65- 8.90	9.05- 9.45	8.50- 9.00	5.00- 5.50	2.00- 2.50	1.80- 2.00	1.35- 1.60
August...	9.65-10.20	10.00- 10.80	9.60- 10.15	5.30- 6.10	2.25- 2.60	2.05- 2.30	1.50- 1.80

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Average Prices of Bituminous Coal at New York by Months in 1925

	Pools 1	9	10	11	34
January	$2.60–$2.95	$1.90–$2.30	$1.75–$2.00	$1.50–$1.75	$1.40–$1.65
February	2.50– 2.90	1.95– 2.25	1.70– 1.95	1.45– 1.75	1.35– 1.65
March	2.50– 2.85	1.90– 2.25	1.65– 1.95	1.40– 1.70	1.40– 1.65
April	2.40– 2.80	1.90– 2.20	1.70– 2.00	1.40– 1.65	1.35– 1.60
May	2.40– 2.70	1.85– 2.10	1.75– 2.00	1.45– 1.75	1.40– 1.65
June	2.40– 2.75	1.85– 2.15	1.75– 2.00	1.45– 1.70	1.40– 1.60
July	2.40– 2.70	1.80– 2.15	1.70– 1.95	1.50– 1.70	1.45– 1.65
August	2.40– 2.75	1.85– 2.15	1.65– 1.95	1.50– 1.70	1.45– 1.70
September	2.75– 3.00	2.10– 2.30	1.85– 2.15	1.75– 1.90	1.45– 1.65
October	2.75– 3.00	2.10– 2.30	1.85– 2.15	1.75– 1.90	1.50– 1.65
November	2.75– 3.15	2.15– 2.45	1.85– 2.20	1.65– 1.80	1.50– 1.65
December	2.75– 3.15	2.15– 2.50	1.85– 2.25	1.65– 1.90	1.55– 1.80

quiet time until April 1, when it was expected the large companies would announce the usual spring reductions. Stove coal held the lead in demand, with occasional spurts by egg and chestnut sizes.

About the middle of March new spring prices were announced by the various companies and a new price for No. 1 buckwheat was included. The new quotations had been discounted by individual operators, many of whom had been selling their coal for a few weeks previous subject to these figures. Stove coal was in such heavy demand that some of the smaller producers found it necessary to pro-rate either egg or chestnut sizes with orders for stove coal.

An "early-buying" campaign by operators and retailers in April resulted in a slightly better market. Egg coal moved in better shape. There was heavier booking of orders and consumers began to fill their bins. Toward the end of May buying eased off again and retailers soon filled their yards.

Some stimulation resulted as the time for the beginning of the wage conferences drew near. Boats were loaded and held for future buyers. Independent broken coal in boats was quoted on a basis of $9.20 at the mines, and stove coal under the same conditions was quoted at around $10.25, some quotations for independent coals going as high as $10.75.

Demand became so strong that some independent operators soon began to refuse orders and the larger companies were pro-rating their supplies among regular customers. Buyers got busy the latter part of August and quotations went as high as $11.25 for stove, $11 for egg and $10.75 for chestnut.

Although the miners stopped work on Sept. 1 consumers showed little interest. Retailers put in orders, and prices for independent output became stronger. Retail prices advanced to $15.90 and later to $23.50 in some of the boroughs of Greater New York. Some middlemen had coal in bottoms which they offered at $15@$16.25 alongside, fresh-mined coal being offered at $12.50@$14 at the mine. Stock chestnut coal was offered around $11 f.o.b. mine. Rice and barley were not quoted by many dealers and shippers.

Relax Smoke Laws

Early in September at the solicitation of the New York State Fuel Commission the various municipalities suspended so-called anti-smoke ordinances in order to permit house owners as well as other coal consumers to burn soft coal until such time as hard coal flowed freely again. This action increased the use of mine-run coals considerably.

Coke was in good demand the last three months of the year and while domestic hard coals were quoted at around $23.50 by those dealers who were able to make deliveries, coke was quoted at $13.50.

There was no activity in the bituminous market at New York when the year opened. Pool 1 coal from central Pennsylvania was quoted at $2.65@$2.90 with the other pool coals quoted in proportion. Demand depended almost entirely upon weather conditions, which were anything but satisfactory to the coal industry. Buyers were looking for bargains and in many instances it was a "buyers'" market. The tidewater market improved slightly, however, and some industrial contracting was reported.

The situation at New York in March was near the rocks, but some hope was seen in the discussion soon to be staged at Cleveland between operators and miners' representatives as to a possible modification of the terms of the Jacksonville agreement. Non-union operators had been able to sell their product at less than the quotations of the union operators and obtained the bulk of the trade. Offers of contract coal had been reported at $3 for pool 1, and at $2.15 @$2.35 for pools 9 and 71.

Later on when consumers were expected to increase standing orders for immediate consumption they used coal from reserve stocks. Some contracts were reported as having been made at current market prices, extending from July 1 to March 31, 1926.

Soon after the beginning of the anthracite strike extra efforts were made to induce the use of screened bituminous coals in this market, but they were only partly successful.

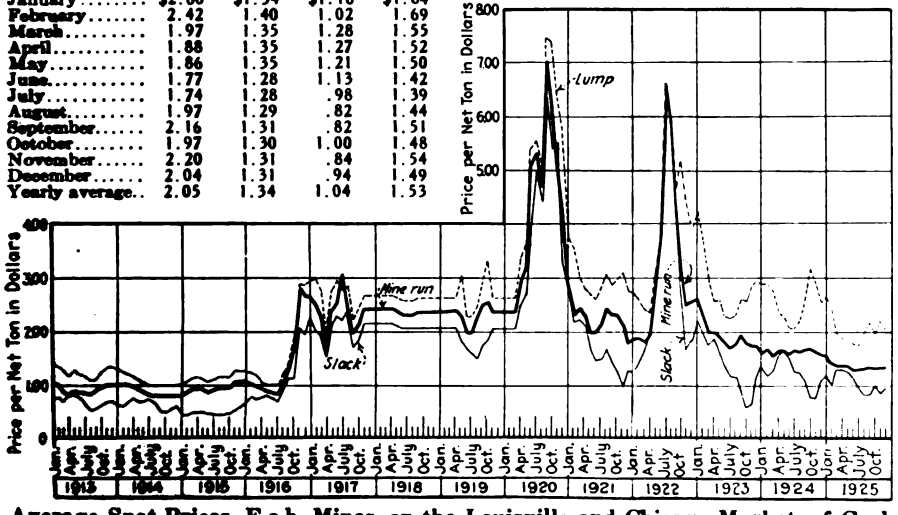
New River and Pocahontas coals came into the market freely and were used in large quantities on Long Island.

Several cargoes of German byproduct coke were landed at New York at a reported price of $12 per gross ton, alongside.

Spot Prices, F.o.b. Mines Western Kentucky Coal, 1925

AVERAGE OF QUOTATIONS ON CHICAGO AND LOUISVILLE MARKETS

Month	Lump	Run of Mine	Screenings	Weighted Av. All Sizes
January	$2.60	$1.54	$1.16	$1.84
February	2.42	1.40	1.02	1.69
March	1.97	1.35	1.28	1.55
April	1.88	1.35	1.27	1.52
May	1.86	1.35	1.21	1.50
June	1.77	1.28	1.13	1.42
July	1.74	1.28	.98	1.39
August	1.97	1.29	.82	1.44
September	2.16	1.31	.82	1.51
October	1.97	1.30	1.00	1.48
November	2.20	1.31	.84	1.54
December	2.04	1.31	.94	1.49
Yearly average	2.05	1.34	1.04	1.53



Average Spot Prices, F.o.b. Mines, on the Louisville and Chicago Market, of Coal from Western Kentucky

Bituminous Coal Production Spot Price and Index By Weeks, 1925

Week Ended	Production (Net Tons)	Week Ended	Average Spot Price	Coal Age Index
Jan. 3...	10,806,000	Jan. 5...	$2.08	172
Jan. 10...	12,590,000	Jan. 12...	2.12	175
Jan. 17...	12,028,000	Jan. 19...	2.11	174
Jan. 24...	11,588,000	Jan. 26...	2.09	173
Jan. 31...	11,073,000	Feb. 2...	2.05	...
Feb. 7..	10,910,000	Feb. 9...	2.03	168
Feb. 14..	9,758,000	Feb. 16...	2.04	168
Feb. 21..	9,464,000	Feb. 23...	2.03	168
Feb. 28..	8,854,000	March 2	2.04	169
March 7	9,384,000	March 9	2.02	167
March 14	8,641,000	March 16	1.99	165
March 21	8,283,000	March 23	1.97	163
March 28	8,353,000	March 30	1.95	161
April 4..	7,546,000	April 6..	1.96	162
April 11..	7,843,000	April 13...	1.95	161
April 18..	7,515,000	April 20...	1.95	161
April 25..	8,029,000	April 27..	1.96	162
May 2..	7,987,000	May 4...	1.96	162
May 9..	8,277,000	May 11...	2.01	166
May 16..	8,350,000	May 18...	1.95	161
May 23..	8,451,000	May 25...	1.96	162
May 30..	8,141,000	June 1...	1.96	162
June 6..	8,375,000	June 8...	1.95	161
June 13..	8,621,000	June 15...	1.94	160
June 20..	8,400,000	June 22...	1.95	161
June 27..	8,662,000	June 29...	1.94	160
July 4...	7,352,000	July 6...	1.94	160
July 11...	8,639,000	July 13...	1.93	160
July 18...	8,966,000	July 20...	1.93	160
July 25...	9,343,000	July 27...	1.94	160
Aug. 1..	9,457,000	Aug. 3...	1.97	163
Aug. 8..	9,971,000	Aug. 10...	2.01	166
Aug. 15..	10,261,000	Aug. 17...	2.02	167
Aug. 22..	10,522,000	Aug. 24...	2.08	172
Aug. 29..	11,133,000	Aug. 31...	2.10	174
Sept. 5.	10,827,000	Sept. 7..	2.16	179
Sept. 12.	9,983,000	Sept. 14..	2.16	178
Sept. 19.	10,880,000	Sept. 21..	2.24	185
Sept. 26.	11,232,000	Sept. 28..	2.13	176
Oct. 3.	11,008,000	Oct. 5..	2.11	175
Oct. 10.	11,681,000	Oct. 12..	2.11	175
Oct. 17.	11,770,000	Oct. 17..	2.13	176
Oct. 24.	12,088,000	Oct. 26..	2.15	178
Oct. 31.	12,485,000	Nov. 2..	2.19	181
Nov. 7.	12,171,000	Nov. 9..	2.24	185
Nov. 14.	12,167,000	Nov. 16..	2.30	190
Nov. 21.	12,596,000	Nov. 23..	2.32	192
Nov. 28.	11,600,000	Nov. 30..	2.26	187
Dec. 5.	12,868,000	Dec. 7..	2.22	184
Dec. 12.	12,908,000	Dec. 14..	2.20	182
Dec. 19.	12,689,000	Dec. 21..	2.17	179
Dec. 26.	8,431,000	Dec. 28..	2.16	17

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Birmingham Trade Has Fairly Good Year

Commercial Movement Gains Impetus After Weak Start—Bunker Trade Finishes Strong—Domestic Demand Drags—Coke Industry Makes Big Strides

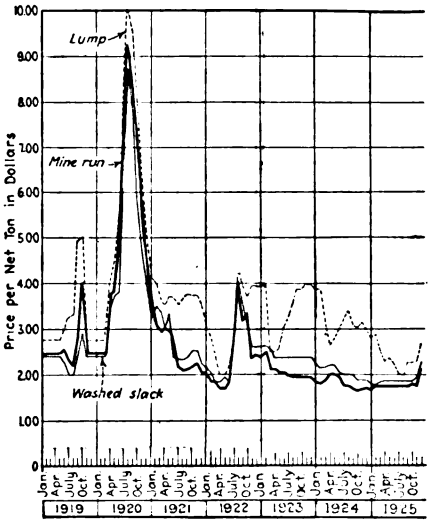
By H. B. McLaurine

Taken as a whole, the Alabama coal industry enjoyed a fairly satisfactory market during the year just closed. During the first nine months demand for commercial fuel was sufficiently large to move output with reasonable promptness and without undue solicitation by agents and brokers. In this connection it should be stated, however, that during the greater part of this period such activity as prevailed was accentuated to some extent by the fact that production was restricted materially by inability of producers to dispose of lump and other domestic sizes, so that active mines were operated only two to four days per week to provide contract requirements and take care of spot business actually in hand. The resultant output closely approximated trade absorption, and very little surplus steam product was accumulated at any time.

During January and February the bunker trade was above normal; demand fell off in March, and the usual dullness prevailed through the summer months. Buying of commercial coal was satisfactory during this period, cement plants and textile industries proving large and consistent consumers, augmented by the railroads, which used in excess of the normal tonnage. Ice plants, ginneries, oil plants and the lumber industry proved good seasonal customers. Industrial and railroad contracts were renewed under satisfactory conditions. A severe and prolonged drought throughout the South forced capacity operation of steam power plants for a long period in the latter part of the summer and fuel consumption in this category was very heavy.

Demand for bunker coal revived in September and gradually became more active through the last quarter, consumption through October, November and December proving heavier than during any previous like period in recent years. General industrial demand waxed exceptionally strong in the last quarter, coking coals and well-prepared steam product being featured in the buying. Coke plants without their own source of supply of coal were hard pressed at times to keep ovens going at capacity warranted by the unusually strong market for all grades of coke. Not only was home consumption heavy but demand from other markets was abnormally large, due in a measure to the anthracite strike, and production and movement exceeded peace-time records.

The market for domestic grades was draggy and unsatisfactory during the greater part of the year. The previous winter, one of the mildest in recent years, left dealers with large stocks on hand and there was little but spot buying to support the trade during the first quarter, when the weather was very unseasonable. At the beginning of the coal year the yards still had considerable stocks and dealers were slow and indifferent about making contracts for further stocking during the spring and summer. A fairly good tonnage was booked by the mines, however, the bulk of deliveries being stipulated for late summer months. These were held up, however, and comparatively little coal was deliveried on these contracts, the largest percentage of cancellations ever known being recorded. Buying during the last four months of the year was sporadic and at no time was demand



Spot Prices, F.o.b. Mines, on the Birmingham Market, of Coal from Alabama Fields

Spot Prices, F.o.b. Mines of Big Seam (Alabama) Coal, 1925

BIRMINGHAM MARKET

Month	Lump	Run of Mine	Washed
January	$2.80	$1.67	$1.80
February	2.87	1.75	1.78
March	2.50	1.75	1.84
April	2.28	1.75	1.88
May	2.35	1.75	1.88
June	2.26	1.75	1.88
July	2.02	1.75	1.88
August	2.00	1.75	1.88
September	2.24	1.75	1.88
October	2.25	1.79	1.88
November	2.28	1.76	1.94
December	2.68	2.11	2.27
Yearly average	2.38	1.78	1.90

Average Range of Coal Prices at Birmingham in 1925

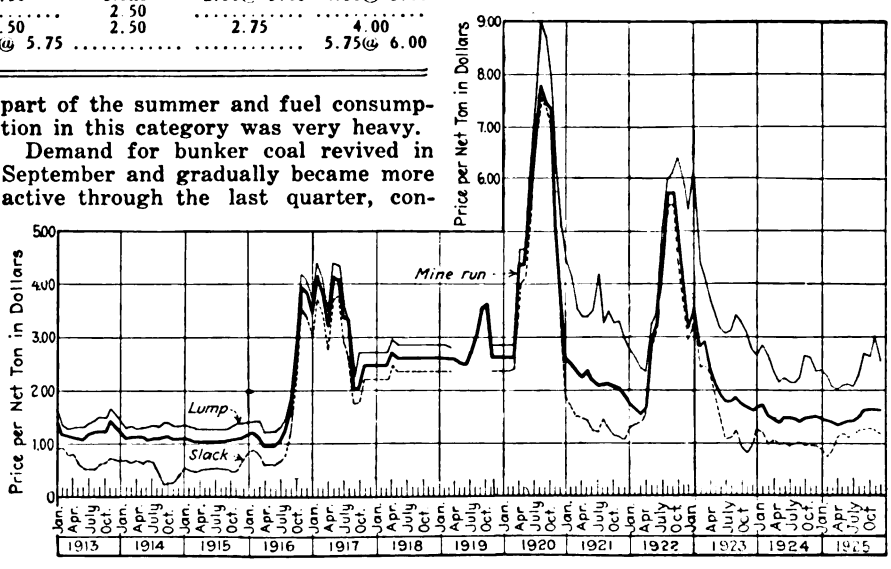
	January			April		
	Mine-Run	Washed	Lump	Mine-Run	Washed	Lump
Big Seam	$1.50@$2.00	$1.50@$2.00	$2.50@$3.25	$1.50@$2.00	$1.75@$2.00	$2.25
Carbon Hill	1.75@ 2.10	1.75@ 2.10	3.35@ 3.55	1.90@ 2.25	1.90@ 2.25	2.50
Cahaba	2.00@ 2.25	2.00@ 2.50	5.00@ 6.00	2.00@ 2.50	1.75@ 2.50	3.25@ 4.00
Black Creek	2.25@ 2.50	2.25@ 2.50	5.00@ 5.50	2.25@ 2.50	2.00@ 2.50	3.50
Pratt	1.85@ 2.00	.....	.....	2.00@ 2.25	.....	.....
Corona	2.00@ 2.25	2.25@ 2.50	4.00	2.00@ 2.25	2.25@ 2.50	2.75
Montevallo	.....	.....	5.50@ 6.00	.....	.....	3.75@ 4.50

	September			December		
	Mine-Run	Washed	Lump	Mine-Run	Washed	Lump
Big Seam	$1.60@$2.00	$1.75@$2.00	$2.00@$2.50	$2.00@$2.25	$2.10@$2.50	$2.50@$3.00
Carbon Hill	1.90@ 2.00	1.90@ 2.25	3.25	2.00@ 2.25	2.25@ 2.50	3.25@ 3.50
Cahaba	2.00@ 2.50	2.00@ 2.50	4.25@ 5.00	2.25@ 2.50	2.50@ 3.00	4.25@ 5.00
Black Creek	2.25@ 2.50	2.25@ 2.75	4.50	None	2.50@ 3.00	4.50@ 5.00
Pratt	2.00@ 2.25	.....	.....	2.50	.....	.....
Corona	2.00@ 2.25	2.25@ 2.50	3.50	2.50	2.75	4.00
Montevallo	.....	.....	5.25@ 5.75	.....	.....	5.75@ 6.00

Spot Prices, F.o.b. Mines, Kanawha and W. Va. High Volatile Coals, 1925

AVERAGE OF QUOTATIONS ON COLUMBUS AND CINCINNATI MARKETS

Month	Lump	Run of Mine	Slack	Weighted Av. All Sizes
January	$2.38	$1.46	$0.89	$1.63
February	2.29	1.43	.74	1.57
March	2.09	1.40	.87	1.52
April	2.03	1.36	1.13	1.52
May	2.10	1.38	1.17	1.56
June	2.11	1.41	1.11	1.57
July	2.08	1.41	1.16	1.57
August	2.30	1.47	1.23	1.67
September	2.70	1.61	1.25	1.86
October	2.64	1.63	1.27	1.86
November	3.03	1.63	1.25	1.97
December	2.56	1.62	1.17	1.82
Yearly average	2.36	1.48	1.10	1.68



Spot Prices, F.o.b. Mines, on Columbus and Cincinnati Markets, of Coal from the Kanawha Field

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active for any great period. Business was booked only in sufficient quantity to move current production without harmful delay.

Mine quotations on steam and domestic coal during the year maintained unusual stability, suffering only slight decreases during periods of more or less depression. Steam prices registered substantial gains and domestic prices were practically the same at the close of the year as at the beginning.

The domestic market during the first quarter of 1926 will be controlled by weather conditions, but as neither dealers nor consumers are buying beyond anticipated requirements for the immediate future, indications are that yards will be practically clear at the beginning of the new coal year, April 1.

General opinion prevails that industrial prosperity has an impetus that will carry it well into 1926 and prospects therefore are good for an active steam market during the first quarter at least.

Alabama's coal production for 1925 is expected to closely approximate the 20,000,000 ton mark. Free from labor troubles and unhampered by union affiliations, with the rigid wage scales which played havoc with operations in some of the states farther north, Alabama operators were able to take advantage of the developments in demand in highly competitive markets. Weekly production at the high point in December was on the basis of 27,500,000 tons per annum.

There were occasional slumps in the coke market during the first nine months, but demand was sufficient at all times to move the available tonnage of commercial and domestic product without undue effort or delay. Demand was exceptionally heavy during most of the last quarter. A great deal of foundry coke was shipped to Pacific coast points and the distribution was over a wide range of southern and southeastern territory. Domestic sizes were bought in quantity for use in the North and Northwest in the early part of the year and during the last quarter there was a more extensive movement to these sections, and also, due to the strike in the anthracite coal field, to Eastern points, some of which was bunkered on transatlantic liners.

Sales would have been much heavier had not freight rates been almost prohibitive; besides, there was a strong disinclination on the part of Southern carriers to allow equipment to move to distant destinations. Quotations ranged from $4.50@5 on foundry grades at the beginning of the year to $6@6.50 per ton during the last quarter. Egg and nut sizes during this period ranged from $3.25@3.50 to $4.75@5.50 per ton. Quotations on gas coke ranged $3.50@4 to $6@$6.50 per ton as the year closed.

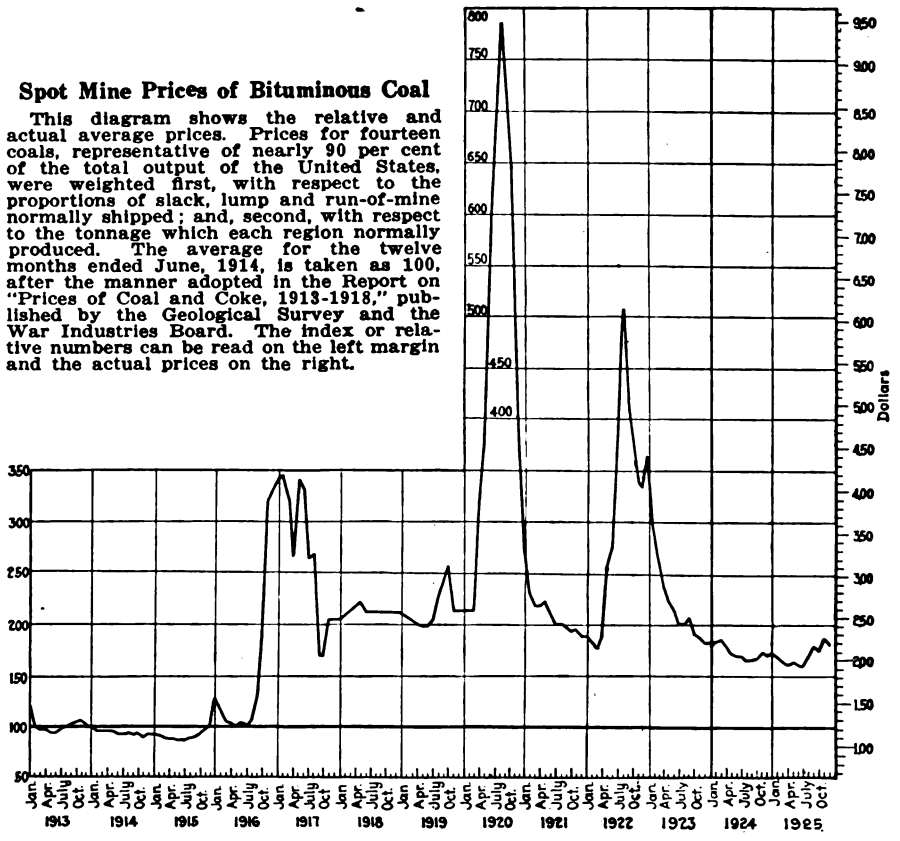
Rate Cuts Aided South

In the efforts to reach northern markets during the last quarter Alabama ovens were opposed by Middle Western plants, which objected to reductions in rates from the Birmingham district. Some adjustments, nevertheless, were allowed by the Interstate Commerce Commission.

Coke production for the year probably was close to 4,750,000 tons, though no figures for estimating purposes are yet available. Coke manufacturing facilities in the district have been materially increased in the past twelve months. The Alabama Byproduct Corporation added twenty-five Koppers ovens to its coking plant and the Republic Iron & Steel Co. completed an entirely new plant of fifty-seven ovens and the necessary equipment and facilities for handling the byproducts. The Woodward Iron Co. practically rebuilt forty of its Koppers ovens. Work will

Spot Mine Prices of Bituminous Coal

This diagram shows the relative and actual average prices. Prices for fourteen coals, representative of nearly 90 per cent of the total output of the United States, were weighted first, with respect to the proportions of slack, lump and run-of-mine normally shipped; and, second, with respect to the tonnage which each region normally produced. The average for the twelve months ended June, 1914, is taken as 100, after the manner adopted in the Report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board. The index or relative numbers can be read on the left margin and the actual prices on the right.



Relative Prices of Bituminous Coal

(Spot prices July, 1913-June, 1914, as base)

Month	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925
January	120	100	93	126	343	205	213	212	270	186	362	183	173½
February	101	96	92	116	346	209	206	213	229	182	297	186	168½
March	97	96	90	105	321	214	204	213	217	175	264	178	165
April	97	96	89	103	265	218	200	318	217	185	235	171	161½
May	95	96	89	100	342	221	197	379	222	257	221	169	162
June	95	93	88	104	331	212	198	593	208	274	212	167	160½
July	97	93	87	101	262	213	204	681	198	386	198	163	160
August	100	93	88	107	268	213	228	786	200	507	198	164	166
September	102	92	91	130	167	213	241	704	196	461	203	167	179
October	106	93	93	187	167	213	256	643	193	370	188	174	176
November	108	91	97	320	205	213	212	485	194	340	186	170	187
December	104	92	110	332	205	213	213	362	187	335	180	170	181
1st Quarter	106	97	92	116	337	209	208	213	239	181	307	182	169
2d Quarter	96	95	89	102	313	217	198	430	216	218	222	169	162
3d Quarter	100	93	89	113	232	213	224	723	198	451	200	165	168
4th Quarter	106	92	97	280	192	213	227	497	191	348	184	171	181
Yearly average	102	94	91	152	269	213	214	466	211	303	226	172	170

Average Spot Prices of Bituminous Coal, F.o.b. Mines

(Unit, net ton of 2,000 lb.)

Month	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925
January	$1.46	$1.21	$1.13	$1.53	$4.15	$2.48	$2.57	$2.57	$3.26	$2.25	$4.38	$2.21	$2.10
February	1.22	1.16	1.12	1.40	4.18	2.53	2.49	2.58	2.77	2.20	3.59	2.25	2.04
March	1.17	1.17	1.09	1.27	3.89	2.58	2.47	2.58	2.63	2.12	3.20	2.15	1.99
April	1.17	1.16	1.08	1.24	3.21	2.64	2.43	3.85	2.62	2.24	2.84	2.07	1.95
May	1.15	1.16	1.07	1.21	4.14	2.67	2.38	4.59	2.68	3.11	2.68	2.04	1.97
June	1.14	1.12	1.07	1.26	4.00	2.57	2.40	7.18	2.52	3.32	2.56	2.03	1.95
July	1.18	1.12	1.05	1.22	3.17	2.58	2.47	8.24	2.40	4.67	2.40	1.98	1.93
August	1.22	1.13	1.07	1.30	3.24	2.58	2.76	9.51	2.42	6.13	2.39	1.99	2.04
September	1.23	1.11	1.10	1.57	2.02	2.58	2.91	8.52	2.37	5.58	2.46	2.02	2.18
October	1.29	1.13	1.12	2.26	2.02	2.58	3.09	7.78	2.33	4.48	2.28	2.10	2.13
November	1.31	1.10	1.17	3.87	2.48	2.58	2.57	5.87	2.35	4.11	2.25	2.06	2.26
December	1.26	1.11	1.33	4.01	2.48	2.58	2.58	4.38	2.26	4.05	2.18	2.06	2.19
1st Quarter	$1.28	$1.18	$1.11	$1.40	$4.07	$2.53	$2.51	$2.58	$2.89	$2.19	$3.72	$2.20	$2.04
2d Quarter	1.15	1.15	1.07	1.24	3.78	2.63	2.40	5.20	2.61	2.64	2.69	2.04	1.96
3d Quarter	1.21	1.12	1.07	1.36	2.81	2.58	2.71	8.76	2.40	5.46	2.42	2.00	2.05
4th Quarter	1.29	1.11	1.21	3.38	2.33	2.58	2.74	6.01	2.31	4.21	2.23	2.07	2.19
Yearly average	$1.23	$1.14	$1.12	$1.85	$3.25	$2.58	$2.59	$5.64	$2.55	$3.67	$2.77	$2.08	$2.06

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FOREIGN MARKETS — Reviews by Our Correspondents in London, Paris and Berlin Recording Economic Progress in Europe as Reflected in the Basic Industries of Coal and Coke

British Trade Suffers Gradual Decline

Business Picks Up When Subsidy Makes Price Cut Possible—Rising Production Costs a Handicap—Modern Machinery May Hold Partial Solution

By C. H. S. Tupholme

Difficulties were plentiful in the path of the British coal trade in 1925, and, notwithstanding improved business in the late fall and early winter, the outlook of the trade is indeed gloomy.

On the whole, business has declined gradually this year. In August and September, following the government subsidy, buyers, who already had fairly heavy stocks on hand, waited until the British operators reduced prices. After a somewhat protracted resistance the producers did so, and business increased. Prices are now lower all round; best Admiralty, which at the opening of the year, stood around 28s. @30s., has fallen to 23s.

Shipments, of course, have declined, as shown in the following table of tonnage shipped from the ports of Cardiff, Swansea, Newport, Barry, Port Talbot and Penarth, during the first ten months of 1913, 1924 and 1925:

Coal Shipments from Welsh Ports

(In Gross Tons)

Coal and Coke 1913	1924	1925
32,711,312	26,193,212	21,757,206
Patent Fuel		
1,009,980	815,713	844,603

Certain customers of the coal fields have been lost and will not be re-won. The most important of these is the British Navy, which before the war took 1,750,000 tons, and now requires only 350,000 tons. This is due, of course to the conversion of large numbers of ships to oil fuel.

The one bright spot is the anthracite branch, which still enjoys comparative prosperity, but though demand is good and prices are satisfactory, production has not increased; output in 1925 was lower than that for any of the three previous years, due to the strike in July and August. Further, the costs of mining and preparing anthracite have tended to increase. The total output of the Welsh collieries in the last few years is given in the subjoined table, from which it will be seen that anthracite has represented approximately 10 per cent of all coal produced in the last two years:

Output of Welsh Coal Mines

(In Gross Tons)

Year	Total Output	Anthracite
1913	56,830,000	4,833,000
1923	54,321,000	4,873,000
1924	51,085,000	4,971,000
1925	45,000,000*	4,500,000*

*Calculated from output to end of November.

High production costs are the chief handicap of the British coal trade. Hitherto the quality of Welsh coal has enabled it to command a price of several shillings above that of its competitors in the world markets, but this advantage is slipping because of the reduction of mining costs in other countries, especially on the Continent, where cheap labor plays such an important part—that is to say, cheap when reckoned at British money value. Some of the British coal fields have been able to lower their costs, due largely to more easily workable seams, but Wales has not shared in this reduction owing to the fact that the mines are on the average much older than in other parts of Britain. The effect of these factors is seen in the figures of coal sold by the various fields, South Wales losing trade to the tune of six million tons, the bulk of this being in the steam divisions.

The causes of the decline in the sales of Welsh coal is easily traceable. The mines being older, the seems are deeper and the distances from the pits to the working faces are longer. (It may be remarked here that so far conveyors have done little to reduce the distance.) In addition, though working hours are shorter, the output per worker is lower. In 1913, for instance, 233,090 men were engaged on surface and underground work in Wales, and the output per worker for the year was 243 tons, eight hours constituting a work day. In 1923, when 252,617 men were engaged, the output was 215 tons per man, the day being seven hours. In 1924, 250,065 men were employed and the output was only 204 tons. The figures for 1925, which are not yet available, must be substantially less. These figures are all the more significant when it is remembered that with the increased use of underground machinery, considerably more coal cutters and conveyors were in use in 1924 than in 1913.

Lower output and higher wages have more than doubled working costs, and, where it was possible in 1913 to make a comfortable profit on low-priced coals, the operators between May 1, 1924, and April 30, 1925, suffered an average loss of 5½d. per ton. From May 1 to July 31 the loss rose to 1s. 2.09d. per ton. At this point the government subsidy came into operation, and since then the average loss has been 10½d. per ton over and above the amounts recoverable under the subvention scheme. The amount of this subsidy paid to the Welsh mines in August was £349,232; in September it had increased to £401,185, a total of £750,417, which is about 2s. 7d. per ton of output for those two months.

These figures, it should be borne in mind, are averages, for while the anthracite mines have made certain profits, some of the collieries producing steam coal have been sustaining losses as great as 2s. to 3s. per ton. This constitutes one of the gravest industrial problems ever encountered in Great Britain. As announced some time ago, the subsidy of ten millions sterling has already been exhausted,

Receipts of Coal at Milwaukee by Months in 1925

(In Net Tons)

	By Cargo			By Car—Ferry			By Rail			Total, All Sources		Grand
	Hard	Soft	Total	Hard	Soft	Total	Hard	Soft	Total	Hard	Soft	Total
January	.....	.....	.....	26,711	71,613	98,324	670	64,108	64,778	27,381	135,721	163,102
February	.....	.....	.....	15,531	43,909	59,440	1,102	42,421	43,523	16,633	86,330	102,963
March	.....	.....	.....	24,728	32,821	57,549	3,448	45,036	48,484	28,176	77,857	106,033
April	133,408	177,471	310,879	10,188	11,488	21,676	7,410	38,095	45,505	151,006	227,054	378,060
May	83,107	295,289	378,396	13,449	25,154	38,603	5,350	31,970	37,320	101,906	352,413	454,319
June	94,840	332,258	427,098	16,446	27,838	44,284	4,320	29,855	34,175	115,606	389,951	505,557
July	74,779	434,045	508,824	16,571	27,601	44,172	4,934	32,634	37,568	96,284	494,280	590,564
August	89,800	495,968	585,768	28,768	41,377	70,145	3,325	34,005	37,330	121,893	571,350	693,243
September	12,300	374,494	386,794	29,487	41,034	70,521	3,650	34,361	38,011	45,437	449,889	495,326
October	.....	519,542	519,542	24,431	35,934	60,365	7,026	40,121	47,147	31,457	595,597	627,054
November	.....	453,632	453,632	24,288	52,241	76,529	4,683	45,086	49,769	28,971	550,959	579,930
December	.....	128,957	128,957	15,774	58,662	74,436	5,610	48,580	54,190	21,384	236,199	257,583
Total, 1925	488,234	3,211,656	3,699,890	246,372	469,672	716,044	51,528	486,272	537,800	786,134	4,167,600	4,953,734
Total, 1924	821,962	2,596,423	3,418,385	245,966	465,219	711,185	21,703	509,628	531,331	1,089,631	3,571,270	4,660,901

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and Parliament was asked to vote another nine millions to tide the industry over until March, when it is expected that the commission now inquiring into conditions in the industry will have concluded its investigation.

Neither the commission nor the subsidy will solve the problems of the coal-mining industry, in my opinion. The solution of these problems must come from within the industry itself, and no amount of assistance from the taxpayer or commissions will avail the industry anything. What will happen when the subsidy is exhausted and the commission issues its voluminous report, which it is fairly safe to predict will be ignored by all except paper economists, it is difficult to say, but in some quarters an industrial upheaval is held to be inevitable.

As far as the outlook of the industry is concerned, everything turns upon whether working costs can be reduced. British mines are taking more interest in machinery and also in the possibilities of utilizing electrical power to the utmost. This is shown by the attention given to such subjects as machine cutting and automatic substations in discussions and in the technical press and the proceedings of societies made up largely of coal-mining engineers. Though mechanical devices are largely looked to for a partial solution of many of the British coal mining problems, there is still enormous prejudice on the part of labor against such devices.

French Market Aided by Franc's Fall; Imports from Britain Drop

Industrial Revival Near Year's End Quickens Demand After Long Spell of Dullness—Severe Weather Stiffens Domestic Trade—Output Exceeds Pre-War Rate

By Victor Truant

In 1925 the French coal industry was ruled more by the fluctuations of exchange rates and by the rates of wages than by the sacrosanct law of "supply and demand." Low consumption caused a rather inactive market during the first part of the year; French coals would have been even more neglected if the appreciation of sterling, compared with the franc, had not formed a protective barrier, which caused the British coal to suffer first.

During the greater part of the year up to October the inland market for French coals remained quiet. Industry, which was working at slow speed, consumed little coal, all the while the competition of British and Belgian fuels was more or less acute according to the exchange value of the French franc, but when, in June, sterling exceeded the level of 100 francs, French coals began to get the better of the struggle and gradually pushed back the British coals.

Lower Prices Necessary

This struggle could not be carried on by French coal owners without some concessions in prices, especially in the areas where competition was keenest, and the consequence was that prices named were less and less advantageous to the French collieries. In order to improve the situation the operators considered reducing costs by revoking the supplement to the super-wage. The government stepped in and succeeded in having the supplement maintained at 20 per cent by granting the two following compensations to the French collieries: (1) Reinforcement, as from July 25, of the interdiction except by special permit of importation to France of German coals purchased on the free market; (2) reductions in rail rates on French coals shipped to destinations in the West or Middle West of France.

It is not likely, however, that these measures would have improved the situation much if the industrial revival due to the fall of the franc had not manifested itself since the end of October.

The prices of industrial sorts were practically unchanged last year, having now been at the same level for three years, a unique occurrence in mining history. The only modification which the prices of these coals were subjected to was a small increase (of a few decimes) when the tax on business transactions was transformed into a tax on production and import.

French Imports Fall

The market for domestic coals has developed quite differently. It must be borne in mind that the output of French domestic coals is far from sufficient to cover the requirements of the country, making it necessary to resort to British, Belgian, Dutch and even German house coals. The high level attained by sterling last year, however, reduced purchases of British coals. As to German sized coals, this class of fuel constitutes but an extremely small part of the reparation deliveries.

The share of Belgian coals in the consumption of Parisian households has always been very important. But the fact that, after the fall of the French franc, Belgian producers exacted payment in Belgian francs, while payment in French francs was customary and as per contract, has cooled relations, with the consequence that the demand for Belgian coals by Paris coal merchants has momentarily decreased. Owing to the threatened severity of winter, however, it is not likely that Paris merchants will be able to preserve this attitude very long.

The Nord and Pas-de-Calais coal owners generally are following the selling methods of the Belgian producers, so that there is an almost constant difference between the prices of the sized products of both countries.

During the first eleven months of 1925 France received from the Ruhr 7,456,400 tons of indemnity fuels, a monthly average of 677,858 tons. During the first two months, however, France was still transferring to Luxemburg a part of the tonnage received by her 763,000 tons in January and 747,600 tons in February. During the same period the O. R. C. A. (Office de Reparation des Cokes Allemands à da Grosse Métallurgie) received 2,948,000 tons of coke, which, of course, is included in the above figures.

From January to the end of October, 1925 (the latest statistics available), French collieries produced 39,869,000 tons of coal and lignite, as against 37,430,000 tons during those months of 1924. It is estimated that the output for the entire year will total nearly 48,000,000 tons, or 7,000,000 tons more than in 1913. As the production of the collieries situated in the part of Lorraine previously annexed to Germany will represent nearly 5,200,000 tons, the output of France within her 1913 limits last year exceeded by about 1,800,000 tons that of 1913.

Production Increases

The collieries of the Nord and Pas-de-Calais—some of which (notably Liévin) have not yet been entirely reconstructed—produced from January to the end of October, 1925, 23,802,000 tons of coal, an increase of 2,522,000 tons over the corresponding period of 1924.

Coke output by French collieries in the first ten months of 1925 totaled 2,510,000 tons, compared with 2,159,000 tons during those months of 1924. Production of coke-oven plants independent from the collieries, together with that of metallurgical works, was about 2,400,000 tons.

Of patent fuel the French collieries produced, from January to the end of October, 1925, 2,989,000 tons, as against 2,685,000 tons during the same period of the previous year. The plants outside of those attached to collieries are producing about 160,000 tons per month.

Coal imports during the first ten months of 1925 totaled 15,248,000 tons, as against 21,129,000 tons during the same period of 1924. The apparent decline of 5,881,000 tons from the preceding year is partly explained by the fact that the shipments from the Sarre—4,228,000 tons during the first ten months of 1924—were included in last year's figures, whereas in the last year this territory ceased to be considered separate from France proper in the customs returns.

Of the imports Great Britain supplied 8,335,000 tons compared with 11,122,000 tons during the same period of 1924; the United States, 180,000 tons instead of 317,000 tons, but Germany was responsible for 4,582,000 tons, as against 3,523,000 tons.

France imported 4,190,000 tons of coke from January to the end of October, 1925, as against 4,650,000 tons during the same period of 1924. Germany supplied only 3,523,000 tons, compared with 3,905,000 tons a year previous. Patent fuel imports were 1,036,000 tons, while they totaled 803,000 tons during the first ten months of 1924. Belgium supplied 555,000 tons instead of 318,000 tons; 144,000 tons came from Great Britain, instead of 103,000 tons and Germany's share was

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reduced from 378,000 tons to 315,000 tons.

Inclusion of the Sarre in the customs returns for France explains why French exports of coal totaled 3,691,000 tons for the first ten months of 1925 compared with 1,813,000 tons during the same period of the year before. Coke exports decreased from 420,000 tons to 370,000 tons.

In October, 1925, the French collieries employed 305,318 men—216,513 underground and 88,805 on the surface—as against 302,771 men in October, 1924 (214,221 and 88,550, respectively).

At this writing industrial activity has caused a revival in the consumption of industrial coals and severe weather has considerably increased the consumption of domestic coals. The latter are advancing steadily, and if cold weather is prolonged, it would not be surprising to see the prices of domestic coals reach and even exceed their war and post-war record level. As to French industrial coals, they will certainly be increased in price during the first quarter of 1926 due to high fiscal charges.

German Coal Output Climbs in 1925

Market Nears Overproduction State—Prices Steadiest of Any Year Since War—Strikes Give Way to Conciliation—Imports Shrink—Exports Gain

By H. O. Herzog

The outstanding feature of the German coal market in 1925 no doubt was the transition from a state of shortage of supply to one almost approaching overproduction. The beginning of the change was noticeable more than a year ago, but was then looked upon as only a passing phase. The year just closed, however, revealed that this condition is likely to persist for some years to come.

During the period of shortage up to the end of the Ruhr occupation measures were taken in all fields to increase the capacity of the mines and when, after the collapse of the passive resistance of the Ruhr, the operators succeeded in largely restoring the pre-war working time and pre-war working conditions the mines were ready to produce on a larger scale than theretofore. Had it not been for the syndicates, which in time checked the tendency toward expansion, even at the risk of endangering their own position against the advance of progressive operators, a state of overproduction doubtless would have resulted. In fact the renewal of the syndicates during the past year met with considerable difficulties. The Ruhr syndicate could be extended only under pressure from the side of the government and at considerable concessions to the members in the way of individual freedom of action, which, especially in the matter of export, has resulted in a considerable loosening of the rigid framework of the syndicate organization.

Private Initiative Helpful

When the almost disastrous business depression which held Germany under its sway during the whole year is considered it is astonishing that the coal production of 1925 shows no diminution compared with 1924 but even a considerable increase. This fact is due no doubt, to the reorganization of the sales machinery, of the syndicates on the lines of up-to-date business methods and the freedom given to private initiative.

Total German coal production in 1925 up to the end of November (December figures not being available at the time of writing) was as follows:

German Coal Production
January-November, 1925

(In 1,000 Metric Tons)

	1925	1924	1913 Germany Present Size	1913 Germany Within Pre-War Frontiers
Bituminous coal	121,362	107,596	130,048	175,945
Brown coal	127,077	112,025	79,742	79,742
Coke	24,577	21,332	26,986	29,470
Patent fuel				
Bit. coal	4,547	3,390	5,090	5,382
Brown coal	30,711	26,515	19,684	19,684
Totals	308,274	270,858	261,550	310,223

Production figures by months show slight fluctuation except for a decrease of about 10 per cent from May to June, due to curtailment of syndicate rations. Reserves at pitheads, which at the beginning of 1925 had accumulated to approximately 8,000,000 tons, kept at that total up to the early months of the fall and at the end of the year were estimated at between 5,000,000 and 6,000,000 tons.

Coal prices remained almost stationary throughout the whole year, the first time since the beginning of the war. The level at which they have settled lies about 25 per cent above that of 1913-14. Ruhr fat run of mine, which is the key grade of the schedule of prices, kept at $3.57 per metric ton, and furnace coke, the key grade of coke, at $5.71 up to September, when it was reduced to $5.55.

Labor conditions in coal mining on the whole were satisfactory. The strike fever has greatly abated and in the last year boards of conciliation were able to settle all disputes, chiefly by a policy of compromise. In general it may be said that the past year contributed a good deal to the consolidation of labor conditions.

Wages during the year showed a slight upward tendency. The average pay of all classes of mining labor in the Ruhr in January, 1925, was $1.50 per shift, in other fields somewhat less. In the Lower Silesia field, where the lowest wages prevail, $1 per shift was paid in January, 1925. The wages of a getter, the highest paid category, were in January $1.78 in the Ruhr and $1.14 in Lower Silesia. By the end of the year these wages had increased by about 10c. on the average all categories of mining labor.

The 7-hour day in mining, which the revolution instituted and the collapse of the passive resistance in the Ruhr obliterated for the time being, is still the chief bone of contention in the labor situation, but demands for its restitution are advanced with visibly less ardor. With German industry heavily taxed and still burdened with the sins of neglect committed during the inflation period there is little chance that working hours will again be shortened in accordance with the demand of labor.

Nothing signifies the change in the coal situation more strongly than the changed attitude of operators toward the reparation tribute of coal. It will be remembered that only a few years ago the size of this tribute was felt to be exorbitant. Operators now would gladly see restored a reparation supply as large as that which was indirectly the cause of the Ruhr occupation. The quantity, which is now settled under the Dawes plan, in 1925 was considerably below that of 1924, when it totaled about 7,000,000 tons of coal and 2,700,000 tons of coke. Exact figures for the last year are not yet available. The estimates are generally accepted.

The year 1925 was conspicuous for the shrinkage of coal imports, chiefly at the expense of Polish Upper Silesia. The facilities given this formerly German field for import into Germany under the terms of partition have ceased, with the result that the imports there have greatly diminished. The following figures represent the coal imports into Germany from January to October, 1925 (later figures not being available at the time of writing), with those of the three preceding years attached for comparison:

German Coal Imports, January-October

(In 1,000 Metric Tons.)

	1925	1924	1923	1922
Bituminous coal	6,476	10,912	21,806	9,327
Brown coal	1,863	1,650	1,246	1,880
Coke	61	309	1,265	222
Patent fuel				
Bit. coal	37	132	125	20
Brown coal	125	65	46	30
Totals	8,562	13,068	24,488	11,479

The chief countries of origin were Great Britain and Polish Upper Silesia. But whereas imports from Great Britain retained a level of about 400,000 tons monthly and even showed a tendency to rise during the later months of the year, shipments from Upper Silesia, which in 1924 averaged 500,000 tons per months had in October, 1925, dropped to 2,381 tons.

At the beginning of 1925 exports gave promise of considerable expansion but later on showed signs of weakness, with the result that last year's figures probably were not equaled. Comparative figures for the first eleven months are as follows:

German Coal Exports, January-October

(In 1,000 Metric Tons)

	1925	1924	1923	1922
Bituminous coal	11,601	12,680	975	4,801
Brown coal	27	25	11	13
Coke	3,033	497	214	785
Totals	14,661	13,202	1,000	5,599

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A striking feature is the increase in exports of coke, which since 1924 have increased over 500 per cent. The chief countries of destination of exports were Holland, which alone absorbed 5,681,743 tons, or about 40 per cent of the total; France, with 1,354,964 tons or 11½ per cent; Belgium, with 1,136,877 tons, or 10 per cent. As regards coke the chief destinations of exports are Luxemburg and Alsace-Lorraine, showing that the German supply of coke is gradually dropping into the old channels.

To the German coal sales fraternity the year just past was almost disastrous. The large increase in the number of coal dealers compared with prewar times and the establishment of co-operative societies, which have taken in hand the supply of coal to large groups of consumers, reduced the quantity of coal handled by individual firms of the trade to such a degree that cutthroat competition resulted, which in numerous cases led to bankruptcy, chiefly in the case of firms which sprang into life during inflation times. The trade owes enormous sums to the syndicates which are bound to sustain considerable losses if the deflation crisis, now in full swing continues.

Canada's Coal Industry Held Back By Labor Unrest

Nova Scotia Disturbances and U. S. Anthracite Suspension Prove Unsettling Influences—Output Falls Below 1924 Total—Recovery Sets in Early

By S. J. Cook

Chief of the Mining, Metallurgical and Chemical Branch, Dominion Bureau of Statistics, Ottawa, Canada

Canada's coal output in 1925 dropped below the total reported in the preceding year, due largely to losses sustained through labor troubles in the eastern maritime provinces in the earlier part of the year. Production amounted to a little better than 13,000,000 tons, as compared with 13,638,197 tons mined in 1924. Depression during the first three or four months of the year, always noticeable, carried the output to a lower mark in April than had been reached in several years. On the other hand, the recovery in 1925 set in earlier than in most other years, for from May to December there was an upward trend in the output curve.

Nova Scotia mines, in which output losses were greatest, produced only 3,900,000 tons of coal in 1925, compared with 5,557,441 tons in 1924, and yielded first place among the coal-producing provinces to Alberta. Distressing conditions prevailed at the Nova Scotia collieries during the earlier months; lack of continuity in employment precipitated labor troubles; strikes and general unrest followed by actual want drove many miners to migrate and created one of the most difficult industrial situations that has occurred in Canada in many years.

Following a general election in which the defeat of the party in power was brought about, the coal-mining situation became the chief topic of interest. The new government appointed a royal commission with wide powers of inquiry; the men returned to work on a temporary agreement pending the findings of the royal commission, and the output of coal grew steadily until the close of the year. It is considered that the commission has done its work thoroughly; great in hope and expectations, those interested await the publication of the report.

Western mines made a better showing in 1925 than in the preceding year when labor troubles in District 18 restricted output. Restoration of coal shipments to Winnipeg and other Eastern points marked an advance in marketing over the previous year, when much of the advantage won in 1923 was lost. Attempts to ship coal east from the western provinces in 1925 did not meet with great success, though some experimental shipments were made with a view to determining solid trainload costs of transporting coal from Alberta to Ontario.

Alberta's output of 5,700,000 tons placed that province in the premier position among Canada's coal-producing areas, and marked an increase in output that was very gratifying. In 1924 Alberta mined 5,189,729 tons of coal.

British Columbia coal mines operated fairly steadily in the face of very considerable difficulties. In 1925 these mines produced 2,753,000 tons of bituminous coal; in 1924 the output totaled 2,193,667 tons.

New Brunswick contributed 203,000 tons of bituminous coal and Saskatchewan added 459,000 tons of lignite to the total for Canada. Production statistics by provinces for the past two years are shown in the table accompanying this article.

Total imports of coal into Canada during 1925 totaled about 16,780,000 net tons, compared with 16,828,578 tons during the preceding year. From the United States Canada obtained in 1925 more than 16,150,000 tons, including 3,250,000 tons of anthracite and 12,900,000 tons of bituminous coal. Imports from the United Kingdom added another 635,000 tons, of which 70,000 tons was bituminous and the remainder anthracite.

More coal was exported from Canada during 1925 than in the preceding year; it is estimated that exports totaled upward of 840,000 tons in 1925 as against 775,246 tons in 1924.

Employment in coal-mining during the year fluctuated greatly in the eastern area, where about 12,000 men usually are at work; during the summer months the number dropped to about 3,000. In the western fields the number of coal miners at work varied from 11,000 to nearly 18,000 at different times during the year; employment was much more continuous than in 1924.

Approximately $146,000,000 capital is invested in Canada's coal mines and the value of the output has at times reached a total above $82,000,000 annually, but in 1925 was $49,000,000.

Output and Value of Coal in Canada by Provinces in 1924 and 1925

Province	1924 Tons	1924 Value	1925 Tons	1925 Value
Nova Scotia	5,557,441	$22,280,554	3,901,000	$16,068,000
New Brunswick	217,121	932,185	203,000	805,000
Saskatchewan	479,118	886,668	459,000	865,000
Alberta	5,189,729	18,884,318	5,706,000	19,600,000
British Columbia	2,193,667	10,601,998	2,753,000	11,686,000
Yukon	1,121	8,265	.....	.....
Totals	13,638,197	$53,593,988	13,022,000	$49,024,000



Lota Harbor on the Bay of Arauco, Part of the Chilean Coal Field

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News Of the Industry



Harrisburg and Washington Hold Attention in Hard-Coal Difficulty; Pro- and Anti-Pinchot Bills Appear

Harrisburg and Washington replaced New York City as centers of interest in the anthracite strike situation last week, following the second break in joint conferences at the Union League Club on Jan. 12. The next day the Pennsylvania Legislature met in special session pursuant to the call issued by Governor Pinchot after the operators had rejected his eleven-point "peace" program. Two bills drafted by Attorney General George W. Woodruff and sponsored by the state administration were presented to the House on the opening day and two anti-administration measures on coal were offered in the Senate.

The first administration bill would amend the Public Service Commission law by including anthracite producers in the category of street-car companies, telephone, gas and other public utilities subject to the jurisdiction of the commission. Enactment of the measure, it is asserted would give the commission wide investigatory powers over the business of the producers and would make prices open to complaint and attack before the state board. Anthracite producers, as defined in the bill, include "all persons, partnerships, unincorporated associations or corporations engaged in the production, preparation and making ready for market of anthracite coal for domestic use and in the sale of such coal."

Would Regulate Retail Trade

The second administration bill requests the Governor to negotiate compacts with anthracite-consuming states to provide for the regulation of retail trade in hard coal. This bill declares the anthracite business to be "affected with a public interest." All compacts under the terms of the proposed law would be submitted to the General Assembly for ratification. The consent of Congress, of course, would be necessary before these interstate compacts were valid.

Governor Pinchot, in discussing these bills, said:

"For many weeks we have read in the newspapers the daily story of the strike of the anthracite operators against the public. Yesterday came the breakdown of the negotiations because the operators refused to do as the miners had already done — make real concessions from their original position in the interest of reaching a settlement. The matter now comes before the Legislature of Pennsylvania for its action. I shall do my best to press the bill which recognizes anthracite as a public utility. That is the next step."

One of the anti-administration bills, introduced by Senator George Woodward, of Philadelphia, calls for the amendment of the miners' certificate law. Under existing law, enacted in 1889, applicants for certificates must have had two years' experience as miners' laborers and must pass the scrutiny of an examining board of nine miners. This law, it is asserted, creates a union labor monopoly because only union members can be employed as helpers and so qualify for a certificate.

The Woodward amendment would waive the two years' experience in the anthracite mines and grant certificates to applicants who answer "intelligently and correctly at least twelve questions in the English language pertaining to the requirements of a practical miner." The examining board is reduced from nine to three, with only two signatures necessary to validate a certificate. This examining board would consist of a miner, an operator or mine superintendent and a mine inspector.

The second bill, fathered by Senator Patrick F. Joyce, of Luzerne County, would repeal the anthracite tonnage tax law of 1921. "It is the opinion of the Legislature," reads the preamble, "that the existing tax on anthracite coal and its consequent effect on the price thereof to the public is one of the chief elements entering into the continuation and prolongation of the strike, and that the repeal of the said tax would hasten the end thereof."

The Woodward bill was given favorable consideration by the Senate committee on mines and mining, but no action on the Pinchot proposals was taken by the House committee. In the opinion of many observers, the Governor's regulatory program is foredoomed to failure. Some also express the opinion that the Legislature will take no final action on the Woodward bill, which already is being bitterly attacked by the miners.

At the session on Jan. 18 three additional measures were introduced in the House. As an offset to the Woodward bill Representative John E. Stavitsky, of Luzerne County, a member of the United Mine Workers, offered an amendment to the present law which would make illegal the employment of uncertified miners, prevent the sale or transfer of certificates and change the make-up of the examining boards along lines suggested by the Woodward bill.

The two other measures were resolutions aimed at a termination of the strike. One would create a Presidential commission to sit in the region and make binding findings. Pending the promulgation of its report, miners would be ordered to work at the old wages. The second resolution proposed a commission of six state legislators and three commissioners named by the Governor to invite operators and miners to resume negotiations.

A flurry over the possibility of federal intervention developed late last week when five Congressmen from the anthracite district conferred with Secretary of Labor James J. Davis. Following the conference, however, the Secretary stated that there had been no change in the attitude of the administration at Washington. Earlier in the week the operators had announced that they would respond to any invitation from the President to confer on the situation. On behalf of the miners, however, it was stated that they would acquiesce in no suggestion from Washington that their differences with the producers be submitted to arbitration.

More Coal Bills in Congress

The collapse of the Union League Club conferences also encouraged the introduction of more coal control bills in Congress. Senator Royal S. Copeland (New York) introduced a resolution on Jan. 15 to authorize the President to take such steps as might be necessary to bring about a speedy resumption of mining, and the next day, when immediate consideration of the proposal was refused, introduced a resolution directing the President to take over and operate the anthracite mines during the present "emergency" and to continue such operation and supervision "for the duration of the present strike," but not beyond June 1, 1928.

In the discussion on the floor of the Senate on the Copeland proposals on Jan. 16, it was argued that a Constitutional amendment would be necessary before Congress could take effective action. This idea was pressed by Minority Leader Robinson. Senator George W. Pepper (Pennsylvania) declared that the Copeland resolution of Friday would aggravate the situation and characterized it as a "legislative sob." Senator James A. Reed (Missouri) commended the "hands-off" policy of the administration as in consonance with the law.

Senator Tasker L. Oddie, chairman of the Senate committee on mines and

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Wage Cut and Abolition of Check-Off Demand Urged by Nova Scotia Royal Coal Commission

That the Nova Scotia miners should accept a 10 per cent wage cut from the 1924 scale, as demanded by the operators (the British Empire Steel Corporation) a year ago; that there should be semi-annual wage revisions; that the company acknowledge the United Mine Workers; that the "check-off" system of collecting union dues be abolished are among the findings of the royal commission appointed by the Nova Scotian Government to probe the coal-mining industry.

The results of the inquiry which was conducted by Sir Andrew Rae Duncan, of England; Major Hume Cronyn, London, Ont., and Dr. H. F. McPherson, Antigonish, Nova Scotia, and lasted two months, were made public last week.

It is recommended that the corporation-owned houses be sold to the miners and the corporation's private police force be abolished. A two-year wage contract is suggested as a means of stabilizing the industry, and sanitation and roads in the mining district should be cared for by the municipalities and government.

Coking plants are recommended throughout the country, so that Nova Scotian coal may have a wider market.

mining, explained that he was not pushing his bill forward at this time because he felt it would embarrass a situation "already full of embarrassment." On Monday of this week, however, the Senator conferred with the President. At the conclusion of the Coolidge conference, Senator Oddie stated that he had been given no assurance that the administration would indorse his bill. Later the Senator also called on Secretary Hoover. The Oddie bill has been under study by the Department of Commerce for several weeks, but no report has as yet has been made public.

Representatives John J. Boylan and Sol. S. Bloom (New York), authors of bills for emergency operation of the mines by the government, criticised the House committee on interstate and foreign commerce for its failure to order early hearings on the various coal bills which have been referred to it. On Jan. 18, Representative Boylan made public a letter from Representative W. F. Oldfield, Democratic whip, indorsing the Boylan measure.

Complete indorsement of the position of the union subscale committee was given Mr. Lewis and his associates at a meeting of the full scale committee at Hazleton, Pa., on Jan. 14. At that meeting the international president pledged the full resources of the organization in supporting the strike. Demands from some of the local unions that maintenance men be withdrawn were turned down by the committee, which also scouted the idea that any operators would attempt to reopen the mines without an agreement. On Sunday Mr. Lewis began a speaking tour of the region.

"Woeful Waiting" Region Attitude

In the anthracite region civic organizations, peace committees, self-appointed mediators, the miners and the operators alike appear to have assumed an attitude of watchful waiting. New peace plans are met with apparently no concern by either the public or the contending factions. The general atmosphere is one of coma. The agencies which in the past strived so desperately to bring about a settlement have given up in disgust. All appear to be awaiting the arrival of some inspired peacemaker who can give the miners what they want without refusing the requests of the operators.

The suffering among the strikers continues to increase as the relief organizations, due to lack of funds, are forced to curtail their work. Strike benefits are not being paid. Relief in the form of a few dollars every fortnight is distributed by the district unions. It is not organized relief, however, and does not succeed in its purpose.

The residents of the region are at their wits' ends to obtain hard coal to heat their homes and prepare their food. Substitute fuels are lacking and anthracite is doled out under supervision that makes it practically unavailable. It is necessary to supply proof of illness in the home, in many instances, before retailers will deliver coal from their depleted stock piles.

"Bootleg" coal, selling as high as $17 a ton, can be obtained from questionable sources. In many cases it is unburnable.

The corner grocer who has carried the striking miner on his books is himself looking vainly for credit. The big department stores and business houses are pleading for extensions on their own credit accounts. A demoralization of the entire region is threatened.

British Labor Would Nationalize Mines

An elaborate plan for the nationalization of power production and the entire coal industry of Great Britain has been laid before the Coal Commission as a panacea for the ills of these industries in the future. The Miners' Federation, the Central Trades Council and the Labor members of Parliament support it. The scheme calls for a distribution of government stock to recompense the mine owners for the value of their properties, a special compensation commission to decide how this stock should be redeemed—possibly from a sinking fund created by profits from the government industries. Three permanent commissions would be appointed, one to control general policies of power and transport, one to control operation of the mines and the third to regulate prices and distribution.

Cosgrove-Meehan Takes Over Dilltown Mine

The Cosgrove-Meehan Coal Corp. acquired the entire holdings of the Dilltown Smokeless Coal Co., at Dilltown, Indiana County, Pa., last week, the deal involving $575,000. The purchase included 1,378 acres of coal lands, the mine and its equipment and the housing for employees at Dilltown Heights. The Dilltown operation now has a daily capacity of 1,000 tons and this will be increased. The mine will be known as Thermal No. 15 of the Cosgrove-Meehan Corp. and this added production will make the corporation one of the largest in the central Pennsylvania field, with operations at Johnstown, Portage, Barnesboro, Foustwell, Boswell, Cosgrove and Acosta, in Pennsylvania, and at Marion, Johnson City, Pittsburg, Paulton and Panama, in Illinois.

The negotiations were closed by John C. Cosgrove and Harry Meehan for the purchasing company and Earl E. Hewit, general manager at Dilltown. The mine, which is served by the Buffalo, Rochester & Pittsburgh and the Pennsylvania railroads, was opened twelve years ago and produces an excellent grade of Miller seam coal for domestic uses. The mine is electrically equipped, has shaking screens and picking tables and lends itself readily to loading prepared sizes of a hardness making them strongly competitive with anthracite. The workings are self-draining. There are fifty houses, with electric lights and water. Mr. Hewitt will remain as manager.

Organize Company to Mine Virginia Anthracite

W. H. Manss, of Baltimore and Chicago; Alexander Armstrong, formerly Attorney General of Maryland; W. O. Pierson, vice-president of the Union Trust Co., Baltimore; Charles H. Holtzman, Collector of Customs, Baltimore district; J. W. Edelen, president of the Enterprise Fuel Co., all of Baltimore, and E. C. Searls and W. Milnor Roberts, of Chicago, have organized the Great Valley Anthracite Corporation to develop hard coal mines in Virginia.

The new company has an authorized capital stock of 15,000 shares of no par value common, soon to be increased to 50,000 shares and $300,000 of 7 per cent bonds.

Mr. Manss is president, Mr. Searls vice-president in charge of operation, Mr. Roberts vice-president, Mr. Armstrong secretary and general counsel, and Mr. Pierson, treasurer.

The Great Valley Corporation plans the expenditure of approximately $125,000 in developing the initial unit in Virginia and expects to begin production early next summer. The property is located on New River adjacent to the Norfolk & Western and the Virginian Ry.

The Consolidation Coal Co. in the near future will construct about 1,300 miners' houses at its mining plants in southern West Virginia and eastern Kentucky.

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Nation's Lawmakers Expect Negative Result From Pinchot Venture

By Paul Wooton
Washington Correspondent of *Coal Age*

The special session of the Pennsylvania Legislature is being watched with more than academic interest by the lawmakers on Capitol Hill who are concerned with coal. The fact that the state is working on the anthracite problem provides an effective bar to the consideration of any coal legislation by Congress pending the outcome of that effort.

Few expect more than a negative result from the Pinchot venture. However willing the people of New England may be to have anthracite declared a public utility, there is little expectation that Pennsylvania will place its major industry under drastic regulation largely for the benefit of other states. The keystone in the Keystone state is coal. The steel industry there rests not on native reserves of iron ore but on the state's superb coals.

It is thought certain a majority of the legislators will see that any regulation prescribed for anthracite sooner or later would have to be applied to bituminous as well.

Interest in the anthracite situation is enhanced somewhat by the circulation of a rumor on Capitol Hill that Governor Pinchot has encouraged President Lewis of the United Mine Workers to hold out against the demands of the operators by giving assurances that he could put through his anthracite legislation. The idea also is in circulation that in the event of failure to obtain satisfactory results at Harrisburg Mr. Lewis would bid again for federal intervention by renewing his threat to call out the soft-coal miners.

Federal Intervention Still Remote

The success which has followed its hands-off policy makes it seem certain that the executive branch will resist, more strongly than ever, any pressure intended to bring about intervention. While the failure of the Pennsylvania Legislature to do anything would be the signal for renewed efforts on the part of some members of Congress to obtain action, the chances are against success. By that time the winter will have been so far advanced that the problem will be less acute. The leadership in Congress is not convinced that the failure of the mine workers and the operators to reach an agreement makes their controversy a national issue. Apparently they are standing with the administration against a political settlement of a dispute that should be settled within the industry.

Despite the effort of Representative Boylan, of New York, to establish that the shortage of anthracite is responsible for much of the pneumonia and influenza, the preponderance of complaints reaching Washington seems to be coming from the rich and from the very poor. The former want anthracite regardless of cost because of its convenience, while the prevailing complaint of the latter seems to be the presence of soft-coal particles in the air which settle on freshly washed clothing as it hangs on the line. Mr. Boylan, however, says the effort to use substitutes is resulting in an "unbelievably high" death rate from asphyxiation and that "it is a question who appears in a more culpable light—Nero fiddling while Rome burned or the American Congress talking and debating comparatively trivial matters while our people freeze and die." He has introduced a bill proposing that the President "take temporary control of any or all anthracite mines and proceed with the mining of such coal until the emergency has passed."

Until recently the sponsors of the campaign for the use of substitutes were somewhat in doubt as to what would happen if the weather should get really cold. After two weeks of genuine winter weather, which prevailed recently throughout the anthracite-using region, their doubts as to that point have been set at rest. Substitutes now are available in abundance in all markets and prices of bituminous coal are lower than they were last October. A generally held opinion in Washington is that the public has won the strike and that with the country almost buried in soft coal there is no excuse for anyone's being cold.

Pittsburgh Coal Co. Opens Dickson Mine

"All's well at the Dickson mine" was the latest report of the Pittsburgh Coal Co., following the reopening of the seventh mine of the company in western Pennsylvania on the 1917 wage scale. This mine, located three miles from Imperial, in Allegheny County, on the Montour R.R., was started on Jan. 13 with 74 men at work. The division manager is Harry M. White and the superintendent is John Pasco.

Warden mine, near McKeesport, which was opened slightly more than a week ago, now has close to 200 men at work. The company also announced that there was a total of 1,410 miners at work at the seven operations of the company, following the reopening of the Dickson mine. This is the greatest number employed at any time since the first mine, Banning No. 2, was opened on Aug. 20, 1925.

Last week six mines loaded a total of 24,820 tons.

Pittsburgh Coal Co. Promotions

William Lauder, of Elizabeth, has been promoted to the position of general superintendent of mines of the Pittsburgh Coal Co., officials of the company have announced. He was formerly division manager in charge of the Youghiogheny River valley section. Howard Burns, of Corliss has been named division manager to succeed Mr. Lauder and will establish his headquarters at West Newton. Mr. Burns formerly was mine inspector for the company.

Standards Board Approves Rock Dusting

The American Engineering Standards Committee has just approved as "Recommended American Practice" a safety code for rock-dusting of coal mines, developed under the sponsorship of the American Institute of Mining and Metallurgical Engineers, in close cooperation with representatives of the various national bodies interested, including state officials having regulatory power over the field in question, coal operators, labor, inspection, insurance, manufacturers of mine equipment, and the U. S. Bureau of Mines. The latter, as a leader in mine safety work, has conducted extensive investigations and experiments under the direction of Dr. George S. Rice, before advocating this method.

The chairman of the sectional committee for the formulation of the code is Howard N. Eavenson, consulting engineer.

The code prescribes the rock dusting of mines producing bituminous coal or lignite, whether gaseous or not, as they are liable to dust explosions. It specifies the kind and amount of dust to be used and the parts of the mine to be dusted. The methods of applying the dust and instructions for its sampling also are given.

The practice of wetting coal dust produced by coal undercutting machines and the drenching of the cars with a water spray while they are in transit are recommended as effective and economical ways to keep down the dust from these sources.

It has been conservatively estimated that about two-thirds of the fatal and serious accidents at the bituminous coal mines of this country could be prevented by the universal adoption of this safety method.

A report by Edward Steidle, supervisor of the co-operative coal mining courses at Carnegie Institute of Technology, who has been making a study of this subject in connection with the Bureau of Mines investigations, presents data on the increase in the use of rock dusting during the past year, which emphasizes the importance that coal mine operators place on the prevention of explosions. During 1924 only one company in America practiced rock-dusting on a large scale, but at present no less than 211 mines are rock dusted. However, this represents only about 4 per cent of the total number of bituminous mines in the United States.

Bain Off Advisory Committee

Dr. H. Foster Bain, former director of the U. S. Bureau of Mines and now executive secretary of the A.I.M.E., has sent in his resignation as a member of the advisory committee of Secretary Hoover, relating to reorganization of the Mines Bureau. It is probable that the vacancy will be filled by a representative of one of the several industries with which the Bureau deals and which is now unrepresented on the committee. There will be a meeting of this committee in late January, when Secretary Hoover will ask the committee to continue to function.

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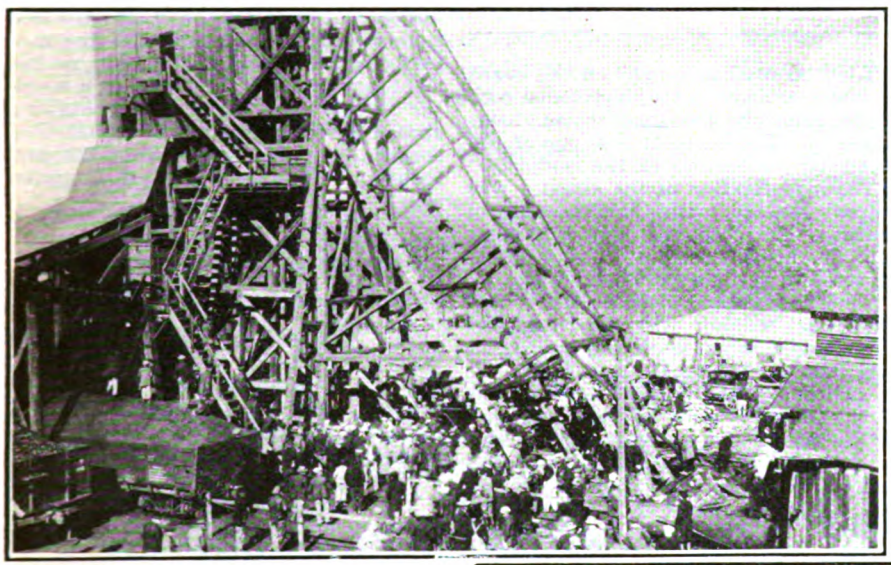
Gas Explosion in Open-Lamp Mine Kills 91 Men at Wilburton, Okla.

Ninety-one men are known to have lost their lives and three others are missing in an explosion in the Degnan-McConnell Coal Co.'s No. 21 mine, at Wilburton, Okla., early in the morning of Jan. 13. It is considered probable, by the authorities on the ground, that the blast was caused by the ignition of gas by men wearing open-flame lamps, State Inspector Edward Boyle having barred electric safety cap lamps from Oklahoma after a battle he carried into the courts.

Mr. Boyle blamed the accident upon incompetence of firebosses and ignorance of men employed since the region was converted to a non-union basis following a long struggle last summer.



This Group Helped Form Rescue Teams at the Wilburton Mine



Damaged Top Works of the Degnan-McConnell Mine

He had not yet entered the mine, however, when he made this charge. "Jim" McConnell, owner of the mine returning from Illinois, where he had gone to attend the funeral of a friend, at once issued a denial.

"Every gas man in the mine held a certificate," Mr. McConnell declared, "and the majority of the men who were at work had been there some time."

One hundred and one men, including A. P. Thomas, of Hartshorne, Okla., a mine surveyor, went into the mine at 7:30 on the morning of the explosion. Two inspectors had finished their rounds an hour and a half earlier and had reported no gas. Within an hour from the time the first cageful of men had descended the 200-ft. shaft and started down the long slope running from the bottom, the explosion occurred. It started a fire down the main slope and sent up a great column of black smoke from the shaft, drawing the inevitable crowd. Rescue crews from McAlester, Hartshorne, Haileyville and Krebs rushed to the scene, entering the mine under the direction of J. B. Hynal and W. H. Fleming, of the U. S. Bureau of Mines. They soon found 16 bodies. The Salvation Army opened a lunch station at the mine. A Red Cross official and state troops arrived that night.

Eight men were brought out alive the night of the 13th, but two more, Cecil McKinney, white, and Beryl Holland, negro, were found wandering through the workings the next morning, both suffering from shock and exhaustion. The negro was so badly frightened he could not talk. Several negroes had refused to do rescue work underground the day of the explosion because it was the 13th, even though superstition was dealt a severe blow by the fact that the first eight men saved all had come out of the 13th east entry.

Union men throughout the country made much of the fact that experienced miners who were on strike in the Wilburton region were barred from aiding in the rescue work by an injunction issued against strikers by Judge R. L. Williams several months ago forbidding them to enter company property.

Charles Buffo, superintendent of the Rock Island mines at Hartshorne, had teams in the mine from the first and William and Steve Ogilvie also were in charge of crews that alternated in the rescue and search work below the surface. Two weeks ago there was a squeeze in the mine, Superintendent W. H. Powers said. Work in the mine was stopped while airways were driven around it to provide ventilation for a section of the mine. A recurrence of this squeeze may have had something to do with the explosion, Powers said. Groping for another possible cause, State Inspector Boyle suggested that possibly a miner might have found an unfired shot, missed the night before, and touched it off.



Chief Owner of the Mine with National Guard Officers

"Jim" McConnell, of the Degnan-McConnell Coal Co., rushed home to Wilburton, Okla., from Illinois immediately after the explosion and helped direct rescue work while answering criticisms leveled at the company by the United Mine Workers, who last summer lost their grip on the Wilburton field.

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Good Barricades Save Lives of 20 But 19 Die In West Virginia Blast

Twenty miners saved their lives after an explosion Jan. 14 in the No. 8 mine of the Jamison Coal & Coke Co., near Farmington, W. Va., by using their knowledge of how to build barricades and by keeping their heads. Nineteen men died, however, and about $75,000 damage was done to the interior and equipment of the mine. The mine was not rock-dusted although the company had previously planned to begin rock-dusting on Jan. 15. A naturally moist condition in part of the mine was credited with reducing the force of the explosion, which was unofficially said to have been caused by an arc from a trolley nip igniting a body of gas. This, however, remains to be proved. The mine operates on a closed-light basis.

Thirty-nine men were in the mine at 10:20 p.m., when the blast occurred, starting, apparently, about 1½ miles from the shaft bottom. Eight men working near the bottom escaped at once. Rescue crews from various northern West Virginia coal companies soon penetrated the workings searching for the rest of the night force under the direction of William Riggleman, of Fairmont, a state mine inspector. Robert M. Lambie, chief mine inspector, was soon on the ground. While the force of the explosion hardly reached the outside and therefore did no damage to the shaft and top works, it was early realized that the loss of life might be heavy because only the first eight men came out. By 5 o'clock the next morning four bodies were brought out, including those of William E. Myers, of Fairmont, and his son Herbert.

Hope for the remaining men was steadfastly held, however, as the rescue workers penetrated deeper and deeper without finding many more bodies. This belief was strengthened, when the searching party at 5:45 o'clock Friday evening, Jan. 15, came across a board bearing what was intended as the entombed miners' farewell message: "Some at stable and at 90 R shanty. So long."

"Jock" McNeil, 60 years old and a compressor engineer, was the real hero, as he directed the work of erecting a barricade behind which the miners were found. McNeil and Lee Fetty had rushed sixteen men into a stable and four into a shanty.



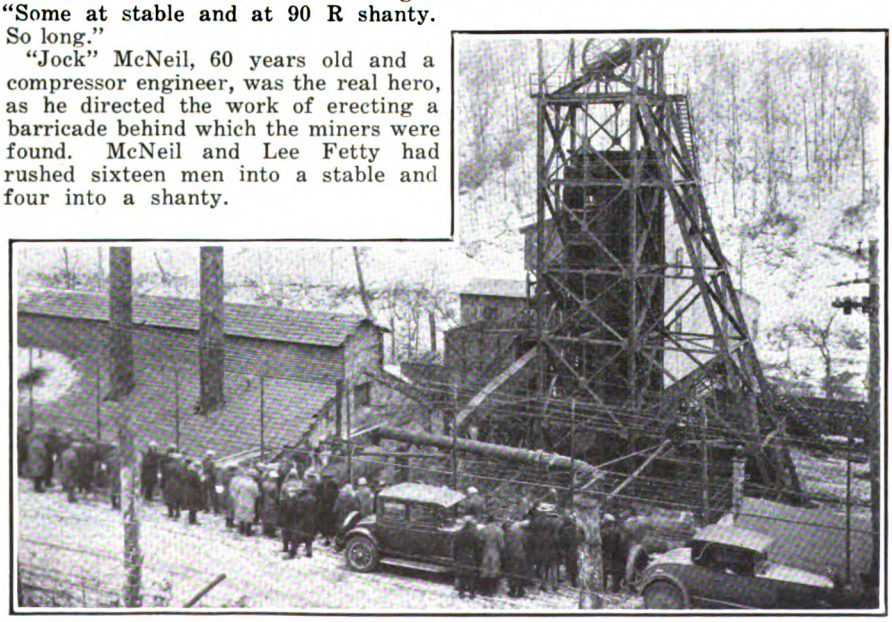
Fred W. Lukins

The "farewell message" on the board led the searchers to the imprisoned men 23 hr. after the men had sealed themselves in. The board is now one of the cherished possessions of the company.

The investigation of the disaster was started Jan. 16, with Chief Lambie in charge. The coroner's jury will meet Jan. 29, at Charleston. The mine is expected to resume work next week.

Something brand new in West Virginia coal mining will be tried, Mr. Lambie said, when work will be started next Monday to sink holes 10,000 ft. in advance of the present development of the Jamison mine to force the gas out by means of a vacuum. These will be extended to points 8 ft. below the coal so that the underlying as well as the overlying seam of coal may be tapped. It is believed that this will solve some of the problems incident to the mining of this gas coal.

Mr. Lambie says that the rescue trucks for the purchase of which Gov. Howard M. Gore managed to have the Legislature appropriate $20,000 saved the day. They rendered quick service.



Top Works of the Jamison Coal & Coke Co.'s No. 21 Mine Were Little Damaged by the Jan. 14 Explosion

Fred W. Lukins Dead at 70; In Coal Trade 40 Years

Fred W. Lukins, for four years ending in 1920, president and a director of the Southwestern Interstate Coal Operators' Association, died Jan. 14, at Springfield, Mo., after a two months' illness following an attack of typhoid fever. He was 70 years old. Last year he severed his connection with the coal industry and retired to his ranch near Chadwick, Mo.

For forty years Mr. Lukins was engaged in mining and selling coal in Illinois and Missouri. In Illinois he was general manager of the O'Gara Coal Co., with headquarters at Virden, Ill. From 1914 until he moved to his ranch Mr. Lukins had lived in Kansas City, Mo., where he operated the Farmers' Fuel Co. and the Waverly Coal Co., with mines in Missouri.

In 1917 Mr. Lukins was elected a director of the National Coal Association, the only connection with the coal industry he retained after his retirement last year. In 1923 he was a member of the bituminous coal operators' special committee of the National Coal Association, which represented the coal industry before the U. S. Coal Commission.

Bureau of Mines Abolishes Urbana (Ill.) Station

The University of Illinois station of the U. S. Bureau of Mines, Ceramics Building, Urbana, Ill., was discontinued Dec. 31, 1925. According to word received at the Bureau, this is part of a general movement of the Department of Commerce to cut down expenses.

The University of Illinois office was first opened as a mine-rescue station in 1908. In 1917, during the war, it was changed to a mining experiment station and had remained the same since. L. D. Tracy, superintendent of the Bureau, has held that office since December, 1922. He was preceded by C. A. Holbrook, now dean of the School of Mines, State College, Pa., and J. J. Rutledge, now chief of the Bureau of Mines of Maryland. Experiments and investigations have been carried on by the Bureau since it was first installed and nine bulletins and seven technical papers have been written and published on material gained through these investigations and experiments.

Three Tennessee Companies In $30,000,000 Merger

The Tennessee Products Corp. is the name of a new company formed Jan. 16 by the merger of the Bon Air Coal & Iron Co., Nashville, Tenn., with the Chattanooga Coke & Gas Co. and the J. J. Gray, Jr., properties, of Rockdale, Tenn. The new organization will have a capital stock of $30,000,000, an increase of $10,000,000 over the capital of the Bon Air company.

James R. Offield, president of the Bon Air company, took an active part in bringing about the merger. William Wrigley, Jr., Chicago capitalist and father-in-law of Mr. Offield, is nominally interested in the consolidation.

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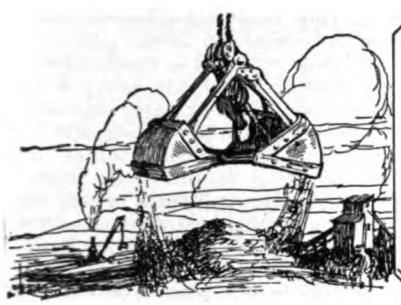
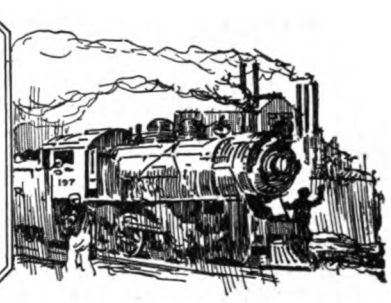


Production And the Market



Demand and Prices for Soft Coal Stronger; Anthracite Substitutes Spurt

Whatever conflicting emotions or conditions may pervade the coal market—and in the complicated conditions of the last year there have been many—an unfailing stimulus to action is cold weather such as has been fairly widespread during the last week. No doubt a few snowstorms, with an occasional blizzard, would not be amiss in the trade's scheme of bigger and better business, but these are not without their serious drawbacks in the shape of disarranged transportation and inadequate equipment.

Another development responsible in some degree for the renewal of activity in soft coal was the abandonment, at least temporarily, of the policy of watchful waiting when the hard-coal peace negotiations were broken off. While the influence of demand from this direction is growing in importance it has not thus far had a very great effect on the coal trade as a whole since the anthracite mines suspended operation, because an unusually large number of consumers laid in a comparatively large proportion of their winter needs before the strike began.

Heavy Output Counterbalances Demand

The improvement in the market situation is reflected in much greater firmness in prices rather than in any notable advances. That quotations have remained comparatively stationary in the face of recent betterment in conditions is due to a rebound in production, which is again close to some of the high marks of past years, following the usual dip caused by curtailment of operations during the holiday weeks. The quick response of output to the temperature, with the inevitable result that prices just as rapidly get no better, has in the last few months been a recurrent cause of chagrin to those hit hardest by the depression that set in soon after the signing of the Jacksonville scale. The splendid performance of the railroads since output began to hit the high spots has played an important part in stabilizing prices and enabling operators to move their product without delay.

As general business conditions are sound and industrial operations are beginning to hit their stride again after the holiday lull, prospects are brighter than for some months.

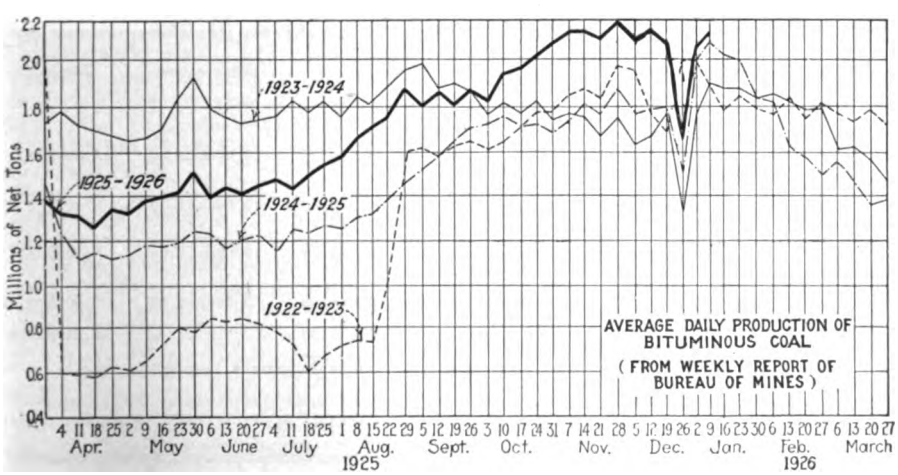
Revival in Demand for Coke

With the abrupt termination of anthracite peace negotiations, indefinitely postponing settlement of the strike, renewed strength marks the demands for hard-coal substitutes, particularly coke, the price of which has been steadily on the upgrade since the parley broke up.

Bituminous coal output during the week ended Jan. 9 is estimated by the Bureau of Mines at 12,883,000 net tons, a total exceeded but once since late in 1920, 12,914,000 tons having been produced in the week ended Dec. 12 last. The revised total production for the calendar year 1925 is 522,967,000 net tons. Production of anthracite during the week ended Jan. 9 was about 47,000 net tons, compared with 64,000 tons in the preceding week, according to revised figures.

Coal Age Index of spot prices of bituminous coal on Jan. 18 stood at 181, the corresponding price being $2.20, compared with 180 and $2.18 on Jan. 11.

Dumpings of coal at Hampton Roads made a sharp rebound during the week ended Jan. 11, the total being 433,560 net tons, compared with 339,761 tons in the preceding week.



Estimates of Production

(Net Tons)

	1924–1925	1925–1926
BITUMINOUS		
Dec. 26	7,546,000	8,431,000
Jan. 2 (a)	10,810,000	10,667,000
Jan. 9 (b)	12,590,000	12,883,000
Daily average	2,098,000	2,147,000
Coal yr. to date (c)	359,814,000	409,805,000
Daily av. to date	1,514,000	1,719,000
ANTHRACITE		
Dec. 26	1,029,000	32,000
Jan. 2 (a)	1,255,000	64,000
Jan. 9	1,785,000	47,000
BEEHIVE COKE		
Jan. 2	257,000	293,000
Jan. 9	265,000	299,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalise number of days in the two years.

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Midwest Spurts a Little as Mercury Dips

A little spell of zero weather came to the rescue of the Middle West coal market early last week. The results were felt immediately in a better demand for domestic coal, as many dealers who had small reserves on hand rushed to cover and booked fairly heavily. The cold wave lasted only two or three days, but many operators accumulated quite a number of orders.

Steam coals have been offered much more freely in the last week and prices have slipped to a slight extent, although not enough to make much difference. This weakening came about entirely through better production. It is possible to move screenings and mine-run at a fairly reasonable price, but not even the most enthusiastic observer could say that the demand was strong. The industrial situation continues to be very satisfactory.

What little anthracite was in this territory is about used up. The cold weather brought this interesting fact to light in an unexpected demand for certain sizes of coke, southern Illinois coals, Indiana Fourth Vein coals and Pocahontas coals.

Labor difficulties in southern Indiana, where operators of co-operative properties locked horns with the United Mine Workers, apparently have been settled for the time being, but many people close to the situation are watching that field with some anxiety.

Seasonable weather is moving domestic sizes of coal in the Williamson, Franklin and Harrisburg fields. All mines are behind on shipments of lump, and egg is moving freely. The nut sizes, however, are slow and steam is heavy with a slight increase in demand as cold weather came on. Railroad tonnage is good and shaft mines are working five and six days a week. Car supply is good. Strip mines have had open weather and are working regularly six days a week and finding a good market, although their prices vary. In the Duquoin and Jackson County fields similar conditions prevail. There have been no changes in prices in any of these fields.

In the Mt. Olive field business is fairly good on domestic and steam is slow. Railroad tonnage is good. Working time is four and five days a week. In the Standard field there is a better movement but nothing to justify higher prices and most mines have "no bills," sometimes of domestic sizes but always of steam sizes. Railroad tonnage is reported light. The mines are getting four and five days a week. Prices are unchanged.

In St. Louis domestic business is reported to be good for middle-grade coals and Standard is moving fairly well, as is steam of the cheaper grades in smaller lots. The anthracite tonnage is cleaned out. There is a fair supply of smokeless and a fairly good demand. Coke is moving well. Country domestic is unusually good for middle and cheaper grade coals as well as for coals from

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	Jan. 19, 1925	Jan. 4, 1926	Jan. 11, 1926	Jan. 18, 1926†
Smokeless lump	Columbus	$3.85	$3.55	$3.85	**$4.00@$4.25**
Smokeless mine run	Columbus	1.90	2.85	2.95	*2.65@2.90*
Smokeless screenings	Columbus	1.20	2.60	2.60	*1.90@2.10*
Smokeless lump	Chicago	4.00	4.00	3.85	3.50@4.25
Smokeless mine run	Chicago	2.00	2.10	2.10	2.00@2.25
Smokeless lump	Cincinnati	4.10	4.10	4.10	**4.00@5.00**
Smokeless mine run	Cincinnati	2.00	2.50	2.35	**2.50**
Smokeless screenings	Cincinnati	1.00	1.80	2.00	*1.50@1.75*
*Smokeless mine run	Boston	4.30	4.60	4.85	**4.75@5.10**
Clearfield mine run	Boston	1.95	2.00	1.90	**1.75@2.20**
Cambria mine run	Boston	2.30	2.30	2.25	**2.15@2.65**
Somerset mine run	Boston	2.10	2.10	2.05	**1.90@2.35**
Pool 1 (Navy Standard)	New York	2.75	2.95	2.95	**2.85@3.25**
Pool 1 (Navy Standard)	Philadelphia	2.80	2.95	2.95	**3.00@3.30**
Pool 1 (Navy Standard)	Baltimore	2.25	2.30	2.30	2.25@2.35
Pool 9 (Super. Low Vol.)	New York	2.15	2.30	2.30	**2.25@2.55**
Pool 9 (Super. Low Vol.)	Philadelphia	2.20	2.30	2.30	**2.40@2.65**
Pool 9 (Super. Low Vol.)	Baltimore	1.85	2.15	2.15	2.10@2.20
Pool 10 (H.Gr.Low Vol.)	New York	1.85	2.05	2.05	**2.00@2.30**
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.85	2.05	2.05	**2.20@2.35**
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.70	1.95	1.95	1.90@2.00
Pool 11 (Low Vol.)	New York	1.60	1.75	1.80	**1.75@2.00**
Pool 11 (Low Vol.)	Philadelphia	1.65	1.90	1.90	**2.00@2.15**
Pool 11 (Low Vol.)	Baltimore	1.50	1.70	1.70	1.70@1.75
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.50	1.60	1.60	1.50@1.70
Pool 54-64 (Gas and St.)	Philadelphia	1.50	1.60	1.60	**1.65@1.70**
Pool 54-64 (Gas and St.)	Baltimore	1.65	1.65	1.65	1.65@1.70
Pittsburgh sc'd gas	Pittsburgh	2.35	2.65	2.65	2.60@2.75
Pittsburgh gas mine run	Pittsburgh	2.10	2.10	2.10	2.00@2.25
Pittsburgh mine run (St.)	Pittsburgh	1.95	2.05	2.05	2.00@2.10
Pittsburgh slack (Gas)	Pittsburgh	1.50	1.55	1.55	*1.50*
Kanawha lump	Columbus	2.50	2.25	2.25	2.00@2.50
Kanawha mine run	Columbus	1.60	1.70	1.70	1.55@1.85
Kanawha screenings	Columbus	1.00	1.15	1.05	*.85@1.00*
W. Va. lump	Cincinnati	2.50	2.75	3.00	*2.50@3.00*
W. Va. gas mine run	Cincinnati	1.30	1.60	1.60	*1.50@1.60*
W. Va. steam mine run	Cincinnati	1.30	1.60	1.50	**1.50@1.75**
W. Va. screenings	Cincinnati	.90	1.10	1.10	1.00@1.25
Hocking lump	Columbus	2.50	2.35	2.35	2.25@2.50
Hocking mine run	Columbus	1.60	1.85	1.85	1.75@2.00
Hocking screenings	Columbus	1.15	1.25	1.20	1.15@1.25
Pitts. No. 8 lump	Cleveland	2.40	2.30	2.30	1.85@2.75
Pitts. No. 8 mine run	Cleveland	1.85	1.80	1.80	1.80@1.85
Pitts. No. 8 screenings	Cleveland	1.40	1.50	1.45	*1.35@1.45*

Midwest	Market Quoted	Jan. 19, 1925	Jan. 4, 1926	Jan. 11, 1926	Jan. 18, 1926†
Franklin, Ill. lump	Chicago	$3.60	$3.50	$3.50	$3.50
Franklin, Ill. mine run	Chicago	2.35	2.50	2.50	2.35@2.65
Franklin, Ill. screenings	Chicago	1.95	1.85	1.85	1.75@2.00
Central, Ill. lump	Chicago	3.10	3.10	3.10	3.00@3.25
Central, Ill. mine run	Chicago	2.20	2.30	2.30	2.25@2.35
Central, Ill. screenings	Chicago	1.95	1.40	1.40	1.35@1.50
Ind. 4th Vein lump	Chicago	3.50	3.00	3.00	2.75@3.25
Ind. 4th Vein mine run	Chicago	2.35	2.30	2.30	2.25@2.35
Ind. 4th Vein screenings	Chicago	1.85	1.85	1.85	1.75@2.00
Ind. 5th Vein lump	Chicago	3.00	2.50	2.50	2.35@2.65
Ind. 5th Vein mine run	Chicago	2.10	1.95	1.95	1.85@2.10
Ind. 5th Vein screenings	Chicago	1.70	1.40	1.50	1.35@1.65
Mt. Olive lump	St. Louis	3.00	2.85	2.85	2.75@3.00
Mt. Olive mine run	St. Louis	2.35	2.00	2.00	2.00
Mt. Olive screenings	St. Louis	1.80	1.75	1.75	1.75
Standard lump	St. Louis	2.45	2.40	2.40	2.35@2.50
Standard mine run	St. Louis	1.95	1.80	1.80	1.75@1.90
Standard screenings	St. Louis	1.20	.85	.85	.75@1.00
West Ky. lump	Louisville	2.60	2.00	2.00	**1.85@2.25**
West Ky. mine run	Louisville	1.55	1.35	1.35	1.25@1.50
West Ky. screenings	Louisville	1.10	.95	1.00	*.75@1.10*
West Ky. lump	Chicago	2.60	2.25	2.25	2.00@2.50
West Ky. mine run	Chicago	1.50	1.50	1.50	1.25@1.75
South and Southwest					
Big Seam lump	Birmingham	2.50	2.75	2.75	2.50@3.00
Big Seam mine run	Birmingham	1.50	2.10	2.10	2.00@2.25
Big Seam (washed)	Birmingham	1.60	2.30	2.30	2.10@2.50
S. E. Ky. lump	Chicago	2.60	3.10	3.10	3.00@3.25
S. E. Ky. mine run	Chicago	1.50	1.85	1.85	1.75@2.00
S. E. Ky. lump	Louisville	2.75	3.00	3.00	2.75@3.25
S. E. Ky. mine run	Louisville	1.50	1.55	1.55	1.40@1.75
S. E. Ky. screenings	Louisville	1.00	1.20	1.00	.90@1.10
S. E. Ky. lump	Cincinnati	2.60	3.10	3.10	**3.00@3.50**
S. E. Ky. mine run	Cincinnati	1.30	1.60	1.60	1.50@1.75
S. E. Ky. screenings	Cincinnati	.90	1.10	1.05	.90@1.25
Kansas lump	Kansas City	4.85	5.00	5.00	*4.75@5.00*
Kansas mine run	Kansas City	3.35	3.10	3.10	3.00@3.25
Kansas screenings	Kansas City	2.50	2.30	2.35	*2.25@2.95*

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**; declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Jan. 19, 1925 Independent	Jan. 19, 1925 Company	Jan. 11, 1926 Independent	Jan. 11, 1926 Company	Jan. 18, 1926† Independent	Jan. 18, 1926† Company
Broken	New York	$2.34	.....	$8.00@$9.25	.....	.....	.....	.....
Broken	Philadelphia	2.39	.....	9.15	.....	.....	.....	.....
Egg	New York	2.34	$8.50@$9.00	8.75@9.25	.....	.....	.....	.....
Egg	Philadelphia	2.39	9.45@9.75	8.80@9.25	.....	.....	.....	.....
Egg	Chicago*	5.06	8.17@8.40	8.08	$9.50@10.00	$8.03@$8.25	$9.50@10.00	$8.03@$8.25
Stove	New York	2.34	9.75@10.25	9.00@9.50	.....	.....	.....	.....
Stove	Philadelphia	2.39	10.10@10.75	9.15@9.50	.....	.....	.....	.....
Stove	Chicago*	5.06	8.80@9.00	8.53@8.65	10.00@11.00	8.40@8.80	10.00@11.00	8.40@8.80
Chestnut	New York	2.34	9.75@10.25	8.75@9.40	.....	.....	.....	.....
Chestnut	Philadelphia	2.39	10.00@10.75	9.25@9.40	.....	.....	.....	.....
Chestnut	Chicago*	5.06	8.61@9.00	8.40@8.41	10.00@11.00	8.50@8.75	10.00@11.00	8.50@8.75
Pea	New York	2.22	4.75@5.50	5.50@6.00	.....	.....	.....	.....
Pea	Philadelphia	2.14	5.75@6.00	6.00	.....	.....	.....	.....
Pea	Chicago*	4.79	5.36@5.75	5.36@5.95	5.50@6.00	5.50@6.00	5.50@6.00	5.50@6.00
Buckwheat No. 1	New York	2.22	2.25@2.75	3.00@3.15	.....	.....	.....	.....
Buckwheat No. 1	Philadelphia	2.14	2.50@3.00	3.00	.....	2.50@3.00	.....	2.50@3.00
Rice	New York	2.22	2.00@2.35	2.00@2.25	.....	.....	.....	.....
Rice	Philadelphia	2.14	2.00@2.25	2.25	.....	.....	.....	.....
Barley	New York	2.22	1.40@1.65	1.50	.....	.....	.....	.....
Barley	Philadelphia	2.14	1.50	1.50	.....	.....	.....	.....
Birdseye	New York	2.22	1.40@1.65	1.60	.....	.....	.....	.....

*Net tons, f.o.b. mines. †Advances over previous week shown in **heavy type**; declines in *italics*.

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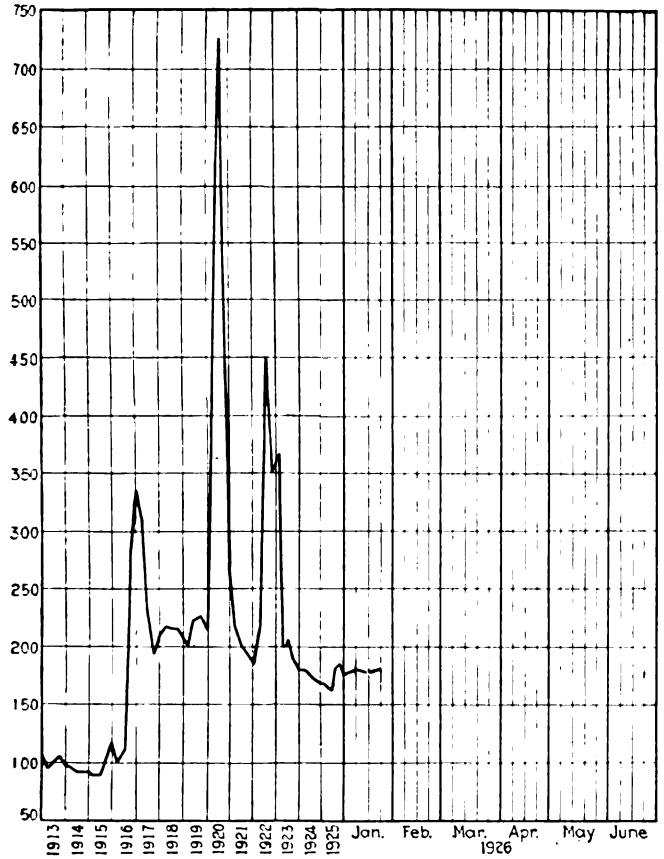

Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926			1925
	Jan. 18	Jan. 11	Jan. 4	Jan. 19
Index	181	180	181	174
Weighted average price...	$2.20	$2.18	$2.19	$2.11

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.

western Kentucky. Local wagonload steam is unusually good. Carload is fair and country steam is quiet. No change in local prices.

Small Orders Help Kentucky

Continued cold weather with snow on the ground has resulted in better retail business in Kentucky. Not much big business has been in the market, however, as many big concerns stocked heavily early in anticipation of high prices and short supplies on account of the anthracite situation. Inventory being fairly well over, more business is coming in, but not in especially large lots.

Industries are consuming steadily, even more brick companies running in bad weather than a few years ago.

Prices as a whole are little changed. In western Kentucky some operators are holding firmly for $2.25 a ton for block, but it can be had as low as $1.85; lump and egg, $1.75@$2; nut, $1.35@$1.50; mine-run, $1.25@$1.50; screenings a shade weaker at 75c.@$1 10. Eastern Kentucky prices show best block at $2.75@$3.25; egg and lump, $2@$2.50; nut, $1.75@$2; mine-run, $1.40@$1.75; screenings, 90c.@$1.10.

Mines in eastern Kentucky are running on a fair schedule as a whole, a few being down for the time being, while western Kentucky is making a fair showing, and probably has had some business thrown to it from southern Indiana, where a number of mines have had labor troubles. Car supply is good in all sections, the railroads having performed well this winter.

Movement Picks Up in Northwest

Movement of coal from Duluth-Superior docks has improved substantially during the last ten days, thanks to colder weather and shipments on orders previously placed for January delivery. Retailers and industrial consumers are still buying largely on an immediate-requirement basis, however.

The market is firm and unchanged for all bituminous coals. With the heavier movement of prepared sizes of bituminous coals the docks find themselves better supplied with screenings to cover orders on their books. Public utilities and mining companies are ordering mine-run and screenings mainly. Domestic coke is in active demand at $8.50 and briquets are being offered at $9.

Iron foundries and other plants over Minnesota and northern Wisconsin are operating more extensively than a year ago. Orders from iron mining companies on the Minnesota ranges have been bulking heavier since the beginning of the year due to mining and stripping programs having been broadened as the result of a brighter outlook in the iron and steel trade.

Car-lot shipments of anthracite were completely suspended last week. Remaining stocks, consisting of nut and egg, are held almost exclusively by three of the dock companies and they are being reserved for their retail yards at Duluth and Superior. Former anthracite consumers are getting along with Pocahontas and other smokeless bituminous coals, domestic coke and briquets.

Bituminous stocks on the docks as of Jan. 1 are estimated at 4,900,000 tons and it is figured that they will be ample to cover all needs up till the opening of navigation.

Milwaukee consumers of anthracite find that the small amount of hard-coal still on the docks belongs to those who contracted for it early in 1925 and must go to them when their bins require refilling. Pocahontas is being used as a substitute, and thus far the supply has been sufficient to meet the extra demand. But the coke makers seek direct business with the consumer, and have placed restrictions on sales to dealers, indicating that their stocks are being seriously reduced by the heavy demand from former consumers of anthracite. Thus far no restriction has been placed by retailers on the amount of coke that can be ordered by consumers at one time. Prices remain unchanged.

Southwest Trade Keeps Time with Mercury

The Southwestern market continues to dance to the weather man's fiddling. A week ago, with the thermometer under 20 deg., it was doing a fair imitation of the Charleston. This week, however, with the temperature again above freezing, its tempo is considerably slower. Kansas lump is especially slow and is quoted 25c. lower by some operators. Others, however, maintain the standard midwinter price of $5 a ton. Kansas nut is short and steam coal is easy.

The Arkansas market remains dull, but a better demand is expected late in January. The demand for screenings is good, but production is limited by the greatly reduced demand for lump, which has caused a cessation of work in many mines.

In Colorado the movement of domestic coal is not up to expectations; there is a large surplus of unbilled coal on track, particularly nut, which is not very encouraging. The slump is attributed, of course, to the mild weather, particularly in Kansas and Nebraska, which has prevailed for the last ten days. While the stocks in retailers' bins are getting low they are ordering only for immediate use. Apparently only severe weather will bring about a change. There has been no change in prices, there is a surplus of labor and transportation has been uninterrupted.

Utah operators find business very "spotty"; one week it is fairly good and the next things are quiet. Last week many of the mines averaged from four to five days working time as a result of a cold snap on the Pacific Coast and in the Northwest. This week the working time will be around half time. The domestic market is taking more domestic lump than anything else, and nearly everyone seems to be buying from hand to mouth. Industrials taking much coal at this time are comparatively few; the metal industries are consuming more than any others. Slack is easier again, but unless another cold snap comes in some part of the territory soon there will be a scarcity as a result of the short working time. Schedule prices are firm and there is little "cutting" outside of slack. Business in December was unusually quiet, that month being more open last year than for a long time, a big contrast to December, 1924, when the temperature stayed below zero for about two weeks. There is an abundance of labor.

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Cincinnati Market on Firmer Ground

The Cincinnati market struck a much firmer footing during the past week than had been its lot for a month or more. There was no tremendous advance in prices, but the tone of solidity was marked. Colder weather was the prime cause, aided by the breaking off of negotiations between the anthracite operators and the unionists—which has been a cause of timidity in certain quarters.

The cold weather showed that retailers were not as well supplied with coal for immediate delivery as was imagined. This reduced accumulations in secondary reservoirs, between here and the west and between here and Detroit, which allowed new loads to move in. Smokeless felt immediate effect, with lump moving up to a $4 basis. Demand from the East with prices around $5 for stove and egg has caused shippers to keep only contractual tonnage moving West—most of this set around $4.25. Mine-run stiffened to $2.50, but screenings went lagging, some dipping down to $1.50 and a range of $1.75 on spot.

In the high-volatile lines there was a more even swing to demand, southeastern Kentucky tonnage again being held around $3 and up to $3.50 for the better grades. Egg was firm at $2.25 for the best and $2 for off grades with mine-run $1.40@$1.75. Slack and screenings ran 90c.@$1.25. West Virginia was hampered a bit when a large-tonnage producer announced that the price on lump had been reduced from $3 to $2.50, but the most of the other concerns named $2.75@$3. With the exception of screenings the range was pretty much that of Kentucky, and on these the lowest price was around $1.

Retail business profited by the cold snap, repeat orders coming in in healthy volume. River business was interfered with because of the cold, sleet and frost, few tows braving the weather.

Movement through the gateways of the Cincinnati district, as shown by the American Railway Association, showed interchange of 12,187 cars of coal, an increase of 3,026 compared to last week, and of 814 compared to the same week last year.

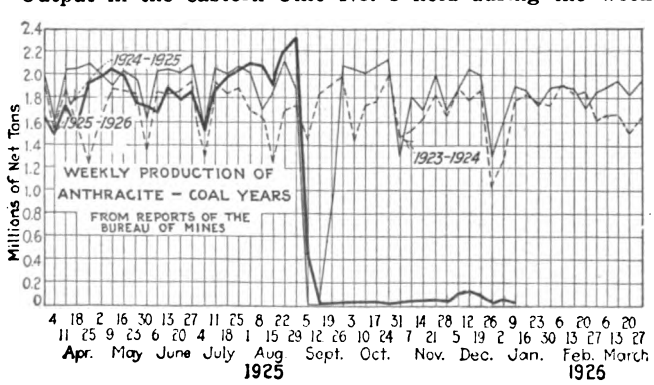
Owing to changeable weather the domestic trade at Columbus has been rather spotty during the last week, and prices at the mines remain unchanged. Retailers have normal stocks for the time of the year and are buying from hand to mouth. Householders are placing "second orders" and these are about half the size of the original orders. Smokeless and splints continue to be the favorite varieties and a good business is reported. A considerable tonnage of Kentucky block also is being sold. Retail prices are steady at former levels. There is practically no distress coal in domestic sizes on the market.

Dullness characterizes the steam business, utilities and steel plants being the best purchasers. Screenings broke considerably during the past week, especially those from the high-volatile fields. Prices were as low as 75c. a ton and high-grade screenings were sold at a sacrifice.

Output in the southern Ohio field is about 25 per cent of capacity. Some mines are in position to start operations should market conditions warrant.

Cold weather has done much to bolster up the eastern Ohio market, although prices have been soft on Ohio coals. West Virginia and eastern Kentucky coals for domestic use are strong, Pocahontas lump bringing $4.25 f.o.b. mine in Cleveland. Retailers have been moving considerable coal during the week for heating purposes and buying has been more active in the steam trade, although not in sufficient volume to create any stir.

Output in the eastern Ohio No. 8 field during the week ended Jan. 9 was 295,000 tons, or about 42 per cent of potential capacity. This was 78,000 tons over that of the preceding week—a five day week—but 12,000 tons under the corresponding week a year ago.



Hard to Move Output at Pittsburgh

Demand in the open market at Pittsburgh is hardly sufficient to support the rate of production, so that coal in general, apart from a few descriptions, is very hard to sell. Demand is slightly better for what is euphoniously called "nut" coal since the trouble two to three months ago with "egg" coal, which in many cases was too large. What is now called nut runs up to 2-in. and sometimes to 3-in. It has been bringing about $2.50 for the eastern market. Slack is rather a drug on the market and prices have softened a trifle farther. Steam slack in the Pittsburgh district is $1.30@$1.40, with the lower figure predominating, while gas slack, recently quotable at $1.50@$1.60, is now not over $1.50.

The straight bituminous trade at Buffalo is as flat as ever. A few members of the trade, wholesalers or operators, especially if they have some fair contracts, are doing fairly well, but the average shipper continues to complain. There still is some scarcity of slack, but prices remain about as before, with gas lump fairly strong.

Hard-Coal Impasse Spurs New England Trade

The breakdown in anthracite negotiations has already given the New England market for steam coal a slight impetus. Run-of-mine has not been much affected, but prices are firmer for screened sizes of all the grades considered likely substitutes. Smokeless egg and stove have mounted within a few days from $4 to nearly $6 per net ton at the mine, and several shippers are sold ahead to such an extent that they are declining business for the present. Most of the increased demand is due to a temporary shortage of substitutes in the larger centers of population; it can hardly be attributed to any special situation in this territory, although here too both the wholesale and retail trade practically ceased purchasing the latter part of December, when it seemed certain that an anthracite adjustment would be reached early in January.

For the same reason a better inquiry for imported fuel has developed. Remembering experiences in 1902, when certain factors netted serious losses on foreign coal that was purchased too late in the season, there is a disposition to insist on early loading or no purchase. More than a few of the larger retailers are without substitutes other than coke and run-of-mine bituminous, and now that they are beginning to hear from that portion of the public who take second fills at about this time they realize how strong is the preference for some form of anthracite. For ovoids, whether from Rotterdam, Swansea or Rouen, there is fairly active demand.

At Hampton Roads the spot price level is not specially changed from a week ago. There are more orders, and it is quite possible that the enhanced price of prepared may permit shippers to build up the price of mine-run. Thus far $4.75@$5 represents the market range for No. 1 coal, with occasional sales up to $5.10. On cars, Boston, the $6.50 asking figure is firmer. An active inquiry comes from small retail dealers in more remote places who have overstayed in the hope that anthracite mining would be resumed.

Demand Climbs in Atlantic Coast Markets

Demand and quotations for soft coal at New York reached the high point for nearly a year following the ending of the hard-coal wage negotiations. As soon as the announcement was made there was a flurry in demand and quotations for most grades advanced 10c. to 25c.

Low volatile mine-run coals are in most demand; a large tonnage going into apartment houses and office buildings. Screened coals apparently are not in favor.

Smokeless egg coal is quoted at $5@$5.25 and nut at $5.25@$5.50. Broad Top prepared coals are quoted at $6.90@$8.

There is a better demand for high-volatile domestic coals with prices ranging from $2.75 to $3.20.

It was expected late in the week that early this week a couple of cargoes of British and German coal and coke would arrive in this harbor.

At Philadelphia following the cessation of hard-coal wage negotiations there was a quick response in the soft-coal market. The coke market sold up so quickly that the anthra-

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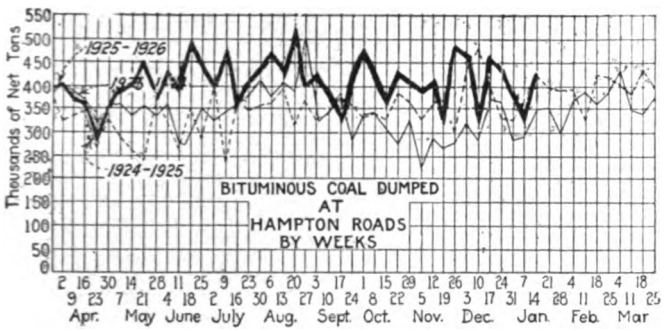

cite retailers fell back upon bituminous coal to help out. Houses handling sized Pennsylvania coals were soon sold up, with lumpy mine-run in next demand and close to being sold up at this time. There has been a gradually increased use of soft coal by the anthracite domestic trade, which is learning how to use it, and to like it.

Stirred by present conditions the general trade is coming into the market, causing a general increase in spot prices.

There has been a marked increase of New River and Pocahontas fuels to this territory recently and some houses are sold up for several weeks on the sized coals. Nut, which could be had for $4.75 a few days ago, is now commanding $6, with every likelihood that it will go higher. Demand for Fairmont sized gas coals also has gained rapidly and the same is true of the high-volatile Pennsylvania coals.

Following a sharp let-down of shipments to Baltimore territory and a shortage in the harbor during the holidays, the movement has regained full headway and prices show no distinct change from recent levels. Best grade steam coals are $2@$2.35 and there is no trouble in placing orders in almost any direction. Because of their use as a substitute for anthracite—and this use is increasing as the supplies of anthracite in cellars diminish—prepared sizes continue firm. Any real activity, as a matter of fact, is confined to these sizes. The effect of cheap European coal, especially German reparation coals released through France, is more and more apparent in the export trade. Thus far this month there has been but one shipment of coal to leave this port on foreign consignment, and that of 10,518 tons cargo to Cuba.

In Birmingham buying of commercial coal, while not specially active, is in satisfactory volume, inquiry and bookings improving some as the year advances and consumers' stocks dwindle. High quality washed coals continue most active, with a large tonnage of coking grades in demand from the ovens. Contract coal is moving well, the railroads taking about the maximum quotas. Bunker demand has eased off some, but inquiries continue to come in for extra requirements.

The weather has been more propitious for the domestic trade than last year and the mines have a steady run of orders, especially for high-grade product. Lower and medium grades, while not as active, are not sluggish, and there is no surplus of even the lower qualities. Dealers are buying in limited quantities and orders are for prompt movement.

Quotations for all grades are firm with prospects of buying being sufficient to maintain stability for some time.

The coke market has stiffened somewhat, with better inquiry and larger bookings for points in the Northwest following the advent of cooler weather. Prices have not shown any change in the last week, spot foundry grades being quoted $6@$6.50 per ton; egg, $5.25; nut, $4.75@$5 per ton ovens. Gas coke is in slack demand at $5.50@$6.

Scramble for Hard-Coal Substitutes

At New York a lively spurt in substitutes, but chiefly affecting coke, followed the discontinuance of anthracite wage conferences last week. The announcement had scarcely been made before orders began to reach the wholesale offices and in some cases were received in such volume that further orders had to be refused if delivery time was limited.

Coke prices advanced from about $10 for beehive product, f.o.b. ovens early in the week to $13 on Thursday. The following day they had fallen back to $12.50 with most manufacturers sold up for the present. This is an advance of from $6 to $7 in a few weeks.

Anthracite users are ready to put in their usual supply of coal to tide them through the first three months of the year and not now being able to get hard coal are compelled to resort to coke or some other substitute.

There are a few cargoes of buckwheat No. 1 in the harbor that are being quoted at around $11.25 alongside. Some retail dealers have small tonnages of domestic coals on hand which in some instances are quoted at $28.50 per ton. Early last week a cargo of byproduct coke which was afloat in the harbor was quoted at $16.25.

When the wage conference broke up there was an immediate scramble in Philadelphia for all kinds of substitutes, but especially coke. Offers of coke which had been disdained in the morning at $8.75 a ton, were eagerly grasped at $1 and more higher late in the afternoon. The coke market continues to rise, $12 at the oven having been reached on beehive fuel. The prediction is freely made that the price will touch $15 in a week or ten days. Low temperature for several days has brought the public actively into the market for coal of any kind.

Baltimore's anthracite trade, that was, is merely biding time. Dealers, busy selling soft coal and other substitutes, realize that by the time the strike is settled much of the late winter market will have been absolutely lost.

At Buffalo the city house-coal consumer is fairly tranquil. He thinks that he has passed through the worst of it, or at least is on the way. He has tried most of the substitutes, smoked his house up with soft-coal lump and will have no more of it. He has used coke and likes it, though agreeing that it is too high and wants hard coal to come back, though if coke comes down he may stick to it. Coke is selling well and it at once became very scarce when the hard-coal peace conference broke up. There was some show of advancing the price, but as a rule it remains at $12 delivered at the curb. Since the collapse of hard-coal peace negotiations the market for smokeless has been restricted in this market. Splints and Kentucky block will soon be sold in larger quantities as a result.

Connellsville Coke Stiffens Sharply

A week ago Connellsville coke had been showing some hardening tendency, run of oven being $4.75@$5 and prepared coke or "yard crushed," $7@$8. It continued to stiffen gradually and when news of the anthracite impasse came the market went up very sharply, being now quotable at $7.50@$8.50 for run of oven and $10.50@$11 for yard crushed.

The bulk of the prepared coke of the region is made by the installation of crushing rollers on top of Covington conveyors, which are the regular equipment for machine-drawn ovens. A little regularly crushed and sized coke is made, which commands still higher prices. It seems that the bulk of the coke from hand-drawn ovens is going out on blast-furnace contracts, and such hand-drawn coke as may be left can be broken by sledges. The region will be able to prepare nearly all the coke it makes, beyond that required to fill contracts with blast furnaces and foundries.

Blast-furnace requirements are no longer a factor in the market situation as the furnaces are covered by contracts, chiefly through the quarter. Contract requirements probably run between 60,000 and 70,000 tons a week and the limit of possibility of merchant-oven production probably is 140,000 tons weekly or thereabouts.

Foundry coke is quotable only on differential, as there are no offerings. This would make it about $8.50@$9.50.

The *Courier* reports coke production in the Connellsville and lower Connellsville region in the week ended Jan. 9 at 110,800 tons by the furnace ovens, a decrease of 3,800 tons, and 118,980 tons by the merchant ovens, an increase of 12,580 tons, making a total of 229,780 tons, an increase of 8,780 tons.

Car Loadings, Surplusages and Shortages

	Cars Loaded — All Cars	Cars Loaded — Coal Cars
Week ended Jan. 2, 1926	741,239	158,944
Previous week	701,079	122,350
Week ended Jan. 3, 1925	767,098	181,604

	Surplus Cars — All Cars	Surplus Cars — Coal Cars	Car Shortage	
Dec. 31, 1925	267,739	95,295	.....	.....
Dec. 22, 1925	186,285	63,509	.....	.....
Dec. 31, 1924	266,252	108,189	.....	.....

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Foreign Market And Export News

Trade Picks Up Slowly Following Holiday Lull In British Coal Market

In the British coal market business has been slowly resumed since the holidays. Fresh inquiry from the Continent is very limited, but there is an expanding demand from South America. Moderate inquiry proceeds from Italy and Spain, though buyers are slow in concluding business, in the hope of obtaining concessions. A tendency to price reaction was stayed by the two-day holiday loss of output, amounting to 300,000 tons. Best Admiralty large is irregular. Dry coals are meeting very little demand owing to the lull in anthracite. In Monmouthshires block vein large is a good spot. Supplies are well sold forward and prices are holding strong. For spot loading smalls are steady. Patent fuel is quieter but unchanged. Coke is slow for export but a good business passes inland.

The January inquiry at Newcastle-on-Tyne is quite good for all grades, but business is not being closed very quickly. Sellers are holding for full recent prices, and the indications point to them being at least maintained. The coke market is very steady, and the home trade is much more active than for some time past. Prices are nominally unchanged.

Production by British mines during the week ended Jan. 2, according to a special cable to *Coal Age*, totaled 4,050,000 gross tons, compared with a total output of 3,965,000 tons in the preceding week.

Slight Change in Situation At Hampton Roads

Last week business at Hampton Roads showed little change from the previous week, except that shipping was flowing through easier channels following a stormy period and the bunker trade was improving. Foreign business has been normal and coastwise trade holding its own.

Continuance of the anthracite strike was expected to bring higher prices, but no effect has been felt. Domestic coal has not advanced as yet, although there are rumors that the anthracite situation will provide the impetus for a boost in soft coal.

French Demand Strong for All Grades; Prices Advance

Demand in the French coal market was on the increase during the whole month of December both for industrial and domestic coals. This was due to the desire of French consumers to cover as much as possible of their requirements before the increase in prices expected on Jan. 1. The justification for this policy was revealed when the Nord and Pas-de-Calais collieries decided to raise their prices as from Jan. 1, 5 to 6 fr. per ton and the price of ovoids 15 fr. per ton. Many collieries, however strictly limited themselves to the delivery of tonnages due on contracts. As rolling stock has been scarce the collieries were sometimes put to the necessity of heaping up tonnages at the pit-head that were impatiently awaited by customers.

The prices of the Belgian domestic coals sold to France are 3 to 5 fr. per ton higher for January, due to the lower value of the French franc as compared with the Belgian.

Negotiations between the French authorities and the Kohlensyndikat are still in abeyance. Resort to arbitration is now being spoken of.

Canal freight rates are high, at 30 fr. Bethune-Paris.

During the first 27 days of December, the O. R. C. A. received from the Ruhr 201,785 tons of reparation coke.

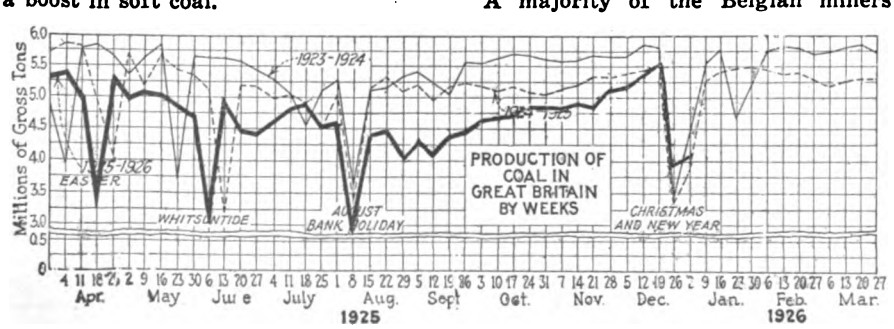
Belgian Industrial Call Better; Domestic Demand Eases

Industrial coals in the Belgian coal market show some improvement for half-bituminous, quarter bituminous, steam-raising coals, as well as for coals used by central electric works.

In domestic coals, except for anthracitic sorts, activity has rather slackened; but this perhaps is due to an insufficient supply of rolling stock.

Briquets are rather weakly held, and so also are ovoids. The prices of both sorts of patent fuel are sustained, however, owing to the rise of pitch. When the present price of briquets, which varies from 95 to 105 fr., according to grade, was first quoted, the pitch was worth 240 fr. per ton, while it is now quoted at 330 fr. About 10 per cent of pitch is used in the manufacture of briquets.

A majority of the Belgian miners have voted against a general strike and it is believed that the miners will accept the operators' proposals of a reduction of wages and continue pourparlers to draw up a new agreement.



Destination of U. S. Fuel Exports In November

(In Gross Tons)

	1924	1925
France	11,945	24,900
Italy	66,669	50,327
Canada	771,870	1,203,311
Panama	12,016	24,062
Mexico	4,505	7,312
British W. Indies	6,251	11,959
Cuba	50,794	59,758
French W. Indies	4,255	12,865
Other W. Indies	7,578	10,733
Argentina	.....	11,431
Brazil	35,656	40,927
Egypt	356	.....
Other countries	7,933	19,438

Export Clearances, Week Ended Jan. 16, 1926

FROM HAMPTON ROADS

	Tons
For Cuba:	
Br. Str. Sunpath, for Clenfuegos	2,608
Br. Str. Berwindmoor, for Havana	9,803
For Danish West Indies:	
Br. Str. General Lukin, for Curacao	4,425
Nor. Str. Leif, for Curacao	2,505
For New Brunswick:	
Br. Schr. Cutty Sark, for St. John	979
For Trinidad:	
Dan. Str. Agnete Maersk, for Port au Spain	2,925
For Brazil:	
Dutch Str. Rijndijk, for Santos	4,429
For French West Indies:	
Nor. Str. Bur, for Fort de France	6,212
For Dominican Republic:	
Nor. Str. Spes, for Macoris	1,529
For Italy:	
Ital. Str. Slara Camus, for Venice	1,996
Ital. Str. Maria Adele, for Porto Ferrajo	9,241

FROM BALTIMORE

For Cuba:	
Am. Str. Feltore, for Felton	10,518

Hampton Roads Coal Dumpings*

(In Gross Tons)

	Jan. 7	Jan. 14
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week	138,780	162,647
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	49,212	83,512
C. & O. Piers, Newport News:		
Tons dumped for week	115,366	140,948

*Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS

	Jan. 9	Jan. 16†
Pool 1, New York	$5.75@$6.00	**$6.00@$6.35**
Pool 9, New York	5.20@5.35	**5.50@5.75**
Pool 10, New York	4.90@5.20	**5.25@5.50**
Pool 11, New York	4.65@4.80	**4.85@5.25**
Pool 9, Philadelphia	5.05@5.30	**5.25@5.50**
Pool 10, Philadelphia	4.80@5.10	**5.00@5.30**
Pool 11, Philadelphia	4.50@4.75	**4.70@4.95**
Pool 1, Hamp. Roads	4.60@4.75	**4.65@4.75**
Pool 2, Hamp. Roads	4.20@4.30	*4.15@4.25*
Pools 5-6-7, Hamp. Rds.	4.00@4.10	4.00@4.10

BUNKERS

Pool 1, New York	$6.00@$6.25	**$6.25@$6.60**
Pool 9, New York	5.45@5.60	**5.75@6.00**
Pool 10, New York	5.15@5.45	**5.50@5.75**
Pool 11, New York	4.90@5.05	**5.10@5.50**
Pool 9, Philadelphia	5.30@5.55	**5.50@5.75**
Pool 10, Philadelphia	5.10@5.35	**5.30@5.55**
Pool 11, Philadelpnia	4.75@5.00	**4.90@5.15**
Pool 1, Hamp. Roads	4.75	4.75
Pool 2, Hamp. Roads	4.30	*4.25*
Pools 5-6-7, Hamp. Rds.	4.10	4.10

Current Quotations British Coal f.o.b. Port, Gross Tons

Quotations by Cable to *Coal Age*

Cardiff:	Jan. 9	Jan. 16†
Admiralty, large	23s.	*22s.6d.@23s.*
Steam smalls	14s.	14s.
Newcastle:		
Best steams	18s.	*15s.9d.*
Best gas	16s.6d.@17s.6d.	*16s.6d.*
Best bunkers	16s.@17s.6d.	*15s.6d.@16s.6d.*

† Advances over previous week shown in **heavy type**; declines in *italics*.

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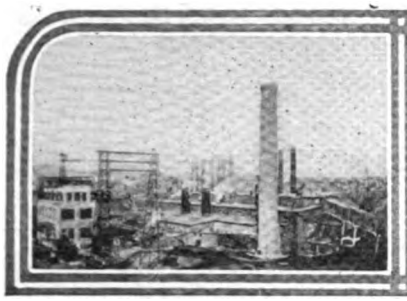
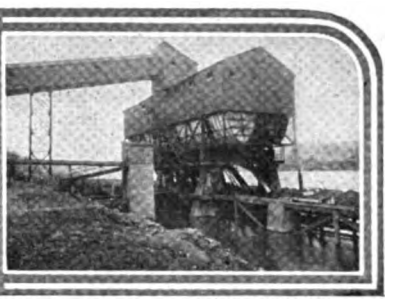


News Items From Field and Trade



ALABAMA

The new washery of the Black Diamond Coal Mining Co., at Adger, in the Blue Creek field, has been completed and placed in operation. This property was leased from the Tennessee Coal, Iron & Railroad Co., and the old Adger and Johns slopes, which had been idle for a number of years, are now producing a good daily output.

The Tennessee Coal Iron & Railroad Co., Birmingham, is about to begin construction of a $100,000 recreation park at Fairfield.

ILLINOIS

The two Bell & Zoller mines, at Zeigler, broke their record for a day's movement of freight-car loads of coal on Dec. 28, when 882 cars were moved out of Zeigler. The Illinois Central handled 447 cars, the Burlington 296 and the Missouri Pacific 79.

The Kathleen mine, at Dowell, has purchased a crusher to salvage clear coal from the inferior rock coal which heretofore has gone to waste. Thousands of tons of this inferior fuel are now piled near the mine. The clear coal salvaged will be marketed. The mine is now working steadily.

With 3,600 acres of land in Schuyler County, lying east of Rushville, under six and twelve months' option, the United States Fuel Co., of Pittsburgh, Pa., through its representative at Rushville, has given promise that work will begin at an early date in opening up prospects for strip coal mining. The company maintains offices at Danville. The company's representative has stated that they believe Schuyler County to be a rich field for this development and it is the intention of the company to ship seven large steam shovels to Schuyler County as soon as they can be removed from other fields. It is also said that the Soo railroad is making plans to secure leases upon coal lands lying north and east of Rushville. Other companies will try to lease land north of Rushville, lying west of the Burlington tracks.

INDIANA

Preliminary articles of dissolution for the Paxton Coal Co., of Sullivan, were filed recently with Secretary of State of Indiana. Will H. Hays, formerly of Sullivan, but now "czar" of the moving picture industry, was secretary of the company; Joseph Hill, of Chicago, was president, and Joe Akin, Sullivan, treasurer.

IOWA

An investigation which it is hoped will result in a clear-cut definition of the causes for discrimination against Iowa coal by consumers and the taking of steps for their eradication, has been begun by Governor Hammill's agricultural and industrial commission. A subcommittee composed of F. L. Maytag, of Newton; A. M. Huntington, of Cedar Rapids, and Morgan Lewis, of Albia, has been appointed to conduct the investigation and report to the committee at a meeting Jan. 30 at Ames. Coal operators, mine union leaders and state college experts appeared before the subcommittee in the first hearing at Ames Jan. 16, when it was reported that heating plants installed in a number of large Iowa industrial concerns are of Eastern manufacture and not scientifically adapted to use Iowa bituminous coal.

KANSAS

Leland Norris, of the Dunkirk Coal Co., one of the best known members of the younger generation of operators in the Pittsburg district, has taken on another activity as a diversion. Andrew Mitchell, one of his mine employees, having shown notable skill as a boxer, Mr. Norris has become his "Jack Kearns" and expects to promote him into fast company if he maintains the stride he has so far struck. Before becoming an operator in his own right Mr. Norris was for several years a field scout for the Crowe Coal Co.

The coal mine three miles south of LaCygne, in Linn County, in what is known as the Pleasanton field, which was formerly owned and operated by the Kansas Coal Co., has been purchased by interests headed by A. R. Rush, LaCygne banker, and operation resumed. The mine had been idle for more than a year.

Only one-fifth of the Kansas operators had made their report for the last quarter of 1925 to James Sherwood, state mine inspector, on Jan. 11 and he prepared to take steps to speed them up so he can compile the department's annual report.

The Western Coal & Mining Co. with its six Kansas mines had a total output larger than for the preceding year and smashed two production records. Its total output for 1925 was 902,347 tons, compared with 877,514 in 1924. It employed only 1,041 men in 1925 compared with 1,321 in the previous year. Developments now under way will add 400 to the number of employees for 1926. At mine No. 20 on June 30 the Kansas daily hoisting record was broken when 1,558 tons were brought to the top. This mine produced 304,210 tons of coal in 1925, which is more than ever before obtained from one Kansas mine in a year.

J. F. Klaner, Pittsburg coal operator, will leave Jan. 16 for Alaska to look after his fox ranch, which occupies an island of 14,000 acres.

Emile Turpin, operator of a coal mine near Scammon, and Miss Margaret Cassidy, also of Scammon, were married Dec. 12, but kept the event a secret until Jan. 11 and then made announcement of it.

The Bunker Hill Coal Co., capital stock $10,000, has been incorporated by W. W. Garrett, Arma, president; Joe Schaub, Arcadia, secretary and treasurer; Charles Harbort, Mulberry, and Frank Harris, Arcadia. The company plans to operate a steam shovel near Arcadia.

The Diamond Coal Co., capitalization $10,000, is to operate a steam shovel near Pittsburg. The incorporators are H. J. Feiden, president; R. D. Wilson, secretary and treasurer; William and Hilton Whetstone and J. R. Bennett, directors.

The executive board of District 14, United Mine Workers, has set Feb. 2 as the date for the run-off election on whether to retain headquarters in Pittsburg or move to Arma or Frontenac, both of which had offered inducements of a building to be used by the organization offices. Frontenac led in the election Dec. 29 but fell 393 votes short of a majority of all the ballots cast.

KENTUCKY

The Main Jellico Mountain Coal Co., of Williamsburg, is decreasing its capital from $500,000 to $50,000.

Louis A. Powell, manager at Louisville for the Malcolmson coal interests, is one of the incorporators of the new Crescent Hill Golf Club, which has arranged for a nine-hole course on property of the Louisville Water Co.

The Speaks Coal Co., Whitesburg, is making extensions to its plant and is installing new machinery.

The "Robert G. Ingersoll," one of the largest coal tow boats on the Ohio River has been equipped with a radio receiving set for use in receiving weather and radio reports of river stages, which are now broadcast from the Crosley W. L. W. station at Cincinnati. Heretofore it was necessary for river captains to land and get such information by telephone. With a

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rapidly changing stage of water such information is very necessary.

Since the Kentucky Legislature started operations, on Jan. 6, Governor Fields has advocated certain tax changes, but some newspapers charge him with sidestepping a tonnage tax on coal, especially the *Courier Journal* and *Louisville Times*, which have been arguing for a coal tonnage tax for years. The *Herald* and *Post* are upholding the Governor, holding that a tonnage tax in Kentucky, which ships most of her coal into districts competing with untaxed coal, would work a hardship on the entire coal industry of the state.

Harry A. Brooking, mine agent and Southern sales manager for the King-Kentenia Coal Co., with headquarters at Harlan, has been retained in the taking over of the Kentenia's business by the Midland Coal Sales Co.

The New Duane Coal Co., on Lots Creek in the Hazard field, has been bought by C. L. Ryly, Lexington, who owns several mines in eastern Kentucky, including the Happy Coal Co., at Carr's Fork, and the No. Four Superior, at Lennut Lots Creek. The consideration was not made known. It also was reported that the Black Hawk Coal Co. at Carr's Fork had been sold. For some time these mines have been operated under a receivership, the Louisville Trust Co. having been named receiver.

The annual banquet of the Hazard Coal Operators' Exchange is to be held in Lexington, Feb. 24.

"Safety First" was the slogan at the recent organization of the Kentucky River Mining Institute at Hazard by 150 leading coal operators and those closely identified with the industry throughout the Elkhorn-Hazard field. Officers named were: President, George P. Fitz, of the Ajax Coal Co., Lott's Creek; vice-presidents, D. T. Mitchell, of the Ashless Coal Co., Lothair, and Henry Pfenning, of the Southeast Coal Co., Seco; treasurer, Richard Samuels, Jr., of the Imperial Elkhorn, Sergent. A secretary is to be appointed later. J. E. Johnson, president of the Hazard Coal Operators' Exchange, Lexington, presided over the meeting. Regular meetings will be held each month and will rotate from Hazard to Whitesburg.

NEW YORK

Grant B. McLaughlin, well-known Buffalo coal salesman, has been made a vice-president and general manager of the Factory Fuels Corp., which takes the place of Wesley P. Montgomery & Co. Mr. Montgomery has become resident manager of the North American Coal Corp., a consolidation of several Cleveland companies.

OHIO

The Redfield Coal Co., with an operation near Redfield, it is announced will resume operations following a lengthy suspension owing to lack of demand. The Redfield mine of the Harmeyford Coal Co. also is being prepared for operation in the near future.

The Columbus Ry., Light & Power Co. will furnish power to the Scioto Traction Co., under a contract just signed. The Scioto Valley power plant at Rees, south of Columbus will be closed. The Scioto company will build a switch from its line to the immense power plant located on Walnut Creek, Groveport. This switch together with the line running to the large power plant on the Scioto River, south of Columbus, under construction by the Columbus Ry., Light & Power Co., will connect the two large power plants of the company and permit of the transfer of coal from one plant to the other by the traction line. This will mean that the coal for the two plants, amounting to several hundreds of thousand tons yearly, will come to Columbus over the C. & O. and the Hocking Valley railroads. The N. & W. will be cut out of this large tonnage. The agreement will take effect as soon as the necessary lines can be built.

A notice has been issued for a meeting of stockholders of the Peerless Elkhorn Coal Co., at the office of the company, 150 East Broad St., Columbus, for the purpose of dissolving the corporation. This company, which was a subsidiary of Hatton, Brown & Co., Inc., has been absorbed by that concern and will pass out of existence. The concern controlled several mines in Kentucky. F. G. Hatton is president and George F. Schwartz secretary of the company.

The George M. Jones Co., of Toledo, owner of Webb Mine near Steubenville, which was closed following a fire in which nine miners lost their lives, has resumed operations. The fire was extinguished by the Ohio mining department.

An effort is being made by creditors and former members of the Southern Ohio Coal Exchange, which went into the hands of W. W. Metcalf as receiver more than a year ago, to compromise the claims and settle up the receivership. Suits to collect about $14,000 have been brought against the individual operators and operating companies to collect claims, on the assumption that since the exchange was not incorporated the liabilities are individual. Other claims to the amount of $37,000 have been made but no suits filed. There are about $10,000 in dues to be collected. In the meantime W. D. McKinney, secretary and manager of the exchange, is functioning in a way, collecting data on operations in the southern Ohio field and serving the operators in other ways.

Walter A. Jones, one of the ancillary receivers of the Wayne Coal Co., of Pittsburgh, denies the report that the offices of the company will be removed from Pittsburgh to Columbus. While that matter had been considered, no action was taken and for the time being at least, the offices in Pittsburgh will be maintained. The company has 16 stripping operations distributed in various Ohio fields, the largest number being in eastern Ohio. A large operation is located at New Lexington. All of the operations are being worked and no change in the policy of the company has been made under the receivers. Fred E. Butcher, a mining engineer of Danville, Ill., is a receiver with Mr. Jones.

More than 250 miners of the Paisley Coal Co. at Oca notified company officials, Jan. 14, that they would go on strike unless paid in cash instead of by check. The company adopted the check-paying system because of the risk of hold-ups. Officials said the system would be continued or the mine would be shut down. The miners assert that they lose a day's work going to nearby cities to have the checks cashed. A half dozen other companies, employing about 1,000 men, have served notice that hereafter the miners will be paid by check. The miners have called upon the United Mine Workers' district organization to protest.

The Indian Run Coal Co., of Charleston, W. Va., has opened a branch sales office in Cincinnati in the First National Bank Building, with James C. Layne, Jr., in charge. Mr. Layne formerly was manager of the coal department of Eaton Rhodes & Co. Later he opened his own office to market Man o' War Fuels, which business he will take along with him to his new position.

Coal companies and wholesalers of Cincinnati, Kentucky and West Virginia are again prominently represented on the Cincinnati Chamber of Commerce with the re-election of George Kearns of the Kearns Coal Co. as secretary for another term.

The annual meeting and banquet of the Cincinnati Coal Exchange will be held at the Business Men's Club Feb. 2. At a meeting of the directors the following committee appointments were made: Employment, E. C. Harper (chairman), W. I. Donnelly, E. Fitzgerald and John Emslie; Entertainment, J. B. Ratterman (chairman), R. A. Dickson, Elmer Weirhake and Dan Pritchard; Membership, John F. Glaser (chairman), Fred Heitzman, John A. Emslie, Ernie Howe and Fred Legg; Publicity, R. A. Colter (chairman), Joe Tuohy, James A. Reilly and R. P. Gillham; Trade Rules, C. R. Moriarity (chairman), D. E. Elland, Thomas R. Morgan, T. H. Richardson and W. P. Slaughter; Transportation, W. J. Magee (chairman), John Callahan, T. T. Wright, John Metcalf and Ernie Howe.

C. A. Cabell has been elected president of the Carbon Fuel Co., succeeding John Thomas, who died last December. Mr. Cabell resides in Charleston and divides his time between there and Carbon, W. Va. At present he is sojourning in Florida. W. J. Magee, vice-president in charge of sales, recently returned from a hunting trip in northern Mississippi.

PENNSYLVANIA

The Oliver & Snyder Steel Co. has officially announced some changes in the operating personnel of the Oliver coal and coke plants in Fayette County, the changes already having been made effective. John H. Lane now is general superintendent in complete charge of Oliver Nos. 1, 2 and 3 mines and coke works at Oliver, Redstone Junction and Thaw. Charles H. Hinsey is chief mining engineer and assistant general superintendent of Oliver Nos. 1, 2 and

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Mining Town of Slab Fork, West Virginia

This picture, showing the well-kept homes of the miners employed by the Slab Fork Coal Co., and the company building at the left, was taken from the Virginian Ry. bridge. The Virginian serves this territory.

3 mines. J. F. Delehunt is superintendent of No. 3 mine and coke works. Clyde G. Brehm is chief electrician and assistant to the general superintendent. Thomas W. Keighley is superintendent of the Nos. 1 and 2 mines and coke works.

J. F. Joy, formerly president of the Joy Machine Co., manufacturer of the Joy loading machine, has gone to Russia as an efficiency engineer for the Russian Soviet Government. He expects to remain for several years. Mr. Joy's home was in Pittsburgh for some years.

P. J. Walsh, until recently general superintendent of the Consolidated Coke Co., is now general superintendent of the G. Corrado coal interests with headquarters at Connellsville.

C. E. Cowan, of Greensburg, chief engineer of the Jamison Coal & Coke Co. and consulting engineer of the Lincoln Gas Co., has been appointed consulting engineer for the Snowdon Coke Co. also.

The Weirton Steel Co., as part of its $15,000,000 improvement program at the plant at Weirton, W. Va., has awarded a $2,250,000 contract to the Koppers Co., of Pittsburgh, for the construction of a battery of 49 byproduct coke ovens. These ovens, added to the battery of 37 now in use at the plant, will give the steel company a total of 86 ovens. Construction of the new battery, which will be of the Becker type, will start immediately and be completed in about eight months. When the full 86 ovens are in operation the company will produce approximately 1,700 tons of furnace coke per day from 2,500 tons of coal. The new battery of ovens will include apparatus for the recovery of byproducts.

Negotiations have been concluded whereby Guy Corrado, Connellsville coal operator, takes over 1,200 shares of stock in the Indian Creek Valley Ry. held by the estate of the late Charles F. Hood of Connellsville. The balance of the 1,400 shares is owned by the Baltimore & Ohio R.R. The railroad, which consists of 21 miles of main trackage, connecting with the Baltimore & Ohio at Indian Creek, terminating at Jones Mills, taps a coal field of more than 50,000 acres of Somerset coal with 18 working mines and maximum daily tonnage of 885 cars.

John Crawford, of Pt. Marion, has resigned as superintendent of the Poland mines of the Poland Coal Co., of Pittsburgh. His successor has not yet been appointed.

S. C. Reynolds of Houston, Pa., made an address on modern mining methods at the quarterly meeting of the Pittsburgh Coal Mining Institute Jan. 16, in the auditorium of the Chamber of Commerce. Other addresses on mining problems were given. A question box, conducted by W. L. McCoy, was a feature.

UTAH

H. H. Calvin, for several years general sales manager and later special agent for the United States Fuel Co., Salt Lake City, and son of Vice-President Calvin of the Union Pacific R.R., is now head of a stationery and office supply company in Los Angeles.

VIRGINIA

December coal production in Virginia reached the highest point so far attained in the history of the field. Output for the calendar year will approximate 12,500,000 tons, which is about 1,000,000 tons more than was produced in any previous year.

WEST VIRGINIA

The Bethlehem Mines Corp. held a safety meeting in Barrackville Jan. 14, when William McCoy, of Pittsburgh, Pa., chief inspector of the Bertha-Consumers Co., spoke on safety. The films "Play Safe," "An American in the Making" and "Our National Parks" were shown.

A school of instruction of the Clarksburg District Mining Institute began to study the West Virginia state mining laws at its session Jan. 12 in the Traction Building, Clarksburg, under the direction of Charles Bashere, general superintendent of the Cambria Coal Co. The class will continue its study of the mining laws at future sessions of the class.

J. W. McCarthy, who was arrested in Pasadena, Cal., on Jan. 8 after forfeiting his bond in the federal court for the southern district of West Virginia on a charge of using the mails to defraud, has been indicted by the Kanawha County Grand Jury on a charge of obtaining by fraud nine cars of coal from the Coal State Coal Co. The mail fraud transactions charged against McCarthy had to do with his activities as a coal broker.

The sixteenth annual banquet given to its employees by the United States Coal & Coke Co. was held at Gary Jan. 16 with 235 present. Officials expressed gratification over the excellent record made at the company's mines in 1925, when 6,262,884 tons of coal was produced with only 15 fatalities. Mine No. 6 has produced over five million tons since the last man was killed. The Gary operations had an output of 1,500,000 tons per fatality and Lynch produced 1,400,000 tons for each death in the last six months.

A series of changes in the state mining districts of West Virginia went into effect Jan. 15. District No. 6 constitutes a new district, extending from Dakota to Morgantown, with Thomas Jarrett, of Weston, in charge. C. D. M. Kramer, of Clarksburg, goes to Weston. William Moore, of Morgantown, has been transferred to District No. 25, composed of parts of Boone, Kanawha and Logan counties, and V. E. Sullivan of Charleston, goes to Morgantown. W. B. Riggleman remains in the Fairmont district. The Clarksburg district has been renumbered and will be known in the future as No. 4 instead of No. 3. Other new assignments are as follows: First, C. W. Stuart, inspector, Thomas; Second, W. H. Sandridge, inspector, Grafton; Fourth, Evan L. Griffiths, inspector, Clarksburg; Seventh, V. E. Sullivan, inspector, Morgantown; Eighth, A. E. Lafferty, inspector, Moundsville,

The Blue Ridge Coal Corp., of Charleston, has been granted permission to increase its capital stock from $200,000 to $300,000 and similar permission has been granted to the Export Coal Co., of Charleston, for an increase in capital stock from $150,000 to $250,000.

CANADA

Sir Henry Thornton, president of the Canadian National Rys., has advised Premier E. N. Rhodes of Nova Scotia that the railway would take approximately 120,000 tons of banked coal in an endeavor to relieve the unemployment situation in the Cape Breton mining district. He stated that the usual requirements of the systems were from 500,000 to 700,000 tons of coal and though it was distinctly against the company's interests it was prepared to take 20 per cent of this amount in banked coal if it would relieve the distress.

Premier Brownlee, of Alberta, held

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a conference Jan. 7 with Premier Ferguson of Ontario respecting the bringing in of coal from the Alberta mines. He was assured by Mr. Ferguson that as soon as the Alberta government was able to obtain from the federal government a special reference of Alberta coal rates to the Dominion Railway Commission the Ontario government would co-operate with Alberta in a joint representation of the case. During his visit to Toronto Premier Brownlee held several conferences with representatives of public bodies and commercial organizations and found them all desirous of obtaining coal from Alberta provided special freight rates could be obtained.

Traffic

Ohio-Inner Crescent Rates to Indiana Not Unreasonable

Examiner Burton Fuller of the Interstate Commerce Commission has recommended dismissal of Docket 16138, Indiana State Chamber of Commerce vs. Ann Arbor R.R. et al. The complainants alleged that the rates on bituminous coal to all points in Indiana from coal mining districts in Ohio and from the Inner Crescent region were unreasonable and unduly prejudicial to complainant's members and localities and the traffic thereto and unduly preferential of their competitors.

The examiner, after a lengthy recital of the evidence submitted, is of the opinion that the freight rates on coal complained of are not responsible for the depressed condition of the mining industry in Indiana and recommends that the commission should find that the rates assailed are not unreasonable or unduly prejudicial, and the complaint should be dismissed.

Penna. P. S. C. Asks to Intervene In Lake Cargo Rate Case

The Pennsylvania Public Service Commission announced on Jan. 9 that it had petitioned the Interstate Commerce Commission for the right to intervene in the lake cargo coal rate case. Intervention is sought in the case of the Pittsburgh Coal Producers' Association and others against the Ashland Coal & Iron Co. and others.

The Pennsylvania Commission asks that the case be reopened for re-argument and reconsideration. The petition sets forth that the rates allowed on bituminous coal shipments from Pittsburgh to the lake ports are unjust, unreasonable and unduly discriminatory, unduly and unreasonably preferential and prejudicial and in violation of the Interstate Commerce law. Twenty-nine of the facts used in the I.C.C. report are picked out for consideration by the petitioner as the basis for its appeal.

Rates on coal from points in Illinois to points in Nebraska and Kansas are alleged to be unreasonable in a complaint filed Jan. 11, with the Interstate Commerce Commission in the case of the Illinois Coal Traffic Association, of Chicago, vs. the Arkansas Valley Interurban Railroad Co.

Industrial Notes

E. M. Staehle, formerly in charge of industrial advertising for the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., has resigned to become eastern representative of the Keystone Mining Catalogs. Mr. Staehle, who succeeds Edward B. Day, will have his headquarters at the offices of the McGraw-Hill Co., Tenth Ave. at Thirty-Sixth St., New York, which recently acquired the Keystone catalogs and directories.

C. V. Root recently joined the **Electric Service Supplies Co.,** Chicago. He is to cover the Chicago territory in the interests of floodlighting. **G. R. Scott** will cover the states of Minnesota, North and South Dakota, Iowa and eastern Nebraska. **Chas. J. Brickley** will cover the State of Wisconsin and upper Michigan. **L. S. Belding** will cover Ohio and part of Michigan. **J. F. Carper** has joined the Steam Railroad Department of the company.

The Simplex Wire & Cable Co., of Boston, Mass., has opened a branch office in the Union Trust Building, Euclid Ave. at East Ninth St., Cleveland, Ohio. Wm. H. LaMond will be manager of the new office.

The Aldrich Pump Co. of Allentown, Pa., has purchased the entire line of centrifugal pumps manufactured by the **Earl Gear & Machine Co.** of Philadelphia, Pa., adding it to the Aldrich line of reciprocating power pumps.

Obituary

Frederick Parker Wright, general manager of the Crescent Coal Co., of Bevier and Nashville, who was 75 years of age, died at Bevier, Ky., Jan. 10. Born in Massachusetts, he was taken to Chile in his childhood, staying there until the Civil War, when he returned to the United States and later served as an officer in the Union Army. His early work included a part in the building of the New York water works system and coast defenses on Long Island. He was vice-president of the West Kentucky Coal Operators Association and the West Kentucky Coal Bureau. He is survived by his wife, Mrs. Lillian Massey Wright, and one son, Douglas M. Wright, the latter of Nashville.

James Duncan, 65, moving spirit and for the last four years active head of the Mt. Olive & Staunton Coal Co., St. Louis, which is controlled by New York capital, died in New York City Jan. 9. He also was president of the Alton & Eastern R.R., Litchfield & Madison R.R., Duncan Foundry & Machine Works and the Illinois Stoker Co., as well as a director in many other railroad, manufacturing, mining, oil and banking corporations and he was interested in many concerns both in Illinois and in Oklahoma.

Charles Bailey Odle, 75, the oldest coal salesman in the St. Louis territory, died at his home in St. Louis, Mo., Jan. 9. He had been selling coal for 43 years and his territory extended all the way from Texas, Louisiana and Mississippi to the Canadian border, having traveled the South when Illinois coal was his principal fuel. For the past twenty years he had been associated with the Southern Coal, Coke & Mining Co. and was active in calling on his trade in Illinois and Missouri until four weeks ago, when he became ill. He formerly was associated with the Consolidated Coal Co. of St. Louis for many years.

Delavan C. Shoemaker, 43, president of the Shoemaker Coal Co., Chicago, died in that city Jan. 6. After leaving high school he spent two years in railroading and three years in the steel industry, taking up traffic work in 1908 with the City Fuel Co., which later became the Consumers Co., remaining with that company until 1920, when he became vice-president of the Republic Coal & Coke Co. Shortly thereafter he organized the D. C. Shoemaker Coal Co., of which he remained president until his death. He was one of the organizers and was first president of the Chicago Wholesale Coal Shippers' Association.

Alexander Reid, Jr., 41 years old, one of the principal owners of the R. & C. Coal Co., of Mineral, Kan., died in Pittsburg hospital the night of Jan. 9, after four transfusions of blood, supplied by relatives, failed to stem the ebbing tide of life following an operation several days earlier. A brother, John Reid, furnished a quart of blood for the last transfusion that was made. Mr. Reid was engaged in the coal industry in Cherokee County from his youth.

John Lindblom, 58 years old, one of the owners of the Purity Coal Co., Des Moines, died Jan. 10 at his home in that city, following a stroke of apoplexy. He was born in Sweden, came to America in 1886 and settled in Des Moines in 1890. He became interested in the Maple Block High Bridge mines with A. W. Carlson. He also was a partner with Oscar L. Olson in the Purity Coal Co. He is survived by his wife.

Association Activities

The annual meeting of the **Indiana Coal Producers Association** was held in Indianapolis Jan. 12, in the offices of the Patoka Coal Co., Michael Scollard, the association secretary, reported that the past year was the most successful in its history. All branches of its work have been maintained in a condition of healthy activity. The personnel of the officers remains unchanged: Fred S. McConnell, president; Hugh B. Lee, vice-president; Michael Scollard, secretary; R. H. Sherwood, J. T. Moorman and Wick Dixon, executive board. The organization's office is at Terre Haute.

New Companies

The Sandlick Coal Co. with a capital of $140,000 has been incorporated at Whitesburg, Ky., by P. F. Gorman and James P. Lewis.

The Brown Coal Co., Pittsburg, Kan., has been incorporated by Louis M. Brown, Homer Brown, I. N. Brown, Miss Mabel Brown and Mrs. L. A. Kooney, all of Pittsburg, to operate a deep mine near that city. The capitalization is not announced.

The Wilson Noland Coal Co., Russellville, Ark., with a capital of $15,000, has been incorporated by Albert L. Wilson, president; J. L. Noldan, vice-president, and Reece A. Caudle, secretary-treasurer.

The Trio Coal Co. has been incorporated in Madisonville, Ky., with a capital of $30,000, by E. B. Hamblett, Tom Logan and others, and has acquired the property of the Finley Coal Co., the daily output of which will be increased from six to twenty-five cars.

The Morrisonebo Coal Co., Madisonville, Ky., has been incorporated by J. N. Stinehour, W. T. Spilman and G. C. Beckwith.

Coming Meetings

Hazard Coal Operators' Exchange. Annual meeting Jan. 22, at Lexington, Ky. Secretary, J. E. Johnson, Lexington, Ky.

American Wood Preservers' Association. Annual meeting, Jan. 26-28, 1926, at Cleveland, Ohio. Secretary, E. J. Stocking, Chicago, Ill.

Midwest Power Conference Jan. 26-29, at Furniture Club of America Rooms, 666 Lake Shore Drive, Chicago, Ill. Secretary, G. E. Pfisterer, 53 West Jackson Boulevard, Chicago, Ill.

Coal Club of Philadelphia. Annual meeting, Jan. 28, 1926, at the Bellevue-Stratford Hotel, Philadelphia, Pa. Secretary, C. K. Scull, Philadelphia, Pa.

Northeast Kentucky Coal Association. Annual meeting, Jan. 28, 1926, at Ventura Hotel, Ashland, Ky. Secretary, C. J. Neekamp, Ashland, Ky.

American Institute of Electrical Engineers. Annual convention, Feb. 8-12, 1926, at Engineering Societies Bldg., New York City. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

American Institute of Mining and Metallurgical Engineers. Annual meeting, Feb. 15-17, 1926, at Engineering Societies' Building, New York City. Secretary, Dr. H. Foster Bain, 29 West 39th St., New York.

The Rocky Mountain Mining Institute. Winter meeting, Feb. 23-25, 1926, at Albany Hotel, Denver, Colo. Secretary, Benedict Shubart, Boston Building, Denver, Colo.

New England Coal Dealers' Association. Annual meeting at the State Armory, Worcester, Mass, April 7 and 8. Secretary, E. I. Clark, 141 Milk St., Boston, Mass.

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JAN 29 1926

COAL AGE

The World's Accepted Authority on Coal Mining

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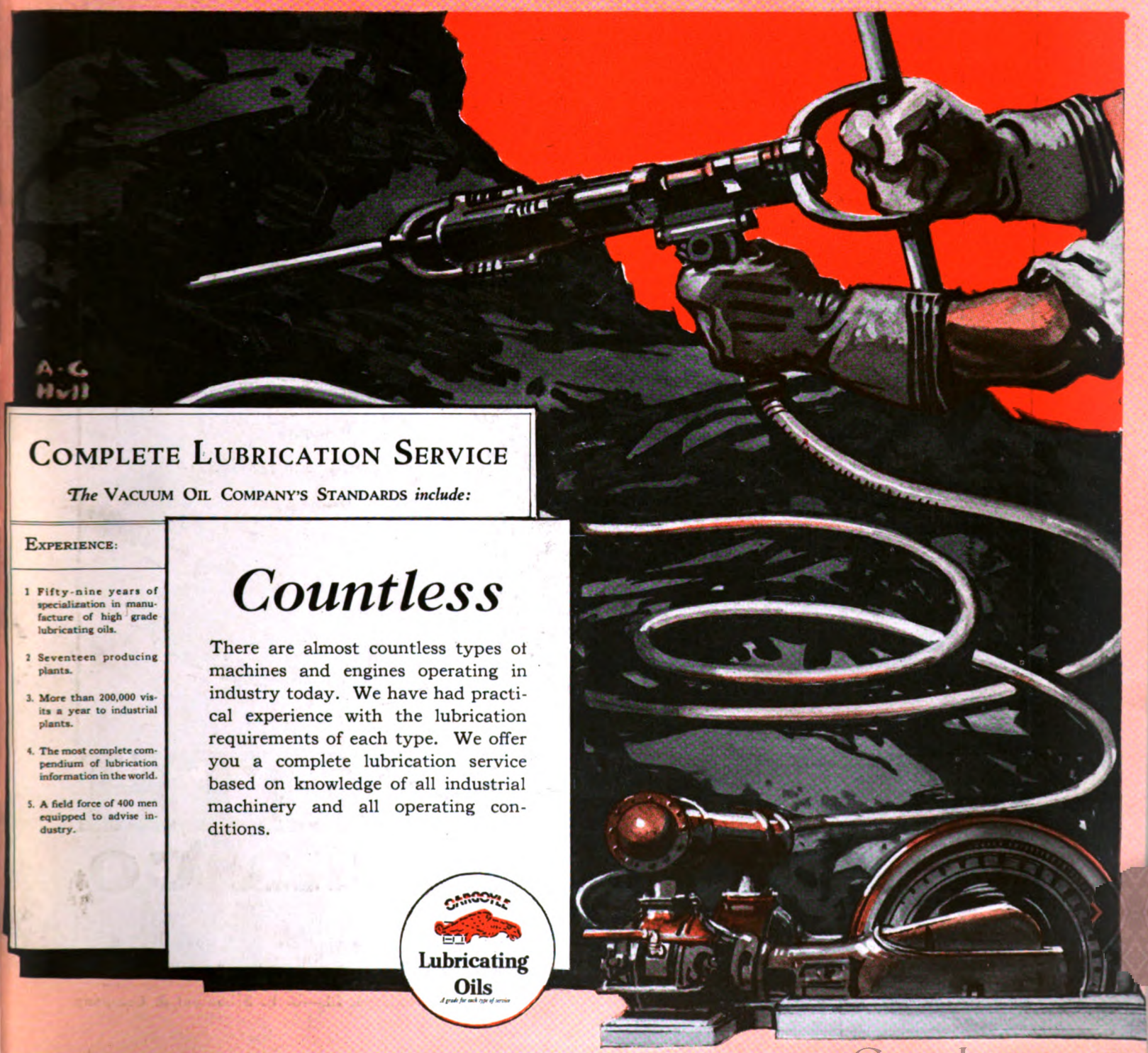

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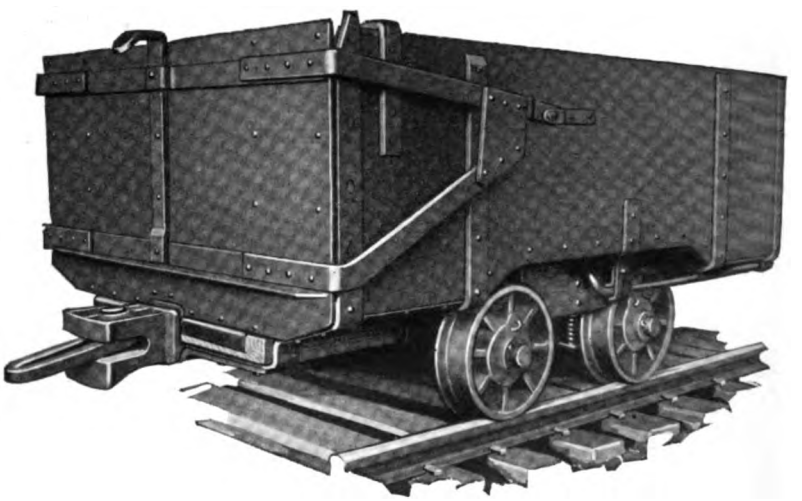

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 29 — New York, January 28, 1926 — *Number* 4

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COAL AGE

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With which is consolidated "The Colliery Engineer" and "Mines and Minerals"
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Big Wyoming Mine Now Completely Mechanized 151
BY HARRY N. TAYLOR.

Siberian Mining Advances Despite Handicaps 155
BY ALFRED PEARSON, JR.

Cable Suspensions of Steel Prove Their Worth 159

Union Pacific Coal Co.'s Code of Standards—VI 160

Anthracite Operators and Miners Make Third Attempt to Reach Agreement 166

Hands-Off Policy Wavers in Congress; Coal Legislation Unlikely to Pass 169
BY PAUL WOOTON.

Soviet Spends $2,000,000 in U. S. for Mining Machinery 168
British Output and Exports of Coal Wane in 1925 168
Philadelphia Engineer's Office Seeks Coal Bids 168
Kentucky Coal Output Gains 10,000,000 Tons in 1925 168
Slim Chance for Woodlock 168
Penna. Compensation Claims in 19 Years $108,690,846 168
Kentucky Utilities to Buy Power Company 168
Nova Scotia Wage Parley to Begin Feb. 1 169
These Illinois Mines Lost Much Business in 1925 169
West Virginia's 1925 Output Breaks All Records 169
Engineers Adopt Ambitious Public Service Program 170
A.I.M.E. Will Discuss Coal Washing and Ventilation 171
Straw Briquets Seen as Minor Rival to Coal 171
Would Probe Coke Prices in New York State 171
December Coke Production Highest on Record 171

Editorials 149
Problems in Underground Management 162
Practical Pointers 163
Book Reviews 165
Weekly Review and the Market 172
Foreign Market and Export News 177
News Items from Field and Trade 178
Traffic 180
New Equipment 181

Coal by Flume

IN NEW ZEALAND they are setting the world a pace in the transportation of coal by flume through hilly country. The Westport Stockton Coal Co., Ltd. has built such an "airline" five and three quarters miles long from a mine to the railroad where the coal is sized and shipped while the water, originally drawn from a conservation reservoir in the hills, is allowed to flow into the river which is its natural outlet to the Pacific. The story of the enterprise is in next week's *Coal Age*.

THE FLUME, a wooden trough lined with cast-iron sheets, traverses deep gullies on high trestles and bores through four tunnels. Its construction was a job fraught with many difficulties and entailed a good deal of expense. But the saving in the cost of hauling the output of the mine down through the rough country to the railroad is great. About 150 tons of coal per hour can be moved at a speed of 8 or 10 m.p.h. There are places in this country, notably in the anthracite fields, where fluming of coal has been talked of but never practiced. The New Zealand installation may inspire Americans to action.

DOWN IN ALABAMA during the past year there have been some notable improvements in coal mining plants. Some companies have been spending money in order to save it. The DeBardeleben Coal Co. is one of these. A description of what it has done at its Empire Mine will appear in next week's issue. Prof. H. S. Newins, of Pennsylvania State College, tells *Coal Age* readers some interesting things about how coal companies are growing at least a part of the 2½ million cords of wood they use annually.

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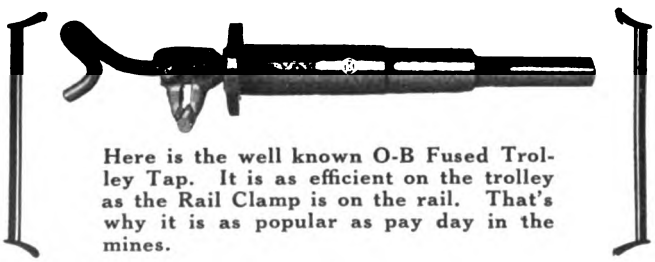

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COAL AGE

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 29 NEW YORK, JANUARY 28, 1926 Number 4

Back to Generated Power

PARTICULARLY in those regions where water for power plant operation can be obtained only with difficulty, the purchase of energy for coal mine operation became popular some years ago. Most mines in fields where the operations are fairly close together are today thus energized. Southern Illinois and southern West Virginia exhibit excellent examples of this practice.

No one has any quarrel with the electric transmission of power—it represents the easiest, cheapest, most convenient and most flexible method of conveying energy from one place to another that is known today. The cost of purchased current however varies not only with the total volume of current consumed in any pre-agreed interval of time such as a month or half month but also with the maximum demand or peak load imposed by the mine on the power system. Roughly the price paid per unit of current varies inversely with the volume and directly with the peak.

Many mines produce, besides their marketable product, a grade of coal that is either entirely unmarketable or whose production cost is higher than their marketable value. Improved stokers and the perfection of furnaces adapted to the utilization of powdered coal renders these fuels readily available for use at the mines, where no freight has to be paid on the inert content of the fuel and where, in most cases, the problem of ash disposal is not particularly difficult or costly. Several coal mine plants are now utilizing powdered mine refuse with excellent results.

Again, failure of power supply at a coal mine is always an expensive and sometimes a dangerous contingency. To guard against the ill effects of such failures many mines have found it necessary to install auxiliary or standby units, usually consisting of an internal combustion engine and generator. Such machines can be started promptly and will generate enough power to operate the fan and in most cases the man hoist, either or both at reduced speed. Handy as these mahcines have proved, however, they nevertheless raise the f.o.b. cost of the mine product.

Taking into account, therefore, the increasing power requirements of the present-day mine, the possibility of utilizing low-grade fuels, and the greater efficiency of modern steam generating and steam consuming equipment it is not surprising to find that some mines are forsaking the use of purchased current and are building modern power plants of their own. This practice is gaining its chief headway where several mines in fairly close proximity to each other are owned and operated by one company. In most cases the inter-mine transmission lines and other equipment already installed can be utilized without change other than connection to the new source of power.

The purchase of energy from an outside source has taught the mine managements to avoid excessive peak loads, as these show up adversely on the monthly power bills. This lesson in economy should not be forgotten when the power used is generated in the company's own plant.

A Public Bond

ANTHRACITE WAGE PARLEYS, twice ended in hopeless deadlock, were resumed at Philadelphia this week at the request of the miners. It would be heartening to believe that that request presages a recession from the stubborn attitude which wrecked the two preceding joint conferences. The circumstances surrounding the conference which broke up Jan. 12, however, are against such a belief. That conference, too, was called at the request of the union. But the weary days of bickering which followed revealed Mr. Lewis and his associates as unyielding as ever in their granitic opposition to the only workable plan for permanent peace proposed.

In the recent conference, the miners put forward the discredited Pinchot program unalterably rejected by the operators weeks before negotiations were resumed. In this new conference, the union spokesmen press for consideration of the Lynett plan. That plan, too, has been placed in the discard by the employers' committee, but that fact will not deter Mr. Lewis and his associates. Indeed, it was intimated before the Philadelphia sessions got under way, that the miners had nothing else to present. If that be so and if the United Mine Workers is still as unwilling to concede anything to the public demand for permanent peace, this third conference might just as well not have been called.

The Lynett plan is not without its admirable features—salvaged from earlier schemes which failed to win acceptance. It offers an immediate resumption of mining. Both the public and the operators want this. It offers a five-year contract. There is much to be said in favor of a long-term agreement. The inflexibility of wages which the plan seems to provide after the second year, however, may well cause the operators to pause. The coal industry has had the lessons of a contract which takes no heed of changing economic conditions unrolled before its eyes in the plight of the bituminous operators breaking under the Jacksonville compact.

But, even were the anthracite producers ready to escape present losses by gambling on the future, there still remains a fatal defect in the proposals outlined by Mr. Lynett. That defect is the failure to give any guarantee for permanent peace. True, Mr. Lynett has suggested that a study be made, but the recommendations growing out of that study are binding upon neither party to the contract. In the light of the history of anthracite wage negotiations since 1920, the public is in no mood to accept promises that something may be done in the uncertain future to prevent suspensions of

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production. The public wants a definite assurance of an uninterrupted supply of coal. Arbitration when direct negotiations fail is the only way yet suggested by the wisdom of man which will give that assurance.

There are public rights in the present controversy which neither operator nor miner may dismiss without inviting disaster. Both sides have appealed persistently for public support and sympathy. In effect, if not in words, the anthracite operators have asked the public to put up with the discomforts and the inconveniences of the strike as the price the public should pay to outlaw future strikes. The public is carrying out its part of the bargain in good faith and, for the most part, with good humor. The operators can afford to do no less.

Studies of Lung Diseases and the Coal Miner

IN R. R. SAYER'S new bulletin on "Silicosis Among Miners" the coal mining fraternity will find only sources of congratulation. The coal miner seems not only not to be subject to the disease but also to acquire a modified immunity from it. "Men," says Dr. Sayers, "who have worked in certain coal mines for several years seem to be less susceptible to silicosis than the average man. According to some investigators, animal experiments indicate that coal dust has this effect."

The use of the word "certain" seems, however, to be more than the scientist's habitual caution. A tabulation shows that in Colorado, Indiana and Missouri the average coal miner is less susceptible to tuberculosis, so called, than the general population and still less so than metal miners. In Illinois the average coal miner is shown to be a trifle more subject than the general public to tuberculosis, but the difference is so slight that it may prove nothing. However, in the northern part of Illinois is a number of mines where much brushing is done because the coal is thin, and perhaps—this is merely supposition—this may explain why Illinois rates are being less favorable than those of the other states named. But Missouri is also a thin-coal state with much rock brushing and bottom lifting, so here again a question arises. What gives the Missouri coal miner his low tuberculosis rate? Perhaps the nature of rock brushed or lifted.

Influenza is less rife among coal miners than among the general public in Colorado and Illinois. In Indiana and in Missouri, a state with low coal and much brushing, this disease is far more prevalent, the ratio in Missouri being roughly two to one and in Indiana seven to four. Pneumonia among coal miners in all four states is less prevalent than among the general public. Where much rock work has to be done and much free silica is in the rock, and especially where the work is done by machine drills, the coal miner doing the same kind of work as the metal miner is subject in that measure to his risks.

Waning of Coal as Heating Fuel

AS BEARING upon the question of the future use of coal for heating purposes, it is estimated by a real-estate expert that around 25 or 30 per cent of the buildings in New York have changed their heating fuel from coal to petroleum, a change that has come about in the last two years. Most of the new apartment houses are installing petroleum heating systems, thereby avoiding the very considerable problem of disposing of ashes. Of the older buildings, the Equitable Building, as an example, has changed entirely to petroleum as a fuel for heat and power. This is a tendency which coal producers must visualize squarely in planning the future marketing of their product. Apparently the only way that it can be partially checked is by a substantially lower price for coal.

Cheaper Coal and Larger Tonnage

AS THE RESULT of coal shortages and resulting high prices, consumers have learned to burn their fuel more economically. In consequence, the demand for coal has not progressively increased at its former rate. Will decreased prices, due to lower wages and greater mechanical efficiency in mines, secure the business that has been lost? There are many reasons to believe that they will, though there are some factors which may interfere.

If regulation of public utilities should take into consideration lower fuel costs as a basis for reducing rates on power, some reduction may actually result; not much, however, since the greater part of the gross revenue of power companies is allowed by the bodies that regulate them because of the interest cost on installation and the cost of its maintenance, and not because of the expenditure for coal. Hence, it appears likely that there will not be sufficient lowering of electricity rates to greatly stimulate thereby the coal industry.

But there are new possibilities in the development of heating by steam. Private garages that are now unheated will doubtless in time be provided with artificial heat. When that is done, the car will be ready at all times to start out without the delays which are so aggravating to motorists who have a cold garage. Private greenhouses are a less important example of fields that may be expanded. They are more numerous in European countries than in the United States. Both the purchase and culture of greenhouse flowers are extravagances so long as coal is costly; but with a decrease in cost of heating the demand for coal will increase. The farmer, also, may gradually forsake the stove and heat his whole house with a furnace; if a lower price for coal should offer an incentive.

Lowered coal costs will inevitably in short, result in increased coal sales; and, concurrently, general industrial expansion will eventually aid the curve of coal output to move upward.

Public Responsibility for Mine Safety

ACCIDENTS in coal mines are a matter of public as well as private responsibility; accordingly it becomes essential to ascertain what means can be taken to make mines as safe as possible. In order to avoid needless multiplication of effort, it is best to have the work performed by a single, adequate staff of men such as that of the U. S. Bureau of Mines. Since foreign nations have similar problems, it is well to arrange for co-operation, so as to make the information of one nation available to all. This is being done; Great Britain is now co-operating with the United States; and in time France, Belgium and Germany may pool their efforts with ours in a common endeavor to prevent the toll of life that mining coal levies.

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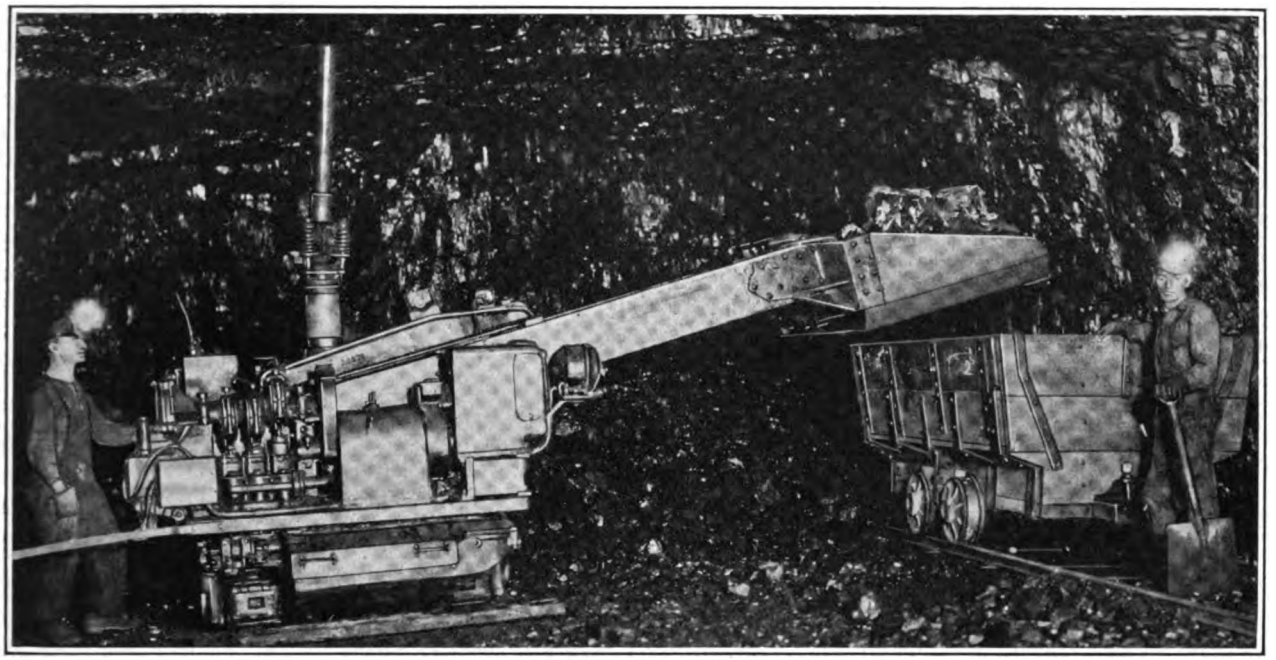

Big Wyoming Mine Now Completely Mechanized

Acme Gets Nearly 200 Tons per Day from Loading Machines in Wide Work and 160 Tons in Entries—Ideas in Haulage and Shooting Are Perfected

By Harry N. Taylor
President Sheridan-Wyoming Coal Co.

CONVERTING the Acme mine, a 3,500-ton operation in Wyoming, from a hand-loading operation to one completely mechanized even to its drilling was accomplished last summer by the Sheridan-Wyoming Coal Co. with a sufficient degree of success to make the story of the mine's performance since then interesting to the coal mining fraternity. In a 47-ft. seam of coal the middle 11 ft. is mined with certain changes from the shooting and haulage system previously used so that today eight Goodman shoveling machines load the entire output of rooms while four Joys handle all coal mined in entries and room necks and put in part of their time in rooms. During last November the Goodmans averaged 196.75 tons per day and the Joys 160.8 tons. It is hoped, with further experience, to raise these outputs. More machines are to be added soon so that the daily capacity of the mine can be increased about 1,000 tons.

After the company had fully decided to install machines in the mine, the next step was to prepare the operation for mechanical loading. As no large mines in northern Wyoming were completely equipped with mechanical loaders, there was no opportunity to profit by the experience of others. As a result, it was necessary for the management to work out a system suitable to the loaders that were to be installed.

The chosen mine employed about 275 loaders. The bed has an average rise to the northwest of about 2 per cent. This pitch is not regular, and in some places frequently runs as high as 6 per cent. The work is laid out so that the rooms are driven to the rise, thus avoiding trouble from water.

Horses were formerly used for gathering at the face, and as gathering locomotives were to serve some of the loaders, it was found necessary to rearrange practically all the panel entry and room track in the mine. Twelve-foot room switches had formerly been used. It was found that it was necessary to lengthen these to 16 ft. on account of the longer wheel-base used on gathering locomotives and loading machines. It was decided to lay the mine out in three machine sections, putting four machines in each section, with a foreman in charge of that particular group of machines. Heavy steel and trolley wire were extended into these sections, and a 25-car parting installed in each panel.

In order to expedite the work of installing the machines, the mine was closed down, and all hand-loading was stopped. The work of rearranging the track, extending the haulage, and putting in partings, was begun on June 1. It was decided to install two types of loaders—eight Goodman power shovels for loading room coal, and four 5 BU Joy machines for driving entries and room necks.

It was decided also, after a fair trial, that the best method suited to existing conditions for serving the loading machines was to put a 5-car parting in each room—as shown in Fig. 1. It also was found that the quickest and most effective means for changing cars at the loader was to keep a horse or mule at this parting. As soon as a car was loaded, it was dropped down onto the parting where the grade is suitable, and

In the headpiece is shown the type of loading shovel that is used in the rooms. Eight men normally constitute the crew, including undercutter machine men, locomotive driver, shot-firers and the like. During the month of November last these machines averaged almost 200 tons per shift each. By enlarging the mine cars on hand this increased production was handled efficiently.

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Entry Driving

All narrow work is driven with this type of machine which is well adapted to operation in close quarters. One advantage of machine loading is that these machines are able to dig standing shots or those that have been shot so lightly that the coal is not broken down and rolled out on the floor as is necessary for best results with hand loading. Caterpillar mounting makes it possible to operate these machines anywhere without the aid of tracks.

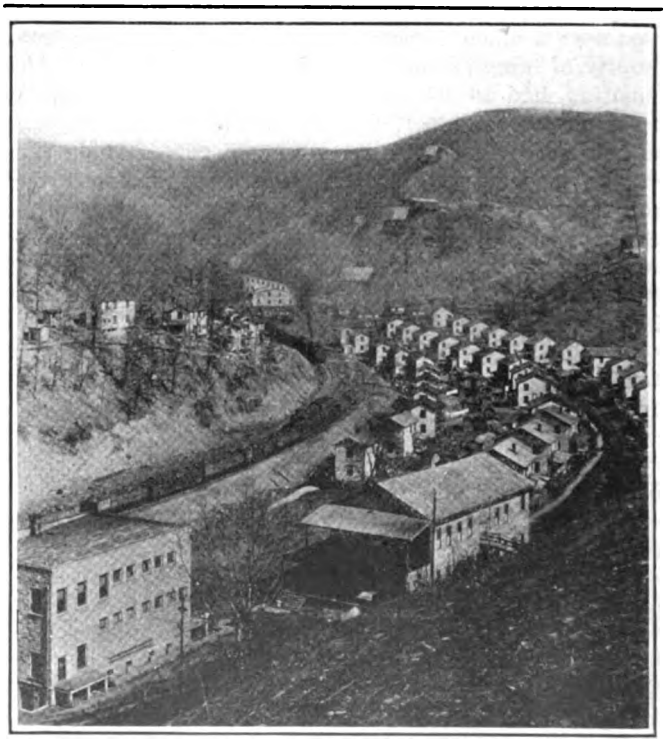
extend the transmission lines. This mine has two well equipped fireproof generating stations underground. Station No. 1 is located on the main slope, 4,000 ft. from power house, and No. 2 station 8,000 ft. from it. Together they have a total capacity of 750 kw.

In order to be well prepared to take care of all mechanical difficulties, the company sent its master mechanic, Mr. Shott, to the factories where both types of loading machines were built. Mr. Shott spent a month in these factories, and actually worked in assisting to assemble the loaders and familiarized himself with everything pertaining to the construction of the machines. The Sheridan-Wyoming Coal Co. considers it thus made a good investment, as the men at the mines have little trouble in locating and correcting any mechanical difficulties that arise.

The tonnage produced by the different machines, no doubt, will be of much interest to many readers. While all of our machine operators are practically new men on this class of work, the tonnage obtained so far is fairly satisfactory. Taking November, for instance, the production per machine in room work averaged 196.75 tons per day. Machines engaged principally in loading entry coal naturally do not produce quite so high an output, 160.8 tons per day being the average. It is well to mention here that about one-third of the coal loaded by these latter machines is taken from rooms. As there is not enough narrow work to give them a full day's run in their district, and they usually finish out each shift loading room coal.

This company has a well equipped machine shop, which enables it to perform practically all of the ordinary repair work that is necessary around a coal mine. This shop contains one 20-in. lathe for ordinary work, one 36-in. lathe for turning down locomotive wheels, a drill press, power saw, grinder, air compressor, electric and acetylene welding outfits, as well as an acetylene generator, and a 30-ton press.

Adjoining the machine shop are the car and blacksmith shops where the company builds all its own pit cars. Equipment in this shop is complete in every detail for doing this class of work. Repairs to all electric equipment—such as rewinding armatures, and the like—usually is performed in the machine shop. Also, a room adjoining one of the generator stations in the mine is fitted up for light repair work. Both the machine and car shops are equipped with independent motors, thus eliminating line shafts and economizing in power.



Hard-Burly Mine of the Hardy Burlingham Mining Co. in Kentucky

This view of the mining town of Hardburly, Ky., shows the village and in the background the outcrop of the Hard-Burly drift mine high on the hillside. The modern four-track tipple may also be seen. Here shaker screens, picking tables and loading booms comprise the preparation equipment. Run of mine slack, nut, egg and block sizes are shipped from this mine which is served by the L. & N. R.R.

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Siberian Mining Advances Despite Handicaps

Frigid Temperatures and State Regulations Made Coal Operations Primitive in Kuznets Basin But New Methods Are Now Improving Output per Miner

By Alfred Pearson, Jr.
Toledo, Ohio

COAL MINING in Siberia suffers many limitations, by reason of conditions both natural and state-imposed. These are responsible for practices that will seem peculiar to the American reading this article descriptive of the Kemerovo mines in the Kuznets basin near the city of Tompsk. But when it is considered that winter brings such extremes of low temperature that mechanical ventilators cannot be used at coal mines unless the developed area is huge, and that legal restrictions intended to make mines safe often merely make trouble, it is easier to be sympathetic with Russian methods such as are now finally giving way to big-scale practices. These, no doubt, will remedy the primitive haulage and hoisting schemes of Russia and will bring up the tonnage per man to a level comparable to that in countries where the industry is less hamstrung.

The coal in most Russian mines pitches steeply. This makes machine cutting difficult or impossible. Therefore, in comparing the man efficiency of Russian mines with that obtained in other countries, it is necessary to use pick mining as a standard. During the period in which I helped direct operations at the Kemerovo mines in the Kuznets basin, we tried chain cutting machines on all grades and found the maximum operating limit to be 35 deg. when cutting down the pitch, 40 deg. up the pitch, and 45 deg. across the pitch; with 35 deg. the limit of practical application.

The system of mining is, in general, a form of longwall. The step system on steep pitches offers such a good opportunity for the use of explosives that I believe machines should not be used on steep pitches except in narrow work.

Kemerovo mines, owing to the byproduct plant operated in conjunction with them, are now the keystone of the Kuznets basin arch. These mines have been producing for nearly twenty years. The coal is from the middle measures and is all of a medium-volatile grade. The top seam, or Kemerovo, is the coal wanted primarily for the ovens. It is from 12 to 15 ft. thick. An analysis shows 1 per cent sulphur, 10 per cent ash, 30 per cent volatile matter, and a heat value of 7,200 calories per kilogram (12,960 B.t.u. per lb.). The roof is a weak clay shale, and the bottom, clay. The seam is divided into four benches. The top bench is uniformly about 7 ft. thick and contains only about 9 per cent ash.

Originally only this bench was mined because its quality is above that of the other coal. In the course of some experiments it was discovered that, as loaded into railroad cars, the lower grade coal was no worse than the higher grade. Investigation revealed that so much of the top got mixed with the coal during mining operations that when it was shipped it contained 16 per cent ash. Detailed analyses of the various benches showed that the worst of the lower coal was the bottom bench, which is about 3 ft. thick. A mixture of all the coal above this stratum showed only 10 per cent ash. Since that time about 1 ft. of coal has been left up to hold the roof, and, by using 10-ft. props, practically all the good coal is recovered without seriously degrading it. The average, however, runs too high in ash, so the next seam is mined to reduce the ash content and make a cokeable mixture.

The system of mining followed in working the Kemerovo seam (Fig. 2) is typical of Russian practice. Slopes have been held in small favor in Russia, so this mine was opened by a circular shaft 16 ft. in diameter and 300 ft. deep, notwithstanding the fact that the coal outcrops under the surface drift and lies on a pitch averaging 45 deg. The drift is about 80 ft. thick.

This is the second part of an article the first installment of which appeared in the Nov. 26, 1925, issue of *Coal Age*. The author was in charge of mines for the soviet government in the region he describes during a period following the war.

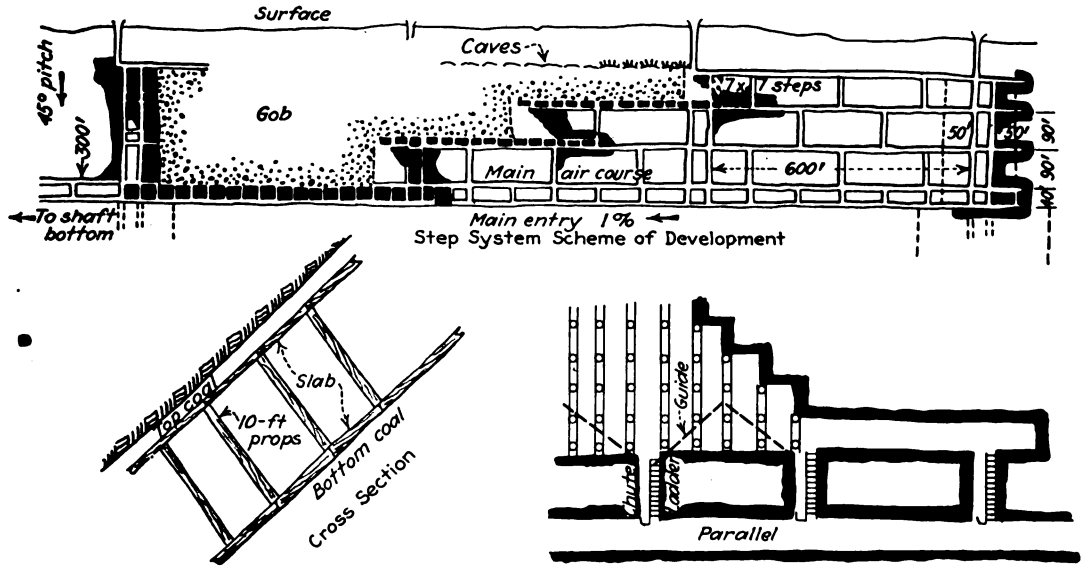

FIG. 2
Kemerovo Workings

This shows the details of the mining method followed in working these pitching measures. About one foot of coal is left up to protect the top as well as nearly all of the bottom bench as this is high in ash. Props approximately 10 ft. long are used. These are set on a rounded wooden slab are capped with another slab. Although the timbering is heavy the quality of the woods available for this purpose is poor.

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Top Works

Here is shown the central mine tipple and headframe at the Kemerovo property which Mr. Pearson operated for a time. In the foreground is the dynamite house. Safety law limits the storage of explosive. The building must be 300 ft. from any other building, must be surrounded by an earth barrier and be protected by a lightning rod on a pole. The author is shown standing at the left with his mine superintendent.

It consists of 7 ft. of soil, 20 ft. of gravel and about 10 ft. of clay, the remainder being a layer of gravel and one of sand, these strata being of about equal thicknesses.

The shaft is concrete lined to its full depth and has steel buntons. The cages travel on two 120-lb. steel rails laid on one side like a railroad track. The shaft bottom is midway between the second and third beds of coal in a hard, fine-grained, gray sandstone. It will be seen that, should it ever be deemed desirable, a broad gage mine car, could be used only in connection with skips. This is because of the small size of the shaft. The side guide construction makes a skip design extremely difficult.

The bottom layout is cramped, 15-ft. radius curves being used. The main tunnel is lined with concrete in some places 2 or 3 ft. thick and reinforced. A cross tunnel is driven in both directions to the two coal beds.

In the plan adopted after the mines came under my direction, a main haulage line is laid in the third bed protected by the sandstone top from the squeezes and fires which are a real menace in the second bed. Cross tunnels are driven every 1,000 ft. and the track in the two beds withdrawn following extraction of the coal. With this plan the entry in each bed becomes a panel haulage way. It is accompanied by an air course on 40-ft. centers.

Driving Upcast Chutes

A pair of upcast chutes are driven from the entry to the top of the coal seam on 40-ft. centers. One upcast is divided to provide a manway and a timber chute, the other is used for coal. These places as well as all other narrow work are timbered with 3-piece sets of round timber. Usually a 10-ft. crossbar is used, the posts being battered in the typical entry form.

These pairs of upcasts were originally 300-ft. apart from center to center, but this spacing was later changed to 650 ft. One of these passages was continued through the gravel to the surface, and is now used for air, men and timber. At suitable intervals parallels are driven on the strike, off of these upcast chutes.

Originally the parallels were driven on 90-ft. centers, this distance having been chosen to correspond with the roof break. Recently this distance was cut to reduce the size of the gangs of men employed. The top parallel is driven just under the gravel. A 650-ft. panel is developed before any extraction is begun. Next, a companionway is started parallel to, and 25 ft. away, center to center, from the other strike entries and connected by cross cuts on 35-ft. centers, beginning at the top horizontal section separated by the parallel. This place is not timbered like an entry, but instead is temporarily supported by props. It is kept ahead so as not to be affected by work in the pillar area. After sufficient advancement is made in the companionway, men are started working up the pitch, in effect, widening the chute. Each man is allotted from 7 to 10 ft. of face and is kept a definite distance ahead of the next miner, thus maintaining a series of steps on an angle of 45 deg. across the panel.

Explosives Too Expensive

Although these steps offer ideal places for "bumping off" the coal, very little use is made of explosives, for the reason that their high cost offsets their advantages. Approximately double the output per man could be obtained by shooting the coal. When the top shows signs of working, the line of props immediately behind the face is boarded up and a hole shot in the roof of the back entry to allow the gravel to run into the excavated area.

The timber available is of poor quality. Poplar, pine, and balsam comprise the supply. Props are set in rows extending up the pitch. These rows are on 6-ft. centers, and slabs are used as caps and sills. The coal from the faces descends by gravity to the chutes, and is there run into small buggies, which are trammed by hand to the main chutes. As soon as the roof has settled, work is started in the panel below, and so on until the whole face is in operation.

The second seam, which is 30 ft. thick is reached through 50 ft. of clay. Soft top, the fact that the coal fires readily, and the adverse conditions encountered made it a difficult mining operation. The development work is similar to that employed in the upper bed, but in extracting the pillars special methods have to be used. Originally the full bed was extracted by widening the chutes at the bottom and working overhand but the coal squeezed to one half its normal thickness and heated so badly that this method had to be abandoned. It was found necessary to work the coal simultaneously

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on about 50-ft. centers, in order to make extraction rapid enough to prevent the squeezing and heating.

The present method is to drive two or even three chutes on 50-ft. centers, then start working on the strike, taking out the full bed between the chutes. The area is back-filled as soon as possible by another crew, the miners meantime working in the opposite place. The next slice of 7 ft. is taken out over the backfilling and the process repeated until the next backfilling is necessary. This is a tedious and expensive method, but as yet represents the most practical plan offered. These methods were developed by the Russians.

Recently an attempt has been made to apply the square-timber set, the idea being that a more rapid extraction could be attained, resulting in the elimination of some of the backfilling. Better timbering would also assure safer working conditions.

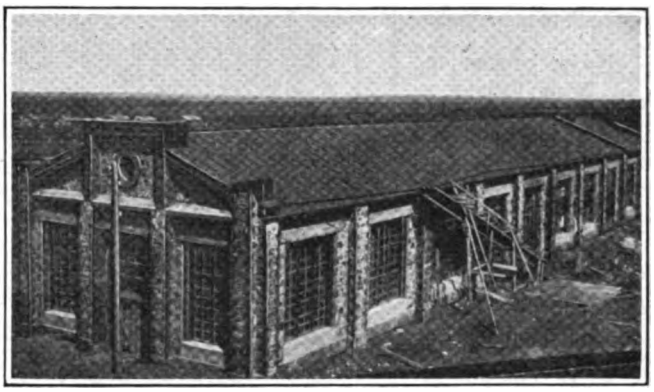
The backfilling proved to be a difficult problem. At first the gravel was drawn from above, the same as in the other bed, but so much was used that the layer of clay was broken and the mine flooded. This caused great expense and resulted in several accidents, so galleries were thereafter driven in the gravel, tapping the bed at frequent intervals, with the idea of not straining the clay. This is really a sop to the miners and the public rather than a sound operating practice. Breaking of the clay is inevitable, therefore it is extremely doubtful if flooding can be entirely avoided.

New Method Works Well

An effort is also made to mine the hanging wall immediately over the excavations. This looks like a possible solution of the problem. Fig. 3 illustrates the old method.

In actual practice it was found that on account of its softening effect on the coke, only a limited quantity of the product of the No. 2 bed could be added to the mixture. An analysis of the coal indicates a trace of sulphur, 6 per cent ash, 35 per cent volatile, and a heating value of 7,200 calories per kilogram (12,960 B.t.u. per lb.).

Fortunately, it was found that the third bed would provide the necessary hardness in the coke if 10 per cent or more of that coal was added to the mixture. This bed is 6 ft. thick, has an excellent roof and analyzes 12 per cent ash, 23 per cent volatile, 7,200 calories per kilogram (12,960 B.t.u. per lb.). It presents no difficult mining problems and the system followed is essentially the same as that employed in the top bed.



Shop Building at the Kemerovo Plant

This general mine and repair shop was still under construction when this photograph was taken. It is of brick and stone with concrete sills and a tin roof.

Underlying these beds and within reasonable tunnelling distance of one another there are known to be ten other beds of coal of commercial thickness, but of unknown quality.

Development of Kolchugina Mine

Fifty miles south of Kemerovo, Kolchugina Mine works four, and has developed four more beds supposed to lie about 1,000 ft. under the Kemerovo coals. The beds lie on a maximum pitch of 20 per cent, and are reached by a 400-ft. shaft. Kolchugina coal is all high volatile and low ash. The beds worked are all about 5 ft. thick. The mine was first developed by driving entries on the strike on 600-ft. centers, with cross entries on the maximum pitch, on which are operated endless-rope hauls of German design. These are impractical in that cars can be caged only at the top and bottom. The upper levels have to serve the cars onto the level below, thus in some instances the cars are caged and recaged four times. The hauls are now being redesigned to extend the full height and permit the caging of cars at intermediate points. For efficient operation the mine should be equipped with electric hoists.

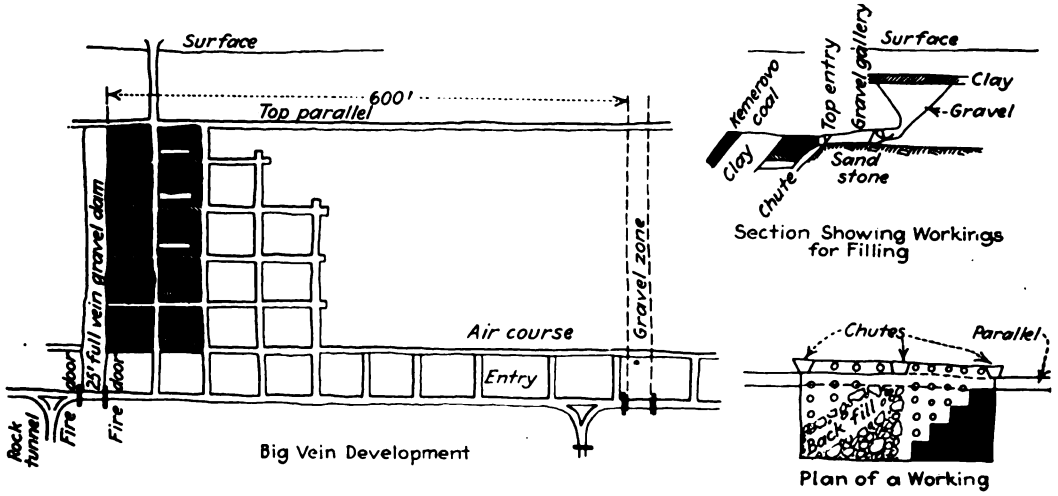
At first the bed was worked by driving stalls up the pitch, the pillar then being drawn back. The coal was loaded into sleds which were pulled by hand to the entry. There it was dumped and loaded into pit wagons which had been lifted off the tracks so as not to interfere with through traffic. The sleds held one-third ton and the wagons one-half ton.

The working plan has been changed since to develop

FIG. 3

Plan of Workings

These beds pitch steeply. This complicates mining operations especially as the lower bed squeezes, heats and fires readily. Because this coal is prone to this firing it is necessary to provide gravel-filled zones or dams at regular intervals to arrest the course of a fire if one should start. Gravel for this purpose is procured from the surface drift above the subterranean outcrop.



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Water System in Mine Village

There are problems of keeping water liquid in the frigid Kuznets region. Here is shown a pump house and tank inclosed within a log structure. Distribution through the village cannot be made in pipe lines. It is difficult to sink them below the frost zone. Therefore the water is delivered by this type of "tank wagon" — a barrel on sled runners.



a V-shaped face in steps. This was a natural modification of the step system applied to lighter grades, and reminds one of the V-system developed in West Virginia. This new system has the advantage that it concentrates a sufficient production to warrant the installation of a rope and thus stop the sledding of the coal.

Future development will space the flat entries on wider centers, the stalls will be driven on the strike, and chain cutting machines used.

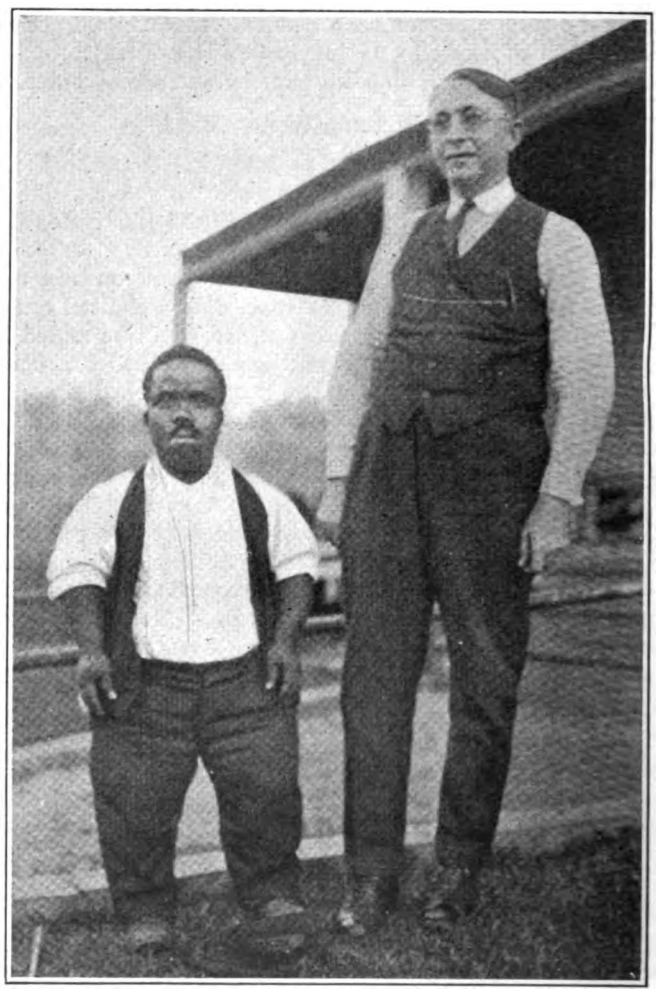
Seventy miles south of Kolchugina the lowest measures are worked. These coals are high quality sub-bituminous. The beds are 60 ft. thick and are worked like the thick beds at Kemerovo. The full thickness of the measure is extracted to a height of 15 ft. for a distance of about 60 ft. This area is then backfilled while the face is advancing, as in the Kemerovo bed. Following the backfilling a 15-ft. slice is worked above it. Extreme care is exercised in timbering. The face is advanced and backfilled alternately, the process being repeated until four steps have been started. These four steps are then continued and back filled until the entry is worked out.

NEW SYSTEM WOULD CUT COSTS

In view of the hardness of the coal and the excellent roof I was not impressed with the need for the backfilling, but believe that if the square-set system were adopted and the thickness of the slices reduced, the cost of getting out the coal would be reduced in substantial degree.

The only other mines operating in this field are those on the Trans-Siberian R.R. There are but two, and both are old plants from which most of the coal has been worked out. So far as mining methods are concerned, nothing is to be found differing much from those already described. The conditions at these mines are difficult for the reason that the measures are badly distributed, and the beds pockety. These two plants operate in the same bed as that worked at the Kolchugina mine.

In my opinion the Russian government is even now ready to grant concessions on a basis that will permit profitable operation. Coal mining offers to Americans as good an opportunity as any Russian industry, and the Kuznets basin is the preferred location. No doubt an American organization with American equipment would be successful in mine operation. Old plants however, should be avoided. A full staff of foremen and a few key workers to train the natives will be needed if American methods are attempted.



He Fits A Thin Seam

In most other pursuits of life, a man of Sam Snider's stature would work at a decided disadvantage. But Sam is at no disadvantage as a coal loader in the Mulga (Ala.) mine of the Woodward Iron Co. Sam's height of 42 in. admirably adapts him to this mine, in which he can stand erect with comfortable assurance of not bumping his head. The average working height of about 54 in. is to him like that in a 7-ft. seam to the average man. Sam is thirty-four years old. The weigh sheets indicate that he is a better loader than the average. E. D. Clark, superintendent of the Mulga division of the Woodward Iron Co., is shown standing beside Snider.

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Cable Suspensions of Steel Prove Their Worth

NO STANDARD form of suspension for borehole cables has ever been generally adopted. Home-made cable clamps are more common than factory types, and there are about as many types of home-made clamps as there are mines using them. Even at one mine two or more methods of clamping can sometimes be seen; nevertheless, progress has been made in many mining regions toward more substantial construction.

An example is the Mulga mine of the Woodward Iron Co., at Mulga, Ala. Here two 2,300-volt cables are carried into the mine through separate boreholes located several thousand feet apart. One of these cables supplies power to a 600-kw. converter equipped with full-automatic control, and the other serves a hoist which handles mine cars on a rock slope leading from the normal mine level down to the coal deposit of a displaced area.

In the accompanying layout of illustrations, the one at the left shows the clamp and suspension of the substation cable. This borehole is 385 ft. deep. The clamp, which is 42 in. long, is made from 2x7-in. mild steel. Through the center is a circular groove which, in each side, is slightly less than a semi-circle and whose radius is about equal to that of the cable. This insures a uniform clamping.

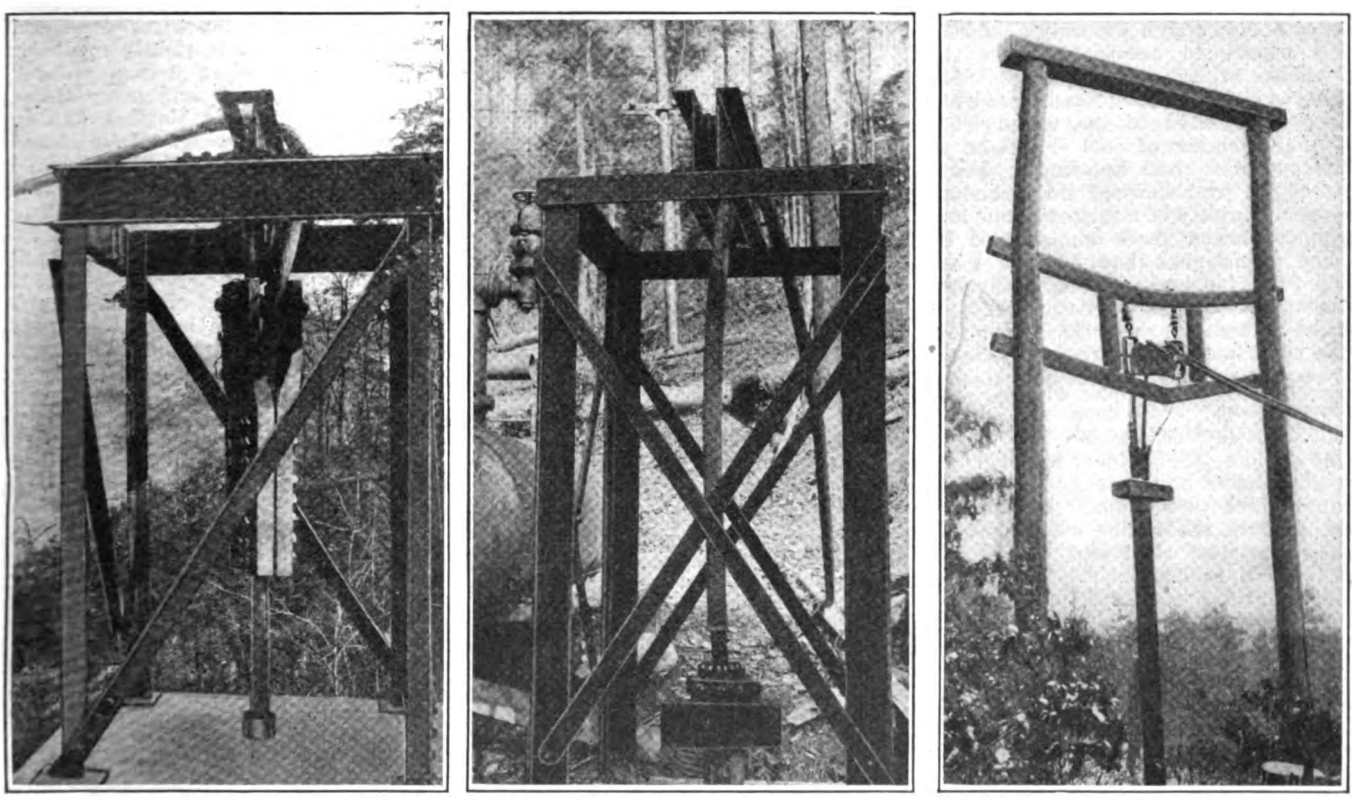
The other cable suspension of the Mulga mine is shown in the center picture. This borehole is 275 ft. deep and the cable is a three-phase No. 4 B. & S.; insulated for 5,000 volts working pressure. At this borehole the weight of the cable is taken by the casing, which extends about 12 in. above the concrete.

Sitting directly on top of the casing is a 6-in. grooved steel clamp. On top of this is a collar over which the individual wires of the armor are turned back about 4 in. A smaller clamp securely holds the ends thus turned back around the outside of the collar. The upper end of the collar has rounded corners so as to prevent sharp bends in the armor wires. The channel-structure clamp, at the top of the steel frame, serves only to hold the cable in a fixed position above the borehole.

Wooden Support Breaks

As a contrast to these apparently-everlasting suspensions of the Woodward Iron Co., the third photograph shows a wooden suspension at a coal mine in another state. Here, two 750,000 circ.mil., single-conductor, rubber-covered cables are held by individual clamps and by resting over a round block of wood. The wooden frame of the suspension broke down after five years service allowing the weight of the cables to be taken by the clamps alone, which, at the time the picture was made, were resting on the end of the casing.

The idea of the clamp and roller suspension for this class of cable appears to be a good one. The clamps are attached by messenger to the end-frames of the roller, thus tending to hold the roller, or round block, from being pulled to one side. The chief trouble with the installation appears to lie in the fact that steel cross-pieces were not used. Perhaps the poles were set farther apart than necessary. Although costing more, a complete steel structure usually is to be preferred for this sort of installation.



Two Successful Borehole Cable Supports and One Failure

At the left is a substation cable suspension at Mulga, Ala., that is equal to its job. This borehole is 385 ft. deep. The clamp holding the 2,300-volt armored cable is 42 in. in length. Through the center there is a machined groove to insure uniform clamping.

In the center illustration is shown another borehole at Mulga. The depth of this hole is 275 ft. Here the armored wires are cut turned back over a collar and clamped. The collar rests on a short clamp which sits on top of the casing.

The right-hand picture is by way of contrast. The wooden crossarms supporting these cables broke after five years of service. When the photograph was made the cable's full weight was taken by the clamps resting on the wooden block at the top of the casing. The advantages of the steel suspension is apparent.

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Union Pacific Coal Co.'s Code of Standards—VI*

Mine Ventilation (Continued)

In the event that any structures such as tipples or other inflammable buildings in the vicinity of the mine mouth catch fire, the mine ventilating fan should be stopped in order that the smoke may not be drawn into the mine and circulate around the mine workings, causing injury or death to employees. All men should then be withdrawn from the mine without delay.

Where fans are remote from the mine entrance, and are electrically driven, they should be stopped by pulling the power switch, whether the switch be at the main power plant or at some other distributing station.

Some responsible man delegated in writing by the mine superintendent, should be instructed to do this.

Where mine fans are steam or electrically driven and are in close, or reasonably close, proximity to the main intake then, likewise, some responsible person should be designated in writing by the mine superintendent, to stop them.

Standards for Weighing Coal

1. The weighman (company weigh boss) must be bonded in the sum of $500.

2. Art. 2, Sec. 3,552, Coal Mining Laws of the State of Wyoming "The weighman employed at any mine shall subscribe an oath or affirmation before a justice of the peace or other officer authorized to administer oaths, to do justice between employer and employee and to weigh the output of coal from miners in accordance with the provisions of Art. 1 of this act. Said oath or affirmation shall be conspicuously posted in the weigh office and any weigher of coal or person so employed who shall knowingly violate any of the provisions of this act shall be deemed guilty of a misdemeanor and upon conviction shall be punished by a fine of not less than $25 nor more than $100 for each offense, or by imprisonment in the county jail for a period of not to exceed 30 days or by both such fine and imprisonment."

Note—Oaths to be made in duplicate, one copy of which is to be filed with the mine superintendent.

3. Art. 4, Sec. 3,553.—"At every mine where the miner is paid by weight it shall be the duty of the weighman and check-weighman to examine and balance the scales each morning and in no case shall coal be weighed until such scales are tested by the United States standard weights and found correct, etc."

Note—Eight 50-lb. weights shall be kept at each pit scale for the testing of the same.

4. As provided in Sec. 3,552, Art. 4: "It shall be the duty of the state mine inspectors to inspect scales upon their regular visits."

Note—It shall be the duty of mine officials to insist upon this inspection.

5. Each pit scale platform shall have at least a ¾-in. clearance, and this shall be closely watched during the working shift to see that nothing lodges in the recess that may cause the scale to bind.

6. Whenever it is believed that any scale does not function properly, it shall be the duty of the weigh boss to immediately notify the superintendent who in turn will cause the scale inspector to make the proper examination and repair.

7. The counterpoise of any scale beam, that contains shot, nuts, etc., for balance, shall be so constructed that it will be inconvenient to add or remove any of these small weights.

8. No equipment should be allowed to stand on any scale except while being weighed.

9. No one except the weigh boss and check-weighman or properly accredited officials shall be allowed within the weigh room while coal is being weighed.

10. When a scale is not in use the beam catch shall be kept closed.

Track Scales

11. Under no condition must track scale weights be altered in order to obtain a check with the bulletin.

12. The weighmen shall keep the beams of all railroad track scales clean and free from rust, familiarize themselves with the construction of scales and make inspections at such intervals as are necessary to determine if scales are in proper working condition, and that scale pits are clean and dry

13. Scales shall be properly balanced before using, and the beam fastened by means of the catch while equipment is being moved onto or off the scale platform.

14. Cars must be stopped on scales and uncoupled at both ends while being weighed.

15. Equipment should not be allowed to stand on scales except while being weighed.

16. Locomotives and other equipment not to be weighed, shall be passed over the dead rail.

17. Salt must not be used in removing ice and snow from the mine scales.

18. The responsibility for the accurate functioning of all scales shall rest with the company scale inspector, who shall make the circuit of all districts at least once each month, examine each scale and file at the general office a report of his inspection.

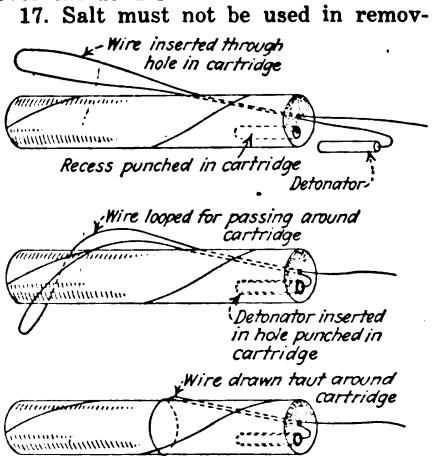

Fig. 29—Method of Using Detonator

This approved practice is suggested by notes obtained from a "Blasters Handbook." Delay detonators should be inserted after the cartridge has been slit, the cartridge should be closed and tied around the detonator.

When Employing Explosives

Don't

—use more than three sticks of permissible explosive in any one hole.

—force a cartridge into a hole.

—slit the cartridge and tamp tight as this is detrimental to the cushioning effect.

—ever tamp with an iron bar unless copper tipped; a wood bar is preferable.

—hurry in seeking the explanation of a missed shot.

—drill, bore or pick out a charge which has failed to explode, but drill and charge another borehole at a safe distance from the missed one.

—carry blasting caps or electric detonators in your pocket.

—try to withdraw the wires from an electric blasting cap.

—keep electric blasting caps, or blasting machines in a damp place.

—leave the lead wires connected to any blasting machine. Disconnect them immediately if it becomes necessary to return to the shot.

—return to any shot under a ten minute interval.

—loop or tie the wire connections. Scrape the ends of the wires clean and bright and twist them tightly together.

—drag the leading wires around. Always coil them up and carry them.

—insert an electric blasting cap in any cartridge carelessly. Have closed end of the detonator pointing toward the bulk of the cartridge (See Fig. 29).

—store or transport electric blasting caps with high explosives.

—worry along with old, broken leading wire or connecting wire.

—operate blasting machines half-heartedly. They are built to operate with full force. They must be kept clean and dry.

—shoot from the trolley circuit.

Employment

1. Employment may only be obtained by application at the employment office at Rock Springs. This applies only to Rock Springs, Reliance, Winton and Superior.

2. No person will be employed for work in or around the mines who has not attained the age of 16 years.

3. No person will be employed for work within or around the mines of this company who has passed the age of 50, without authority from the general superintendent.

4. Blindness in one eye, or apparent impaired sight or hearing disqualifies anyone for employment with this company.

5. Heart trouble, disease of the lungs, hernia, loss of a hand, foot, or other serious physical defect shall be a bar to employment.

6. Since every person employed around a coal mine possesses poten-

*This is the sixth of a series of articles giving the Code of Standards put into effect by the Union Pacific Coal Co., at its operations in Wyoming. The first five articles appeared in the issues of Dec. 17, 24, 31, Jan. 7 and 14, and the remainder of the code will be published in a future issue in this form that permits of easy filing.

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tialities for accident or disaster, peculiar to the industry, it is imperative that each new employee be physically and mentally alert, as not only his own life but the lives of many others may be sacrificed or jeopardized by his actions. Therefore the foregoing five articles have been established as a guide in the employment of labor.

Copy of General Office Bulletin No. 2

The following important points to consider in the event of mine catastrophe by fire, explosion, flood, etc., were prompted by observations at a mine explosion:

1. Cut power off the mine from all sources.
2. Notify the general office.
3. Organize and enforce a checking system for all men entering the mine.
4. Organize for handling the crowd so that they cannot endanger themselves or the workers.
5. Thoroughly examine the fan and provide against overloading its motor or transformers as a result of short circuiting of air, by placing a competent man in charge of fan and motor.
6. The fan must not be reversed except on order of the official in charge.
7. Electric lamps should be made available in quantity, for the workers, together with proper charging facilities.
8. Provide telephone communication between important surface points and prepare portable telephone sets for underground extensions with sufficient wire for advance.

Note—For this purpose take a desk phone or any other instrument available.

9. Arrange for water supply from all possible sources in the event of failure of usual supply lines.
10. Arrange base on top for lumber, brattice cloth, nails, pipe, fittings, hose, buckets and tools.
11. Provide shelter for man checkers, telephones, lamps, temporary morgue, workers, food dispensary and consulting place for shift leaders.
12. Obtain ample supply (at least three) of accurate and up-to-date maps of mine workings.
13. Establish base for rescue apparatus recharging, repair and storage.
14. Arrange for proper rest and food for apparatus men.
15. Arrange with railroad agent for handling and nearby spotting of U. S. Bureau of Mines rescue car.
16. Assign a man to transmit hourly bulletins to the general office and to prepare statements for the press.

Greasing of Wire Rope

1. Distinguish between a lubricant and a preservative in the selection of material for greasing.
2. A lubricant such as black oil has little or no value in the treatment of wire rope.
3. The proper oil should be a preservative which not only penetrates to the hemp center of the rope (in order to saturate it and prevent absorption of water) but also thoroughly coats the inside wires of each strand.
4. Main haulage rope shall be greased at least once each week and panel slope ropes twice each month.
5. Ropes are to be greased by passing them through "V"-shaped troughs, this to be done at the end of the shift and the rope allowed to lie over night in the slope off the drum. Those portions that cannot be passed through the grease box, but must remain on the drum shall be painted.
6. A preservative such as is made by the Wire Rope Lubricant Co., Newark, N. J., is recommended for this work.
7. Sockets must be annealed and reset every four months. A record of annealing and resetting of sockets is to be kept by the mine superintendent, same to be signed by the party doing, or having charge of the work.

Note—Where it has been the practice to make rope sockets locally, this will be discontinued as it is possible to purchase equipment of this kind fully as good as that made locally at a considerable saving.

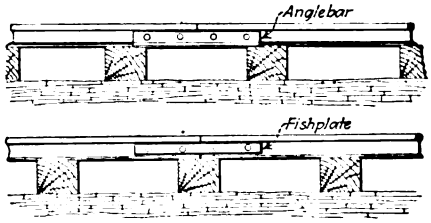

Fig. 30—Two Forms of Rail Joints

The suspended joint is used with angle bars but the bars are supported at each end by a tie. Fishplated joints are made directly over a selected tie, as shown in the lower illustration.

Wire Rope

Important Precaution.—In the manufacture of wire rope, great care is exercised to twist the wire in the strands and the strands in the rope under uniform tension. If the ends of wire rope are not properly secured the original relation of tension, as manufactured, will be disturbed and maximum service will not be obtained due to the fact that some strands are carrying the greater portion of the load.

When cutting steel wire rope it is highly essential to place three sets of seizings each side of the cut to prevent disturbing the uniformity of the rope. The placing of proper seizing requires considerable practice and, therefore, it is advocated that the average user of wire rope exercise great care when placing seizings and for safety use a greater number than specified.

Unless a serving mallet is used, there is no advantage in making more than 10 wraps of wire per seizing.

Use annealed iron wire of the following sizes for seizing:

Diam. Rope	Wire Diam.	Birmingham Wire Gage
⅜ and ½ in.	0.047 in.	18
⅝ in.	0.054 in.	17
¾ in.	0.063 in.	16
⅞ and 1 in.	0.080 in.	14
1⅛ and 1¼ in.	0.105 in.	12
2 in. and larger	0.135 in.	9

Note—From Roebling's Hand Book, "Wire Rope and Wire."

Rope Inspector's Report

Mine .....Location .....
Date.....Date of last inspection.....
Diameter of rope.....Length.....
Gross weight of trip hauled.....tons
Slope angle .....
Manufacturer of rope .....
Kind of rope, lay, strand, steel, etc.....
.....
Condition of socket .....
Date socket was last annealed.....
Condition of rope.....
.....
Date rope was installed.....
Probable remaining life of rope.....
Has rope proven satisfactory to date?.....
If not, how and why has it failed.....
.....
Date last greased .....
Date rope was turned....Date removed....
Total life of rope.....Tons hoisted.....
Cost of rope .....
Cost of rope per ton carried.....

Note—This report to be made monthly and in triplicate, one copy to be forwarded to the general office, one to local superintendent, and one filed with the master mechanic having charge of the inspection.

Mine Track Standards

1. The mine superintendent at each property must see that each foreman and assistant is supplied with copies of track data and turnout diagrams.
2. Each mine employee that may have supervision of track work in any way shall familiarize himself with these track rules.
3. In cases where data are insufficient, or there may be a doubt as to their meaning, the engineer of the property will supply the information.
4. Safety is, in each case, the first consideration and all installations must be made with this in view. All switches, frogs, guard rails or other track equipment where a person may be liable to receive injury, are to be properly blocked or guarded. This to apply to both inside and outside track.

Switch throws are to be of the "parallel" type with a ground throw. No new installations are to be made with switch stands.

Track Clearance

1. The minimum clearance to be maintained at all points on all haulage roads or track where switching is done is to be 2 ft. 6 in. from track rail to rib or nearest timber. This is to be regarded as the standard clearance for all tracks of the Union Pacific Coal Co.
2. Room necks are to be so turned and track so laid as to give a clearance of not less than 2 ft. 6 in.
3. Parting tracks are to be provided with the standard clearance above named.
4. Opposite all switch throws on any track at any point the track must be given not less than standard clearance.
5. Panel slope tracks are to be so laid as to give the proper standard clearance on both sides of the track for the entire length of the panel.
6. On long straight runs where locomotive or rope haulage are employed the standard clearance will be required on one side only but this clearance must not alternate from side to side of the track.

Ties

1. Ties must be laid on all haulageways (locomotive, rope and mule) at intervals not to exceed 2-ft. centers. (This implies 60-lb. steel on main slopes, 40-lb. steel on locomotive haulageway, 20-lb. steel in rooms.)
2. Where ties of uneven length are used they should be aligned on the ditch or low side of the track.
3. Standard square ties in graded lengths shall be provided for each turnout where 40- and 60-lb. steel is used.
4. Joint ties should be selected that have an extra wide face where a choice is possible.
5. Ties removed that cannot be used for other purposes should be loaded and sent out of the mine at once.
6. Where fishplates are used, a selected tie shall be placed directly under the joint. (See Fig. 30.)
7. Where splice (angle) bars are used the rail joint shall be suspended between two ties. (See Fig. 30.)

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Problems In Underground Management



Longwall Face Protects Mine Against Explosions

As a result of tests to determine the effect of release of pressure on the development of coal-dust explosions in mines, made by the British Safety in Mines Research Board in co-operation with the U. S. Bureau of Mines, at the Eskmeals Experiment Station, England, it has been made clear that there is less danger of a coal-dust explosion developing from a given source of ignition at a longwall face than at a "dead-end" or cul-de-sac.

The results obtained have an important application to actual coal mining conditions, as they show clearly that branch roads near the point of ignition of an incipient coal-dust explosion, by affording release of pressure, retard and may prevent the development of the explosion. Again, the course of a partially developed explosion may depend upon the arrangement of the mine roadways and branching passages, a knowledge of which will indicate the positions in the mine at which the most stringent measures should be taken against the accumulation of coal-dust or the occurrence of a source of ignition.

PRESSURE RELEASE NEAR ORIGIN

The nearer means of release of pressure are to the origin of the explosion the greater are their effects, the tests demonstrated. When an explosion has partially developed, a branching passage ahead of the flame tends to accelerate it, while one behind tends to check it. If a source of relief of pressure is provided in the path of a developing explosion, the effect is to increase its speed of travel until the opening is passed, after which the explosion is retarded.

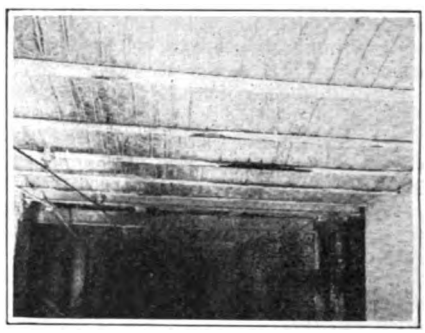
Most of the experimental work on the development of coal-dust explosions that has been conducted in England has been concerned with the character and mode of deposition of the dust, with the nature of the means of ignition or with the condition of the interior of the explosion gallery, whether unobstructed or provided with restrictions at certain points. No systematic work has been conducted to determine the arrangement of the gallery most favorable to the initiation and development of a coal-dust explosion, but, with few exceptions, the experiments have been conducted in a straight continuous tube open at one end and closed at the other. At the Experimental Mine of the U. S. Bureau of Mines some work has been conducted with regard to explosions originating in wide places, on the effect of side-openings from the main entry and on the propagation of flame from the mouth towards the interior of the mine, but, in general, the study of coal-dust explosions has been with regard to their development when traveling from a closed to an open end.

TO CONTINUE EXPERIMENTS

In Safety in Mines Research Board Paper No. 14, just issued by the British Mines Department, is recorded the results of these preliminary experiments, carried out in the 7½ ft. diameter gallery at Eskmeals, to determine to what extent the development of a coal-dust explosion was aided or retarded by release of pressure, either at the origin of the explosion or at some point in its path, such as would be given in a roadway of a mine by openings to side galleries or drifts. The experiments will be continued in the 4-ft. diameter gallery that is being constructed at the new British Experimental Station at Harpur Hill, near Buxton, and a parallel investigation will be made in the Experimental Mine of the Bureau of Mines at Bruceton, Pa. Such trials and tests should yield much information of value to the coal industry.

Overcast Construction Method Makes 15 per Cent Saving

A new, concreted construction of overcasts, which avoids the use of wooden forms and thereby effects a saving of about 15 per cent in the overall cost, is being used in the Harmar mine of the Consumers Mining Co., Harmarville, Pa. The side walls are formed by 8x8x16-in. hollow tile blocks which on the outside are plastered with a 2-in. coating of sand-cement mortar. As indicated by the accompanying illustration the roof consists of a series of concrete arches between 6-in. H-beams laid laterally on 30-in. centers across the top of the walls.



This Economical Construction Makes Strong Overcasts

First, wire meshing is cut to the proper length and bent to the required spring. After this has been slipped between the H-beams it is covered with roofing paper after which a 2-in. concrete arch is poured. When this has set another layer of concrete is poured to fill the spandrel openings and make a flat surface above the beams. The arch effect thus obtained is quite as strong as flat concrete provided with reinforcing.

In the construction of these arches wire meshing is placed between and rests on the lower flanges of the H-beams. It is curved to about a 6-in. spring. The meshing is covered with a heavy roofing paper over which is worked a 2-in. layer of cement mortar. After this mortar has set from 12 to 24 hr. concrete is poured over the arches to a depth of about 4 in. as measured from their crests. This arch construction imparts the same strength to the roof that reinforced wire mesh within the concrete gives to a flat roof construction.

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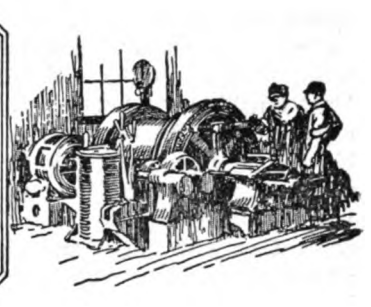
Practical Pointers For Electrical And Mechanical Men



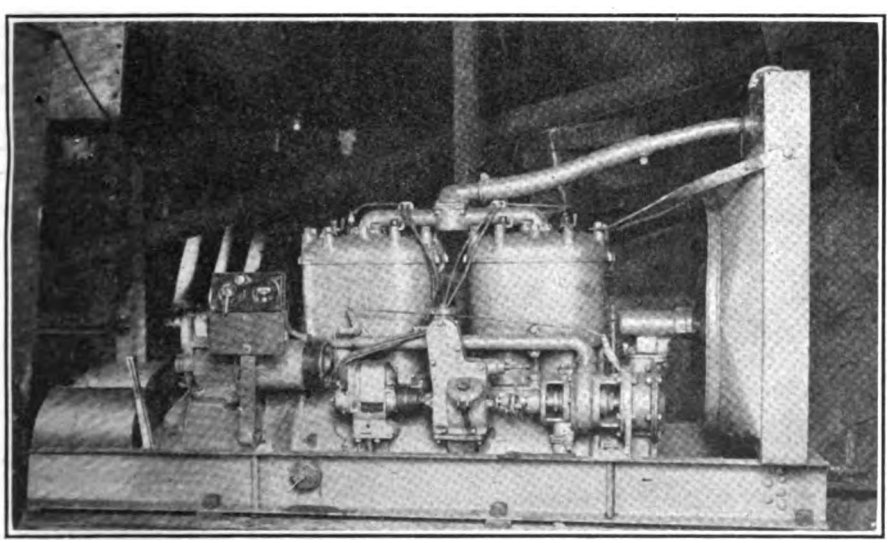
Gas Engine Makes Reliable Stand-by Fan Drive at Coal Mine

Mine ventilating fans driven by steam engines are not immune to shutdowns, but nevertheless are seldom fortified by auxiliary drives. On the contrary, fans which are driven from purchased power and are used to ventilate gassy mines, generally are equipped with standby power. If a fan stops because of trouble with the local steam equipment, the engineer usually can tell at a glance, whether it can be started again in a few minutes or whether the repairing will be a matter of hours. When an interruption to purchased power occurs, the man at the mine is truly, "in the dark," as to when service will be restored. Phoning the power company may bring some information, but this phoning takes time.

Recently, purchased-power drives, in place of steam, were installed by the Montevallo Coal Mining Co., at Aldrich, Ala. After the change had been made the officials found it advisable to arrange for an auxiliary source of power to insure continuous ventilation.

The fan, an 8-ft. x 30-in. unit, is normally driven by a 75-hp. induction motor. The standby is a 75-hp. gasoline engine equipped with electric starter and fan-cooled radiator. This engine, a four-cylinder model operating at 1,200 r.p.m., is belted to a friction-clutch pulley mounted on the fan shaft, between the housing and the pulley of the electric-motor drive.

In case of a power failure the engine is started without load, and the friction clutch then is engaged slowly until the fan and engine are brought to the same speed. By quick work it is possible to get the engine into action before the fan loses its inertia.

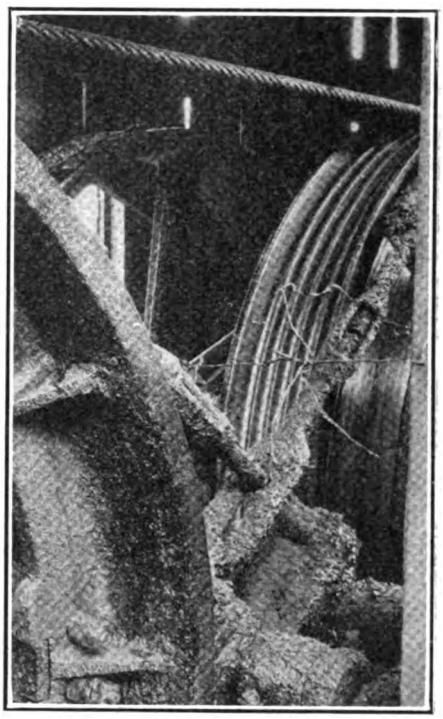


Standby Gasoline Engine in Mine Fan House

The Montevallo Coal Mining Co., at Aldrich, Ala., regularly drives the main fan by an electric motor operated from purchased power. The engine, which has a rating of 75 hp. at 1,200 r.p.m., is belted to a friction clutch pulley on the fan shaft.

Life of Blocks Prolonged By Greasing Brake

Greasing the brake drums in order to prevent the burning of the friction blocks is a practice rather contrary to theory. To maintain a given braking effort during a given time and through a given distance, requires the dissipation of a definite quantity of heat. In order to obtain a braking effect there must be friction between the blocks and the drum, so why, the average man would ask, grease the drum and thereby lessen the coefficient of friction? That must necessitate a tighter application of the brake. Regardless of this, the four brake bands on the incline machine of the New Caryville Coal Co., Caryville, Tenn., continue to be greased regularly with "black strap."



Incline Machine at Caryville

The four brake drums are thoroughly greased at regular intervals in order to prolong the life of the friction blocks. Many years' experience at this mine has proved the advantage of this unusual practice.

GREASE ADDS LIFE

The men in charge at the mine state that the friction blocks will last but a short time if operated dry, but have an average life of two years if greased regularly. The blocks are made of wood. Black gum has been found best for the purpose. The machine controls two 15-ton coal monitors operating on an incline 6,000 ft. long.

Theory based on natural law will explain any result which may be attained in actual practice but only

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where all conditions are known and taken into account. Experience omits none of the conditions and so has the "last word" in any argument. In the case at Caryville, the burning of the blocks may be prevented by a change in the conductivity or radiating power of the wood by virtue of the saturation with oil. Aside from the difference in life of the friction blocks, greasing has the advantage of reducing chatter and noise.

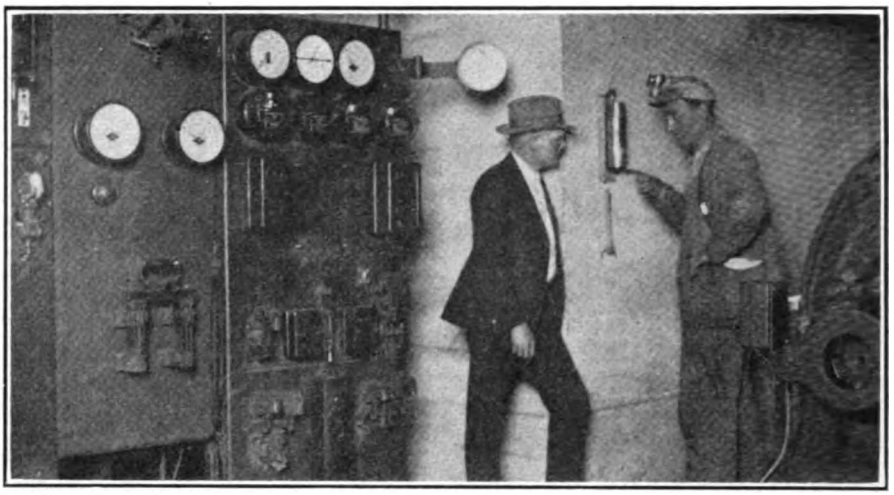
Substation Changed with No Loss of Time

Located approximately 9,000 ft. from the drift mouth and under 350 ft. of cover is the only substation of the Nuttallburg (W. Va.) mine, of the Fordson Coal Co. The original equipment consisted of a 300-kw. synchronous motor-generator set with manual motor control and a reclosing generator breaker. Over a year ago this substation was converted to full automatic by the addition of switching, and relay equipment. The change was made without shutting down the mine, the work being done between midnight Saturday and 7 a.m. Monday.

MAKE USE OF OLD PANELS

Two of the old panels were left in place and parts of them were used in the automatic layout. At the direction of C. B. Loche, a special feature was added to the regular equipment as proposed by the manufacturer. This consists of a relay to disconnect and short circuit the synchronous field during starting. This feature, according to Mr. Loche, causes the motor to come up to speed more quickly, and with less disturbance. The relay is operated by virtue of the differential action between two coils, one connected to the generator brushes and the other in series with the synchronous field. As the machine comes up to speed the current in the first coil increases, and that in the second decreases.

That the automatic control of this substation has been entirely satisfactory, is proven by the fact that, from the time it was changed to automatic, the salary of an operator has been saved. Starting and stopping of the motor-generator is controlled by a 30-amp. time switch mounted on the base of the alternating-current panel.



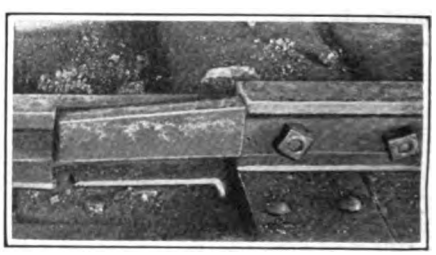
Automatic Substation Inside a Fordson Mine

This 300-kw. unit was converted from a manual equipment, so now it is made up of parts from several manufacturers. In the photograph are C. B. Loche (left), electrical engineer of the Fordson Coal Co. and J. H. Boyer, foreman of the Nuttallburg mine.

Device Eases Mine Cars Onto the Scale

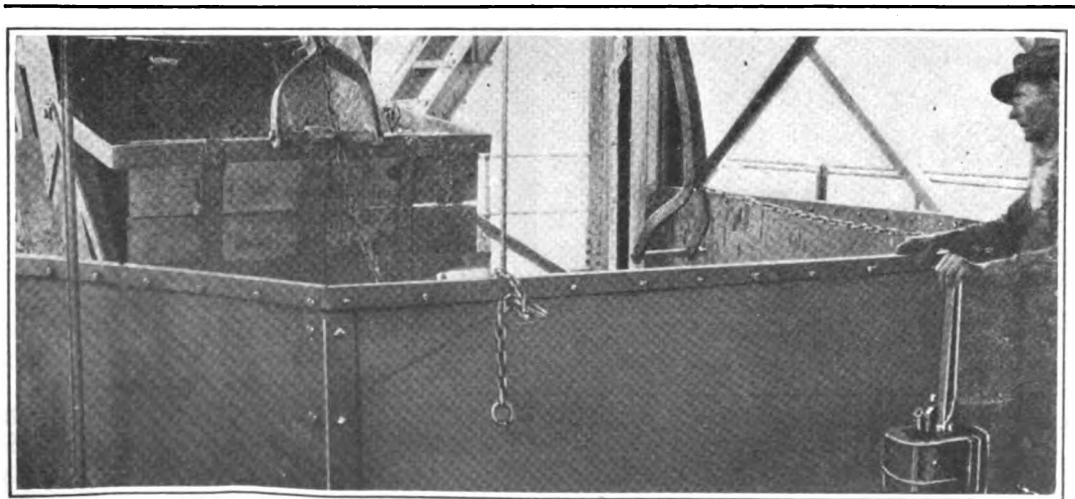
Frequent hammer blows should be avoided wherever possible in the operation of any equipment. Failure of materials is more commonly due to repetitions of relatively small stresses than to a single stress beyond the ultimate strength. Mine-car scales usually are subjected to severe shock due to the wheels "dropping on" as they pass over the open rail joint. The old familiar "clickety-click" of cars moving onto the scale, is absent at the Mulga mine of the Woodward Iron Co., at Mulga, Ala.

The scheme used for easing cars over the open rail joint is shown in the accompanying photograph. As the car wheel rolls down the inclined extension piece it engages and is picked up by the rail on the scale platform. The end of this rail has one side of the ball planed off to make room for the extension piece. No noise or shock results as the car comes on the scale.



This Arrangement Reduces Bumps at the Scale

When this device is employed mine cars passing over the rail joint when being moved onto the scale are not subjected to the usual bumping.



Dumping Controlled on the Spot

This arrangement, besides saving the wages of one man, has other advantages. No time is lost in signaling between the dump and hoist house. The operator works by noting the position of the cages rather than by an indicator.

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Book Reviews

Devine Exposes Shortcomings Of Coal Industry

By R. Dawson Hall
Engineering Editor, *Coal Age*

Knowledge of the bituminous coal industry sinks but slowly into the minds of the public. Data laboriously collected at much expense and tossed in the lap of hard-working people who have their own daily living to get fail to be read and digested. However, some small portion of them do receive consideration, of that there is plenty of evidence, and so the book by Dr. Devine may be welcomed by the industry and the public, especially in so much as the author was well known not to have nourished the kindliest of feelings toward the industry in former years. His present volume records his reactions to painstaking investigation.

Many unfortunate points of view still remain. He believes that any man or corporation that has obtained by purchase an excellent piece of coal should be compelled to pay not alone a tax on the profits of his operation but a differential tax that would give him no advantage over his competitors. He believes that the operator should be handicapped by this impost so that he would be at no advantage in the race for business. He would have the public be the gainer and would arrange that no good fortune should accrue to the producer as the result of his perspicacity and good judgment. With such a provision the tendency would be to use no care in the purchase of coal lands but to rely on Washington to protect any injudicious investment that might be made. There would then be no investments that from the investor's point of view could be classed as injudicious.

Dr. Devine's little book, termed by him briefly "Coal" and more copiously "Economic Problems of the Mining, Marketing and Consumption of Anthracite and Soft Coal in the United States," published by the American Review Service Press, Bloomington, Ill., is full of statements that condemn the operators and defend the union, as well as statements that do just the reverse.

He says that the anthracite operators are "self-confident, sophisticated, not a little arrogant," and declares that "to the unsophisticated mind" the failure to increase output despite a growth of population in the natural and established markets of anthracite "certainly suggests a deliberate policy on the part of the anthracite combination that there shall never be enough anthracite to go round." Nevertheless, the operators will almost forgive him for this quite general, though unfounded belief, because he adds: "A policy of holding back rather than glutting the market is not to be condemned off-hand. It is the policy which cotton growers, wheat growers, tobacco growers and manufacturers carry out when they can and lament their inability to carry out when they cannot. Only very foolish persons destroy their profits by overstocking the market" and again: "What is so difficult in the case of farm products and would be difficult also in the case of soft coal, has been perfectly feasible in the case of anthracite; so easy that it would have seemed childish not to do it; so easy that the substance remains even after the successive means by which it was accomplished, one after another, have been declared illegal and as far as court decisions go have been destroyed—though in calling it easy I do not mean to suggest that it did not call for imagination and initiative."

Praises High Standards

We are much surprised to see the following favorable comment from such a source as Dr. Devine: "The historical fact is that anthracite coal producers in their own province were pioneers in this sound policy [of standardized quality] and to this their prosperity is in part, though not wholly, to be attributed. The standards of quality have been maintained in the face of temptations to a contrary short-sighted policy of adulteration when coal is scarce and demand brisk."

We cannot avoid quoting further because it augurs ill for those engaged in the present controversy: "It is not inconceivable that the anthracite which is not mined in the next generation or so may never be mined. In that case the owners of reserves, their unearned increment evaporated can only lament the golden eggs they might have gathered."

But quotation may go to too great lengths and briefly it should be said that in 448 pages (5 x 7½ in.) and with several badly printed but valuable charts, Dr. Devine tells the story of anthracite and bituminous coal broadly and in a well balanced manner and then in the end lays down what all parties to the controversy can do to better conditions. The reviewer would not write those recommendations quite as the Doctor has done, but no one can doubt the intellectual honesty of the author. The price of the book is $3.

Herrin Coal Seam Near Duquoin, Ill.

Many persons believe that Illinois coal lies on a dead level without any interesting structure. As a matter of fact, the Illinois coal fields have a varied structure and are not by any means regular. Thus in the Kathleen mine the contour which intersects the shaft is marked 140, whereas at a distance of 4,000 ft., less than a mile, contour 310 is crossed without a fault in the whole distance to account for the rise. The 170-ft. rise is made on the steep slope of an anticline. The average grade is 4.25 per cent and at many points the inclination is much steeper. On the eastern side of the slope is a complicated series of nine faults.

A publication of the State Geological Survey on the "Structure of Herrin (No. 6) Coal Seam near Duquoin," by D. J. Fisher, issued at Urbana, Ill., contains a study of the whole field including portions of Franklin, Jackson, Jefferson, Perry, Washington and Williamson counties. The faults of the fields other than those already mentioned are found in one group near Hallidayboro, one west of Royalton and one west of Weaver with one east of Duquoin.

The Herrin coal from a point two miles north of Royalton to a point over two miles north of Mulkeytown is so split that neither part of the seam is workable. The area thus made valueless in one direction almost east and west is ten miles wide. A smaller area lies between Royalton and Hallidayboro. The split in the seam in places is not far from 100 ft. thick.

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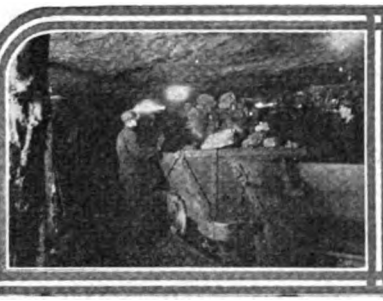

News Of the Industry



Anthracite Operators and Miners Start Third Attempt at Agreement, This Time Meeting in Philadelphia

A third attempt to effect a new anthracite wage agreement was started at the Bellevue-Stratford Hotel, Philadelphia, Pa., on Tuesday afternoon, Jan. 26. The resumption of the joint conferences was undertaken at the request of John L. Lewis, who asked Chairman Alvan Markle to call the negotiating committee together again to consider a plan suggested by E. J. Lynett, publisher of the Scranton *Times*, as a basis of negotiation. This plan, making no provision for arbitration of disputed points and pegging wages at the 1923-25 basis for five years unless a voluntary agreement to change was effected at the end of the second year, has already been rejected by the operators.

Both sides entered the renewed negotiations clinging resolutely to the positions which have twice caused the conference to break off in a hopeless deadlock. The operators still insist that some provision to prevent future strikes must be incorporated in a new agreement. The union officials still publicly denounce any suggestion that the workers accept arbitration. As a result, the conference, after wrangling for several hours the first day without making any progress toward an agreement, adjourned at 6:30 p.m. to meet again Wednesday, Jan. 27.

Wrangle Over Publicity

At the outset of the Tuesday conference the miners proposed that the sessions be opened to the newspaper reporters. The operators offered an amendment that the publicity representatives of the two sides prepare a statement each day from the stenographic report of the conference, with the understanding that nothing important in the record be omitted from this statement. The miners rejected this amendment. The original motion was then put, the miners voting yes and the operators no, defeating the motion.

Mr. Lewis then offered the Lynett plan and placed in the record the first letter of Maj. W. W. Inglis commenting on this plan. Major Inglis countered with his later communication to Mr. Lynett and, with his letter to Chairman Markle, reiterated the operators' objections. Mr. Lewis moved that the Lynett plan be accepted as a basis for negotiations. The operators voted no on this, killing the proposal. The conference then adjourned for the day.

The call to reconvene the joint conference came as the climax of a week of exciting developments in which the scene of action shifted between Washington, Harrisburg, the anthracite region, New York and Trenton. As told elsewhere in this issue of *Coal Age*, the halls of Congress again echoed with the demands of Congressmen that the government "do something." New Jersey also stepped into the picture for legislative action when Governor A. Harry Moore, in his inaugural address on Jan. 19, recommended the creation of a tri-state commission with power to condemn anthracite coal-bearing lands and to construct another railroad from the region to tidewater. Governor Pinchot's legislative program for regulating the industry was blocked when the House mining committee voted an indefinite postponement of action on the bill to make anthracite coal mining a public utility and made a negative report on the bill authorizing interstate compacts.

Pinchot Bills Get New Chance

Later, however, the Pennsylvania House leaders experienced a change of heart. At a meeting on Jan. 25 it was announced that the bills would be reconsidered. The same evening the Senate committee on mines and mining took action on the Woodward bill to amend the miners' certificate law. The Senate committee struck out the Woodward proposal to repeal the requirement for two years' experience, but changed the law to permit that experience to be acquired outside of the state.

The New Jersey executive, in urging a tri-state commission, condemned the national administration for inaction which permits "a few powerful men" to "snap their fingers in the face of what we are pleased to believe is the greatest government on earth." This inaction, he declared, forced state action, but regulation of anthracite as a public utility was not the solution of the problem.

"With the co-operation of New York and Pennsylvania," said Governor Moore, "a tri-state commission could be set up with power to condemn—acting through the state courts of Pennsylvania—a sufficient amount of lands containing coal to set up competition against the trust. These lands could be leased on very moderate royalties to operators willing to develop the mines in competition with the trust.

Bills to cover Gov. Moore's recommendations, it was later announced, would be introduced Feb. 1.

Adverse action on the Pinchot administration bills by the Pennsylvania House committee on mining followed a public hearing at Harrisburg on Jan. 20 at which the proposals were opposed by representatives of the operators and retail coal men. The attack was led by Walter Gordon Merritt, counsel for the Anthracite Operators' Conference, who told the committee that the Pinchot legislative program was neither feasible nor constitutional. Any attempt by the Public Service Commission or any other agency of the state to control prices would find that agency "as helpless as a child in the face of economic conditions." John T. Brady, Philadelphia & Reading Coal & Iron Corporation: J. A. Kelly, Hudson Coal Co., and Wellington M. Bertolet, Pennsylvania Retail Coal Merchants' Association, also spoke against the bills. "No one," read the Associated Press report of the hearing, "appeared in support of the measures."

The cavalier treatment accorded his recommendations moved Governor Pinchot to a long denunciatory statement, made public Jan. 21, in which he accused the House committee of sharp practice. The Governor contended that proponents of the measures had not been given sufficient notice to prepare statements in support of the bills, but that they had been led to believe that consideration of the measures had been postponed until Jan. 27.

Lynett Offers Plan

The Lynett plan, first published in the Scranton *Times* on Jan. 18, came to the fore last Thursday when Major W. W. Inglis expressed his opinion of the program. The plan itself reads as follows:

(1) The miners resume work immediately.

(2) A five-year contract dating from the time of signing the agreement.

(3) The wages in effect under the last contract to continue during the term of the new contract, unless changed as hereinafter provided.

(4) At the instance of either party, given in writing sixty days before two years have elapsed from the signing of the contract, a conference may be called for the consideration of changes in the agreement on the subject of wages only; the miners to remain at work until the end of the five years' contract, whether the conciliators agree upon a change of wages or not.

(5) One year before the contract expires representatives of the coal operators and miners to meet to devise an arrangement whereby work may be continued at the mines at the expiration of the contract and during the negotiations for a new agreement.

Major Inglis directed his objections to the fourth and fifth paragraphs. "As to paragraph 4," he wrote, "it would appear that after two years no question

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as to adjustment of wages could be raised by either party; the wages would be fixed for the last three years of a five-year period, although it would be in this latter period that conditions are most in doubt. The provision that the miners are to remain at work whether or not agreement is reached is one for which we have all along contended, and which has been opposed by Mr. Lewis on all occasions.

"We appreciate and welcome your interest in bringing about a settlement. We are already converted to the necessity for some such plan as you suggest with provision against deadlocks, and this can be done without sacrificing any of the miners' rights or interests. The need seems to be to convince Mr. Lewis of this fact."

Mr. Lynett interpreted this reply as an acceptance of his program and conferred with President Lewis of the United Mine Workers, who announced that he was ready to resume negotiations with the Lynett plan as the basis of discussion. A statement from Philadelphia on Friday, however, made plain that the operators had no intention of accepting the Lynett basis. "The Lynett plan," said this statement, "did not contain anything that had not been threshed out in previous conferences. For this reason it does not afford a basis for a renewal of negotiations."

Inglis Answers Lynett

Major Inglis further amplified his position in a second communication to Mr. Lynett, in which he reiterated the objections raised in his first letter. "Your editorial [of Jan. 20]," said Mr. Inglis, "states that 'your plan eliminates arbitration altogether.' Mr. Lewis' letter of Jan. 22 confirms this understanding, while the operators are firmly of the opinion that this feature in some form is absolutely necessary in any workable contract.



John L. Lewis
President of the United Mine Workers

"To now say that I accepted your plan and that the operators conference have repudiated my acceptance is far from the fact. Neither I nor anyone authorized to speak for the operators could have accepted your plan because, as you admitted, it amounted to a five-year contract with no means whatever for avoiding just such deadlocks as the one from which we are now suffering."

To this Mr. Lynett retorted that the reply of the chairman of the operators' negotiating committee was "a weak and puerile repudiation of the expressed and implied approval of *The Times*' plan for settling the strike." Nevertheless, Mr. Lewis held to his desire for a resumption of the joint conferences, and Alvan Markle, chairman, accordingly issued a call for a meeting at Philadelphia on Jan. 26. The operators followed this with a reiteration of their refusal to accept the Lynett plan as a basis of discussion.

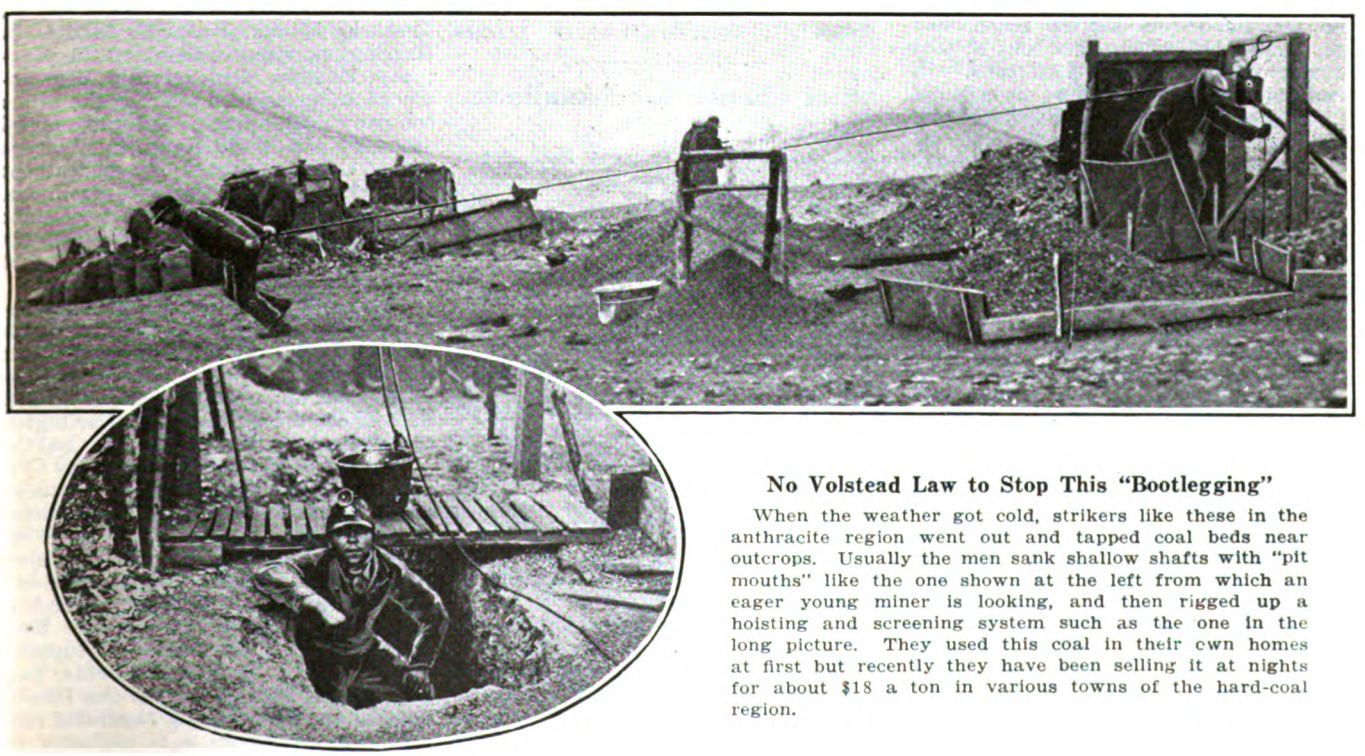
Central Penna. Producers Urge Reopening of Lake Rate Case

The Central Pennsylvania Coal Producers' Association on Jan. 25 filed with the Interstate Commerce Commission a petition for re-argument and reconsideration of the Lake cargo coal rate case, supporting the case of the Pittsburgh Coal Producers' Association against railroads carrying coal to the lower Lake Erie ports for transshipment to destinations beyond. The Pittsburgh operators contend that the present rate structure gives preference in rates to West Virginia and Kentucky coal as against Pennsylvania coal.

The Central Pennsylvania Coal Producers' Association stated in the petition that it represents miners and shippers of bituminous coal in the Lake cargo origin freight rate groups of Reynoldsville, Freeport, Blairsville, Indiana County, Bellwood, Vintondale, Altoona, Spangler, Cherry Tree and Clearfield.

The Northern West Virginia Coal Operators' Association will enter a protest with the Interstate Commerce Commission against reopening the lake coal-carrying rate case. Petitions against reconsideration already have been filed by the Michigan Public Utilities Commission, the Minnesota Railroad and Warehouse Commission; Brackett's Coal Statistical Organization, Fairmont, W. Va.; By-Product Coke Corp., Chicago; Northern States Power Co., Minneapolis; St. Paul Association of Business Affairs, Wisconsin Steel Co., Connelisville coke shippers, numerous shippers in West-Virginia and Kentucky and several railroads.

Progress is being made in the statewide safety campaign, according to Robert M. Lambie, of Charleston, chief of the West Virginia Department of Mines. It is reported that 7,000 miners attended the first eighteen meetings that were held in the state.



No Volstead Law to Stop This "Bootlegging"

When the weather got cold, strikers like these in the anthracite region went out and tapped coal beds near outcrops. Usually the men sank shallow shafts with "pit mouths" like the one shown at the left from which an eager young miner is looking, and then rigged up a hoisting and screening system such as the one in the long picture. They used this coal in their own homes at first but recently they have been selling it at nights for about $18 a ton in various towns of the hard-coal region.

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Soviet Spends $2,000,000 in U. S. for Mining Machinery

American coal mining machinery valued at $2,000,000 was purchased for Soviet mines in the Donetz basin by the technical commission which has returned to Moscow after purchasing equipment in America, Germany and England. The figure is given in the report of the Commission, received by the Russian Information Bureau at Washington, D. C. With the aid of the new equipment it is planned to increase coal production in the Soviet Union 43 per cent this year.

The report states that the bulk of the equipment purchases made abroad, including 150 of the 196 coal-cutting machines, came from the United States. Other American equipment bought included electric mine lamps of the latest type, automatic appliances for drawing mine cars, automatic appliances for closing mine doors, etc. Part of the equipment has already been shipped. The terms of the principal purchases were 60 per cent cash and 40 per cent after five months.

The report adds: "The acquirement of highly-improved American coal-cutting machines of Jeffrey and Sullivan manufacture is particularly important for the Donetz basin. The Sullivan Machinery Co. will send a special instructor to the Soviet Union to supervise the installation. The coal-cutting equipment, the first to be employed in the Donetz mines, effects an enormous increase in operating efficiency, each machine taking the place of 25 coal hewers."

British Output and Exports Of Coal Wane in 1925

Output by British coal mines during 1925 was nearly 25,000,000 tons lower than in the preceding year. Up to Dec. 12, with ten or twelve working days to be accounted for, British mines had produced 237,150,300 gross tons of coal during the year. The final total will run below 250,000,000 tons, as against 273,260,900 in 1924 and 282,354,900 in 1923. For 16 of the first 20 weeks of the year production ran beyond 5,000,000 tons per week, but beginning with the 21st week that figure was not reached again until the end of November, when anticipation of the holidays caused workers to turn out heavier tonnage.

In 11 months 46,185,067 gross tons was exported, or 10,300,000 less than during the corresponding period of 1924 and 27,000,000 below the unusual export of 1923. Of the decline in 1925, 8,300,000 tons represented the lower takings of only four countries—Germany, Netherlands, Belgium and France.

Values show the position even more unfavorably, the proceeds for 11 months of 1925 amounting to £46,201,851 at a quotation of £1 8d. while the corresponding period of 1924 gave £66,507,781 at £1 3s. 6½d., and 1923 had £92,659,201 at £1 4s. 1d. In two years the decline in the value of export coal alone reduced the offset to British imports by over $230,000,000.

Philadelphia Engineer's Office Seeks Coal Bids

Bids for approximately 15,000 gross tons of semi-bituminous coal will be received by the U. S. Engineer's office at Philadelphia until noon, Feb. 17. The coal is for use on the floating plant for the maintenance and improvement of existing river and harbor works during the period April 1, 1926, to March 31, 1927.

Kentucky Coal Output Gains 10,000,000 Tons in 1925

Coal output by Kentucky mines in 1925 totaled 53,217,065 net tons, according to an estimate by W. H. Jones, chief of the state Department of Mines. These figures, based on reports received up to Jan. 15, 1926, indicate an increase of nearly 10,000,000 tons in production over the preceding year. Output by counties during the last three years was as follows, in net tons:

	1923	1924	Estimated 1925
Bell	2,276,098	1,859,055	2,239,443
Boyd	119,688	125,142	48,365
Breathitt	124,005	138,722	145,017
Carter	101,466	62,685	72,411
Clay	546,400	220,897	179,240
Caristian	79,183	19,759	97,116
Daviess	102,011	138,186	139,319
Floyd	3,150,549	3,701,437	4,714,396
Hancock	6,800	9,700	9,700
Harlan	8,400,877	9,076,269	11,263,835
Henderson	334,250	410,860	469,910
Hopkins	2,223,858	3,289,834	3,893,305
Johnson	693,409	1,021,576	1,190,644
Knott	342,599	342,321	466,715
Knox	576,923	452,360	349,281
Laurel	52,845	137,685	147,276
Lawrence	6,727	442	105
Lee	30,033	4,974	8,950
Letcher	4,405,622	4,851,806	5,919,805
Martin	375,615	432,898	398,114
Magoffin	12,164	13,526	41,540
McCreary	869,113	802,117	862,355
McLean	107,839	21,445	75,298
Morgan	38,644	25,420	61,578
Muhlenberg	3,655,839	1,297,581	3,274,382
Ohio	925,734	216,659	332,446
Perry	4,899,434	5,229,066	5,542,690
Pike	5,648,221	6,049,809	7,300,039
Union	1,221,456	1,049,196	956,707
Webster	1,318,435	1,682,264	2,267,058
Whitley	480,272	704,041	750,025
Totals	43,122,109	43,387,732	53,217,065

Slim Chance for Woodlock

Senate leaders last week took up consideration of a request that President Coolidge withdraw the nomination of Thomas F. Woodlock, of New York, as a member of the Interstate Commerce Commission.

The Senate Interstate Commerce Committee on Jan. 23 again questioned Mr. Woodlock, who received a recess appointment last spring after the Senate twice had failed to act upon his nomination. Opposition is based largely upon his statement that he has voted the Republican national ticket since 1916. Under the law a Democrat must be appointed to fill the place to which Mr. Woodlock was named.

Unofficial polls of the Senate are said to have disclosed that it is doubtful whether Mr. Woodlock's nomination could be confirmed.

A favorable report on the nomination of Charles W. Hunt, of Iowa, to be a member of the Federal Trade Commission was voted Jan. 21 by the Senate Interstate Commerce Committee.

Penna. Compensation Claims In 10 Years $108,690,846

The workmen's compensation system in Pennsylvania completed its first decade on Jan. 1 and coincident with the event the bureau of workmen's compensation of the State Department of Labor and Industry issued its annual report for 1925. It was the first state report issued this year, and it contains a summary of the work of the past ten years, prepared by William H. Horner, director of the bureau.

The report shows that in 1925 176,392 accident cases were reported, including 2,022 fatal cases. Of these fatalities, 792 occurred in the mines of the state, 831 in industrial plants, 319 among the public utilities companies and 80 were attributed to state and municipal agencies. Compensation payments were authorized in 80,261 cases and the total amount of compensation incurred in these cases was $12,748,266, $5,397,192 of this being in fatal cases.

Since the compensation law became effective, on Jan. 1, 1916, 1,836,681 accidents have been reported to the bureau. Of this number, 24,699 were fatal.

From Jan. 1, 1916, to the first day of this year a total compensation liability of $108,690,486, covering 692,863 cases, has been incurred by the employers or their insurance carriers, $54,374,855 of this being in fatal cases. In fatal and permanent disability cases the total amount provided by the agreements and awards is $75,645,325. Of this total $37,785,380 has been paid, leaving unpaid obligations amounting to $37,859,945.

Kentucky Utilities to Buy Power Company

C. F. Richardson, president of the West Kentucky Coal Co. and the West Kentucky Electric Power Co., and L. B. Herrington, vice-president of the Kentucky Utilities Co., recently consummated an agreement whereby the latter company will purchase all the capital stock of the West Kentucky Electric Power Co. As a part of the deal the Kentucky Utilities Co. gets from the coal company a large tract of land bordering the Ohio River near Sturgis, where there is an abundance of good coal and water.

The Kentucky Utilities Co. also contracted to furnish all electric power used in the operation of the coal mines and other enterprises of the West Kentucky Coal Co. and agreed to buy all of its coal for the Paducah and Earlington plants from the West Kentucky Coal Co.

The mines of the West Kentucky Coal Co. are the largest in western Kentucky and are heavy users of power. Besides supplying the coal mines, the West Kentucky Electric Power Co. furnishes electric service to Earlington, Morton's Gap, Wheatcroft and Sturgis, and to the transmission system of the Kentucky Utilities Co. It also supplies water to the cities of Madisonville, Earlington and Sturgis and to the Illinois Central and Louisville & Nashville railroads.

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Hands-Off Policy Wavers in Congress; Coal Legislation Unlikely to Pass

By Paul Wooton
Washington Correspondent of *Coal Age*

Sentiment in Washington early last week seemed to indicate that it was not certain that Congress would continue indefinitely to follow the President's policy of non-intervention in the hard-coal strike. When the second deadlock in peace negotiations between the operators and union leaders came and it was recognized that the Pennsylvania Legislature would do nothing there was insistent demand on each side of the Capitol for action. Now that conferences have been resumed, however, it is probable that action will be deferred awaiting the outcome.

Charges by Senator Reed, of Pennsylvania, that retail coal dealers are profiteering caused the District of Columbia Committee of the Senate to launch into an investigation of coal prices in Washington.

Senator Oddie, one of the administration regulars, plainly is becoming impatient. He is doing his best to conform to the administration policy but is being accused of strangling his own child in committee. He recognizes that there would be little opportunity to pass his bill without administration support, so is loath to add needlessly to the agitation by opening hearings. He does feel, however, that the executive branch in giving him no indication of what it thinks of his bill is leaving him to hold the bag.

Senator Borah made this point in the course of the debate in the Senate:

"In my opinion the fault of the situation lies here in the Congress rather than with the President. I think it up to the Congress of the United States to find the power if it exists; if it does not exist, to provide by a change of the instrument under which we live that it may exist, to the effect that people cannot seize the great natural resources of the country, without which we cannot live, and conduct them as if they were purely private affairs. It is impressed with a public service, and the government has the right to impress upon it the stamp of a public service. In time we will have to take that position in order to protect the people of the United States."

Freight Rates Attacked

Senator Reed and Senator Willis, of Ohio, told the Senate that freight rates are unduly preferential to the non-union mines. This led inter-mountain Senators to urge them to support the Gooding bill, prohibiting departures from the long-and-short-haul clause of the Interstate Commerce Act.

Senator Sackett, of Kentucky, denied that the long-haul rates to the lakes are lower but that the Southern mines gradually have been able to acquire some lake business and have been able to afford an opportunity to the people of the Northwest to buy coal on a competitive basis.

Senator Reed also had this to say:

"It has been intimated that the present situation is a conspiracy between the operators and the miners to force a higher price on a long-suffering public. The very consideration of the situation in the hard-coal region shows the absurdity of that suggestion. The miners' suffering, the suffering of those people who are dependent upon them, and the suffering of all the community which owes its livelihood to this industry is so much greater than any possible increase in wages over the next five years could compensate for that it is obvious that the men have not entered into any such conspiracy. The losses of the operators during this period of suspension are so much greater than any possible increased profit during the next few years could compensate them for that it is equally obvious that they are not conspiring by that small profit to overcome the enormous present losses. The suggestion disproves itself."

Profiteering Charge Sifted

The Pennsylvania Senator's remarks as to profiteering on the part of retailers was prompted by a letter he received from the Clinton Block Coal Co., of Pittsburgh. In the letter exception was taken to an example cited by Senator Copeland where soft coal had cost $17 a ton in Richmondville, N. Y. The Clinton company pointed out that nut and egg coal is selling for $3 at the mine in the Pittsburgh district. The freight rate was added to show that the Richmondville retailer's margin was $10.

Regret is expressed, however, that the Pennsylvania Senator should have attempted to defend coal producers by accusing retailers generally of profiteering. Such tactics have been resorted to by each branch of the industry in the past to the damage of all. Past experience has shown that it breeds popular suspicion when such charges are made by those who supposedly know the inside of the business.

In subsequent remarks Senator Reed, in pointing out the spread between the mine price and the price charged the ultimate consumer in the District of Columbia, failed to state that he was comparing net ton run-of-mine with a delivered gross ton of prepared fuel and that the business is accompanied by unusual risks in that a sudden end of the strike would leave the retailers with unsalable stocks.

Despite talk at the Capitol, it is apparent that any legislation which may be taken up will have a slim chance to get through. With the end of winter not far away and with consumers imbued as never before with a determination to get along, it is doubtful if any coal bill can be put on the statute books even were it to be given the administration's support.

Coal specialists in Washington are divided as to the probable duration of the strike. Some think the men are so anxious to see the mines resume operation that they are willing to leave the settlement to arbitration. Unless Mr. Lewis recognizes this sentiment, they believe, the anthracite miners will demand autonomy, so that their own union may carry out such a program.

Others feel that the strength of the union is being underestimated and that the men still are loyal to the Lewis leadership and will make no concessions in the near future.

Nova Scotia Wage Parley To Begin Feb. 1.

Negotiations preliminary to drawing up a new wage scale and working agreement between the British Empire Steel Corp. and the miners of District 26, United Mine Workers, which were held in abeyance pending the result of the Duncan Royal Commission report on the coal industry of Nova Scotia, will be entered into on Feb. 1, when a joint meeting of the Corporation and United Mine Workers executives will be held at Glace Bay.

The date was set by the union officials to follow the annual district convention of mine workers at Sydney, C. B., beginning Jan. 26, at which the commission's report was to be discussed.

These Illinois Mines Lost Much Business in 1925

Although the 79 mines in the Fifth and Ninth Districts of Illinois, reporting to the Coal Operators' Association, have shown an increase in tonnage during November and December of 249,942 tons as compared to the same months in 1924, nevertheless these mines lost on the year's business 1,003,771 tons when compared with the preceding year.

Forty of the 79 mines worked an average of 36.12 per cent and stood idle 63.88 per cent of the time during the year. Thirty-nine of the mines were idle the entire year. Considering the 79 mines together, they have worked 18.3 per cent of possible working time during the year. In 1923 these 79 mines produced 12,823,138 tons. The 1925 output when compared with that of 1923 shows a loss of 3,256,095 tons.

West Virginia's 1925 Output Breaks All Records

Coal output in West Virginia in the calendar year 1925, according to a preliminary estimate, totaled more than 112,000,000 tons, the largest in the history of the state. Production by some of the fields was approximately as follows: Northern West Virginia, 24,000,000 tons; Pocahontas and Tug River, 25,000,000 tons; Winding Gulf, 9,000,000 tons; Williamson, 10,000,000 tons; Logan, 18,500,000 tons. Gains over 1924 in the New River district were about 2,700,000 tons; in the Kanawha field, 2,000,000 tons; Coal River, 800,000 tons; Logan, 2,500,000 tons.

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Coal Produced in the Principal Countries of the World, Calendar Years 1922-1924*

(In metric tons of 2204.6 lb.)

		1922	1923	1924
North America:				
Canada	Coal	10,587,611	12,163,804	12,372,300
	Lignite	3,162,907	3,249,605	2,500
Greenland		2,100	2,117	
Mexico		932,550	1,261,541	(a)
United States	Anthracite	49,607,344	84,675,282	79,765,491
	Bituminous and Lignite	383,073,174	512,161,770	438,790,754
South America:				
Argentina		(a)	(a)	(a)
Brasil		500,000	324,154	268,157
Chile		1,053,001	1,164,028	1,522,228
Colombia		(a)	(a)	(a)
Peru		294,492	b/253,000	(a)
Venezuela		c/20,782	c/18,050	(a)
Europe:				
Austria	Coal	165,727	157,650	171,959
	Lignite	3,135,902	2,685,467	2,752,300
Belgium		21,208,500	22,922,340	23,359,790
Bulgaria	Coal	46,725	61,600	69,670
	Lignite	983,311	1,012,594	1,155,291
Czechoslovakia	Coal	10,464,990	12,347,251	15,178,942
	Lignite	19,174,296	16,265,530	20,459,690
France	Coal	31,141,096	37,682,235	44,011,240
	Lignite	772,014	861,435	944,080
Germany	Coal	d/129,964,597	62,316,134	118,828,644
	Lignite	137,207,125	118,784,997	124,359,829
Saar		11,240,000	9,192,275	14,032,120
Greece—Lignite		131,515	126,000	129,530
Hungary	Coal	941,380	7,709,775	688,675
	Lignite	6,776,230		5,741,655
Italy	Coal	195,352	173,700	21,855
	Lignite	745,402	953,460	799,448
Netherlands	Coal	4,866,371	5,595,478	6,180,182
	Lignite	28,919	54,185	191,202
Poland	Coal	e/23,974,814	36,097,997	32,224,680
	Lignite	219,983	171,035	88,038
Portugal	Coal	127,279	137,613	124,802
	Lignite	14,380	15,952	8,121
Rumania	Coal	254,642	291,983	297,288
	Lignite	1,861,579	2,229,410	2,479,083
Russia		7,781,400	f/14,504,300	g/13,918,000
Spain	Coal	4,435,843	5,971,446	6,127,586
	Lignite	329,680	394,268	411,773
Spitsbergen		315,000	340,942	451,914
Sweden		378,861	419,569	437,856
Switzerland		3,380	(a)	(a)
United Kingdom				
Great Britain		253,613,054	280,430,369	271,405,414
Ireland		(a)	(a)	(a)
Yugoslavia		3,726,568	4,001,265	4,185,240
Asia:				
British Borneo		88,948	(a)	(a)
China		22,681,000	19,955,000	20,969,000
Chosen		317,330	279,978	399,415
Dutch East Indies		1,032,310	1,156,625	1,470,362
Federated Malay States		286,351	322,994	378,778
India, British		19,316,112	19,972,376	21,516,491
Indo-China		988,991	1,056,921	1,235,880
Japan (including Taiwan & Karafuto)	Coal	29,163,727	30,417,012	31,617,277
	Lignite	166,302	151,462	176,764
Philippine Islands		42,420	43,446	(a)
Russia		1,276,900	(f)	g/2,271,000
Turkey		681,000	(a)	(a)
Africa:				
Algeria		8,855	3,562	9,228
Belgian Congo		33,000	65,000	81,000
Nigeria		123,027	173,422	183,000
Rhodesia, Southern		467,787	559,999	591,526
Tunisia		343	620	305
Union of South Africa		8,830,774	10,810,897	11,331,125
Oceania:				
Australia				
New South Wales		10,346,572	10,646,693	11,804,688
Queensland		973,903	1,077,686	1,141,143
Tasmania		70,349	82,014	77,208
Victoria		660,113	603,240	656,170
Western Australia		445,480	427,466	428,635
New Zealand	Bituminous	983,981	950,715	1,102,418
	Lignite	903,656	1,050,735	1,014,224
		1,225,500,000	1,359,900,000	1,354,300,000

* The term "coal" as here used includes lignite, and the production stated for the world is simply the total of quantities reported, no attempt being made to reduce the statistics for inferior coals to an equivalent tonnage of coals of higher rank. Where possible, however, coal and lignite are shown separately.

a/ Estimate included in total. b/ Includes a small quantity of asphaltite. c/ Exclusive of the output of the State of Falcon (about 8,000 tons), for which estimate is included in total. d/ Includes entire output of Upper Silesia for January-May inclusive: for June-December, inclusive, only that part of the province allocated to Germany. e/ Includes the output June-December, inclusive of that part of Upper Silesia allocated to Poland. f/ Russia in Asia included under Russian Europe. g/ Data for operating year, Oct. 1, 1923, to Sept. 30, 1924.

Annual World Production of Coal, 1911-1924

(In Metric Tons)

Year	Production (In Part Estimated)	Per Cent Produced By United States	Year	Production (In Part Estimated)	Per Cent Produced By United States
1911	1,189,000,000	37.9	1918	1,333,000,000	46.3
1912	1,249,000,000	38.8	1919	1,173,000,000	42.8
1913	1,342,000,000	38.6	1920	1,319,000,000	45.3
1914	1,207,000,000	38.7	1921	a 1,134,600,000	40.4
1915	1,193,000,000	40.5	1922	a 1,225,500,000	35.3
1916	1,291,000,000	41.5	1923	a 1,359,900,000	43.9
1917	1,356,000,000	43.6	1924	a 1,354,300,000	38.3

a Revised from earlier reports to conform with more accurate information on certain of the warring countries.

Engineers Adopt Ambitious Public Service Program

Dean Dexter S. Kimball of Cornell University was elected president of the American Engineering Council at the annual meeting of the Council in Washington, Jan. 13 to 15. Dean Kimball, past president of the American Society of Mechanical Engineers, succeeds former Governor James Hartness of Vermont. Gardner S. Williams, of Ann Arbor, Mich., and Irving E. Moultrop, of Boston, were named vice-presidents. Mr. Williams being re-elected. Dr. Harrison E. Howe, of Washington, was re-elected treasurer, and Lawrence W. Wallace, of Washington, was again chosen executive secretary, a post he has held since the organization of the Council.

At its Washington meeting the Council approved a public works bill to be introduced in the Senate by Wesley L. Jones, of Washington, and in the House by Adam M. Wyant, of Pennsylvania. This measure would change the name of the Department of the Interior to the Department of Public Works and Domain. Four assistant secretaries are provided for, and numerous transfers to the new department of boards, bureaus, commissions and officers are made.

Plans for an organized attack on the problems of industry and agriculture, aiming to wipe out waste and to forestall possible economic disaster through dwindling labor supplies and crippled production, were framed. Five years would be required to carry out this program of research, continuing on a more extensive scale the "Assay of Waste" conducted by the Council in 1921 under the presidency of Herbert Hoover, Secretary of Commerce.

The Assembly of the Council adopted recommendations of the administrative board declaring "that the government should not trespass upon the field of industry unless it can be satisfactorily shown that the government can better engage in that business than private enterprise can."

It was voted to postpone action on the giant power report until further consideration could be given to it.

Future fuel supplies for the nation's industries and homes must be won through reforestation, Dean Mortimer E. Cooley of the University of Michigan, past president of the Council, said in an address at the closing session of the Assembly.

A large and distinguished gathering of engineers, public officials, economists and men of science attended the annual dinner of the Council at the Chevy Chase Club on the evening of Jan. 14. Vice-President Williams presided. The principal speakers were Secretary Hubert Work of the Department of the Interior, and Daniel R. Crissinger, Governor of the Federal Reserve Board. Secretary Work declared his agreement with the essentials of the public works bill. President Kimball also spoke.

The National Safety Council has moved its offices in Chicago to 108 East Ohio St. The transfer was made Jan. 1, 1926.

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A.I.M.E. Will Discuss Coal Washing and Ventilation

When the 133rd session of the American Institute of Mining and Metallurgical Engineers meets, Feb. 15-18, at the Engineers' Societies Building, New York City, an outstanding interest will be the discussion of the progress and theory of mine ventilation, to which two sessions are to be devoted. Air-sand flotation, where coal floats on a sand stratum suspended in the air, is one of the interesting developments. It will be presented for the first time at this session.

The meeting on that subject, with G. S. Rice in the chair, opens Feb. 15 at 9:30 a.m., and after his report and that of E. A. Holbrook, the secretary, Graham Bright will report for the subcommittee on fans and L. W. Huber will speak on "Mine Fan Characteristics." Ole Singstad will make an address on the New York-New Jersey Vehicular Tunnel. The afternoon session will be steered by R. R. Sayers, who will open with a report on the proposed activities of the subcommittee on physiological studies and an address on "Permissible Limits of Toxic and Noxious Gases in Mine and Tunnel Ventilation."

A. C. Callen will report on the present and future activities of the subcommittee on the physics of ventilation, and G. E. McElroy will discuss the report of the British Institution of Mining Engineers on the "Theory of Ventilation." Frank Haas will present a report on the present and future activities of the subcommittee on coal-mine ventilation, for which discussion is being prepared by E. A. Holbrook, J. W. Paul, D. Harrington and others. B. B. Gottsberger will make a report similar to that of Mr. Haas but in regard to metal mining, and G. E. McElroy will discuss that subject.

On Tuesday under C. M. Lingle's leadership a report will be made by H. N. Eavenson for the coal and coke committee. On Wednesday R. H. Sweetser will preside at a meeting in the course of which T. M. Chance will describe the "Mt. Union Sand Flotation Plant for the Preparation of Bituminous Coal." Thomas Fraser will describe the newly developed "Air-Sand Process of Cleaning Coal." A. C. Fieldner will deliver an address on the "Relation of Ash Composition to the Uses of Coal" and A. C. Noe one on "Coal Balls." "The Explosibility of Coal and Other Dust in a Laboratory Steel Gallery" will be discussed by V. C. Allison.

The committee on education will meet at luncheon at 12:15 and a round-table discussion led by E. A. Holbrook will follow. The industrial relations committee at 2 p.m. will canvass the question of "Employee Stock Ownership" under the direction of C. A. Meissner and the leadership of George E. Roberts, of the National City Bank. H. N. Eavenson will discuss "Coal-Mine Subsidence" in the ground movement and subsidence meeting, also at 2 p.m. W. E. Fohl will assemble a committee at the same moment to study the methods for the drilling of oil and gas wells through coal beds.

On Monday evening a smoker will be held at the Mecca Temple Mosque and on Wednesday the annual banquet is scheduled. On Thursday the members will motor up the Hudson River, across the Bear Mountain bridge and back. The ladies will have a continuous program of entertainment throughout the meetings. It may be added that all those interested in the matters discussed by the various committees of the A. I. M. E. to which reference has been made are welcome to attend and take part in the proceedings.

Straw Briquets Seen As Minor Rival to Coal

Straw compressed into briquets under 833 lb. pressure per square inch in laboratory experiments at the Kansas State Agricultural College, Manhattan, Kan., has proved to have about one-half the heating value of coal and may partly supplant it as a fuel in midwestern homes, according to W. H. Sanders, professor of agricultural engineering of the college.

Professor Sanders has invented a machine that can be constructed at little cost, operated on the same principle as a hay baler, which has had fair success in this undertaking. Professor Sanders says that under tests at the college engineering department it was found that 70 per cent of the heat content of the straw was utilized.

Would Probe Coke Prices In New York State

Investigation by the State Coal Commission of the price of coke and the marketing thereof in New York State is provided for in a resolution introduced in the State Senate at Albany Jan. 20 by John J. Dunnigan, Democrat, of the Bronx, New York City.

The resolution recites that "It is charged that the price of coke at the ovens both inside and outside the state is $12 a ton, whilst the freight rate from ovens in the City of Troy to the City of New York is $2.39 per net ton with comparative freight charges to and from other points. Despite this cost of $14.39 or thereabouts to the dealer, the latter is retailing coke in bushels in New York City and Westchester at 70c. or at a rate per ton of from $22 to $28, thereby realizing a profit of from $8 to $14 on the ton. It is obvious that such a charge to the consumer is exorbitant and is permissible only because the retail business is unregulated and unrestricted."

The resolution was referred to the Committee on Finance.

Resumption of dividend payments on the preferred stock of the Consolidation Coal Co. was announced Jan. 20. Directors declared a dividend of $1.75 a share, payable Feb. 20, to stockholders of record Feb. 10. This dividend was due to have been paid June 1, 1925. A total of $3.50 in dividends is overdue on this issue.

December Coke Production Highest On Record

Output of byproduct coke in the United States during December, according to reports by the operators to the U. S. Bureau of Mines, amounted to 3,760,000 net tons, an increase of 203,000 tons, or 5.7 per cent, compared with the preceding month. During the month of December, the daily output increased to 121,305 tons, a gain of 2,729 tons, or 2.3 per cent, compared with the November rate. The coke plants operated at about 91 per cent of capacity. With the inclusion of the new plant at Troy, N. Y., and the rebuilt plant at Chester, Pa., the total number of byproduct plants now in existence is 80, of which 74 were active during the month. The current output is the highest on record for any month.

Beehive coke production continued to increase during December, the total being estimated at 1,307,000 net tons, an increase of 94,000 tons, or 7.7 per cent, compared with the month of November.

Production of all coke amounted to 5,067,000 tons, the byproduct plants contributing 75 per cent, the beehive plants the remainder.

Monthly Output of Byproduct and Beehive Coke in the United States*

(In Thousands of Net Tons)

	By-product Coke	Bee-hive Coke	Total
September, 1925.....	3,185	746	3,931
October, 1925.....	3,402	1,006	4,408
November, 1925.....	3,557	1,213	4,770
December, 1925.....	3,760	1,307	5,067
1923 monthly average....	3,133	1,615	4,748
1924 monthly average....	2,833	806	3,639
1925 monthly average....	3,332	893	4,225

* Excludes screenings and breeze.

The total amount of coal consumed in both beehive and byproduct coke plants amounted to 7,465,000 tons, 5,403,000 tons being consumed at byproduct plants, and 2,062,000 tons at beehive plants. This December total is 435,000 tons greater than the monthly average for 1923.

Estimated Monthly Consumption of Coal in Manufacture of Coke

(In Thousands of Net Tons)

	Consumed in By-product Ovens	Consumed in Beehive Ovens	Total Coal Consumed
September, 1925.....	4,576	1,177	5,753
October, 1925.....	4,888	1,587	6,475
November, 1925.....	5,111	1,913	7,024
December, 1925.....	5,403	2,062	7,465
1923 monthly average....	4,523	2,507	7,030
1924 monthly average....	4,060	1,272	5,332
1925 monthly average....	4,787	1,371	6,158

Of the total output of byproduct coke during December, 1925, 3,118,000 tons, or 82.9 per cent, was made in plants associated with iron furnaces, and 642,000 tons, or 17.1 per cent, was made at merchant or other plants.

Removal of coal from deposits on public lands without having obtained the necessary rights under the Minerals Leasing Act is made a misdemeanor in a bill proposed by Representative Sinnott, chairman of the Public Lands Committee. The bill was introduced at the request of the Interior Department.

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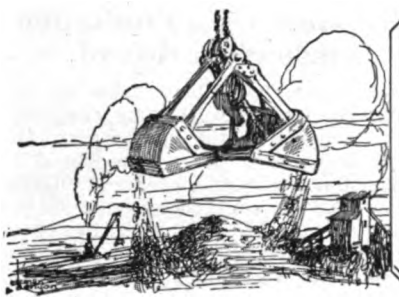
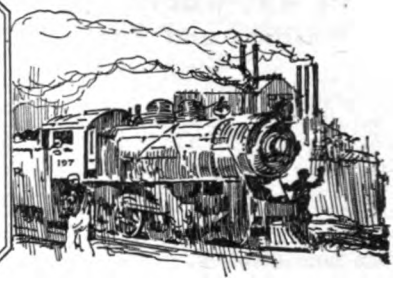


Production And the Market



Strong Demand Absorbs Soaring Coal Output; High Coke Prices Rouse Criticism

The temper of the spot bituminous coal market as January draws to a close shows a sharp territorial division. In the Middle Atlantic and New England states activity is largely controlled by developments in the anthracite strike controversy. In the states farther west the weather is the dominant factor. This is true not only of the domestic business but also is highly influential in the trend of open-market industrial buying.

The bulk of the business, however, does not appear in the spot market. It shows up when production figures are made public. This under-cover purchasing, either on contract or through channels so silent that the same relationship might just as well exist, and the heavy shipments from captive operations account for the record outputs during the present month. Output in the week ended Jan. 16, according to the Bureau of Mines, totaled 13,073,000 net tons. Revised figures for the week preceding were 13,030,000 tons.

Buying Reaches Record Proportions

When it is remembered that the maximum record, made in the week ended Oct. 25, 1919, was only 13,344,000 tons and that the 13,000,000-ton mark was passed just twice in the six years following, the record of the current month becomes significant. Part of this heavy output, of course, represents the substitution of bituminous coal for anthracite, but this substitution does not cover the major increases. These must be credited to a sustained industrial demand that gives real substance to the reports of national prosperity and holds out hope for better things to the bituminous coal trade.

There is still, however, a slight maladjustment between prices and demand, except in cases where the former are rigidly maintained as a matter of principle and trade stability. Gambling on the weather in the West and on the turn of the anthracite negotiations in the East, both buyer and seller have at times overplayed their hands. Reluctant purchasers of West Virginia low-volatile lump and egg have paid for their tardiness in higher prices. Over-eager shippers of screened coal from the Appalachian field have found slack backing up on them. "No bills" are still the rule at Middle Western mines and the Southwest and the Far West do not escape.

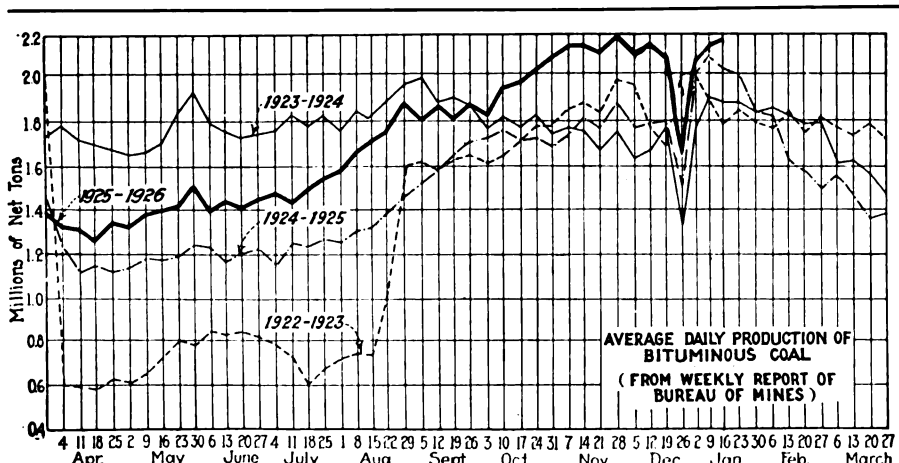
Price Bulges Not Unmixed Evil

But the price situation is not without its compensations. The extra demand put upon low-volatile West Virginia coals in the territory opened up by the emergency all-rail rates has reacted to the benefit of the sorely distressed central Pennsylvania field. A number of consumers, rebelling against $6 and $7 Pocahontas and New River lump on the one hand and $12 and $13 coke on the other, have turned to Pennsylvania for relief. Some of the high-volatiles also have enjoyed a wider market because of price differentials.

More criticism is leveled at the coke ovens than at any other factor in the trade at the present time. The critics are a unit in denouncing current quotations as distinctly out of line. When blast furnaces controlled by coke producers are banked so that the coke tonnage may be diverted to the domestic market at sky-rocketing prices, even the best friends of the coke people are convinced that the ovens are injuring their own future.

Coal Age Index of spot prices of bituminous coal on Jan. 25 stood at 178, the corresponding price being $2.16, compared with 181 and $2.20 on Jan. 18.

Dumpings at Hampton Roads dropped to 407,625 net tons the week ended Jan. 21. The total the preceding week was 433,560 tons.



Estimates of Production

(Net Tons)

	1925	1926
BITUMINOUS		
Jan. 2	10,810,000	10,667,000
Jan. 9 (a)	12,590,000	13,030,000
Jan. 16 (b)	12,044,000	13,073,000
Daily average	2,007,000	2,179,000
Coal yr. to date (c)	371,858,000	423,025,000
Daily av. to date	1,526,000	1,731,000
ANTHRACITE		
Jan. 2 (a)	1,255,000	28,000
Jan. 9	1,785,000	47,000
Jan. 16 (b)	1,803,000	32,000
Coal yr. to date (c)	68,486,000	40,568,000
BEEHIVE COKE		
Jan. 9 (a)	265,000	290,000
Jan. 16 (b)	262,000	310,000
Calendar yr. to date (c)	612,000	697,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

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Mid-West Pins Hopes on Weather

Middle Western producers are hoping that the week-end cold snap will quicken a sluggish trade. Illinois operators are holding to established prices in the face of badly broken running time and a heavy accumulation of "no bills." The market on screenings again has declined despite curtailed output. Some Indiana operators are so well sold up on lump that they will accept additional orders only when the buyer will take smaller sizes as well. Western Kentucky prices have slumped in sympathy with a further weakened demand.

From the standpoint of the Chicago trade, the smokeless shippers are the only ones who are benefiting from the situation arising out of the anthracite strike. Nevertheless Pocahontas lump is still offered freely in the Western market. West Virginia bituminous operators are making bargain-counter offers on large lump in order to keep their mines going to take advantage of Eastern demand for the smaller prepared sizes. Slack, too, is backing up on some of these shippers.

There is little activity in the eastern Kentucky fields. Prices have been helped somewhat by complaints of car shortage, but no great buying pressure has been exerted.

Reports from the southern Illinois mining fields show that there has been a slight increase in the movement of lump coal since colder weather set in, but egg is still draggy and nut and screenings are distinctly slow. There seems to be ample transportation facilities to take care of current demand.

During the holiday period there were further curtailments in operations at the shaft mines in the Franklin, Williamson and Saline County districts. The past few days, however, have witnessed a slight improvement. Stripping mines still have the better of the argument in so far as steady running time is concerned although the snow and ice last week slowed up work at the pits.

Light railroad buying has been taking toll of the deep mines in Jackson and Duquoin, as well as in the Franklin and Carterville fields. There is still a large accumulation of unbilled coal at the mines—a handicap under which Perry and Jackson Counties have labored for many months.

Mt. Olive domestic sizes have been in better demand the past few days, but steam trade is backward. Prices on prepared coals in the St. Louis market were cut from $2.75 to $2.50 ten days ago and there are reports that one or two southern Illinois producers have started shading prices.

The market on Standard screenings is down to $1@$1.10, with demand very light. Mines relatively free of "no bills" are holding 2-in. lump to a $2.10 minimum. The domestic demand, however, is concentrated on 6-in. coal. Railroad buying is light. Mines doing 50 per cent or better in the

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	Jan. 26, 1925	Jan. 11, 1926	Jan. 18, 1926	Jan. 25, 1926†
Smokeless lump	Columbus	$3.85	$3.85	$4.10	**$4.25@$4.50**
Smokeless mine run	Columbus	1.90	2.95	2.75	*2.40@ 2.85*
Smokeless screenings	Columbus	1.20	2.60	2.00	*1.75@ 2.00*
Smokeless lump	Chicago	4.00	3.85	3.85	**3.75@ 4.25**
Smokeless mine run	Chicago	2.00	2.10	2.10	2.00@ 2.25
Smokeless lump	Cincinnati	4.10	4.10	4.50	*4.00@ 4.50*
Smokeless mine run	Cincinnati	2.00	2.35	2.50	*2.25*
Smokeless screenings	Cincinnati	1.10	2.00	1.60	*1.25@ 1.50*
*Smokeless mine run	Boston	4.45	4.85	4.90	*4.75@ 5.00*
Clearfield mine run	Boston	1.95	1.90	1.95	**1.85@ 2.25**
Cambria mine run	Boston	2.30	2.25	2.40	*2.15@ 2.60*
Somerset mine run	Boston	2.10	2.05	2.10	**1.95@ 2.40**
Pool 1 (Navy Standard)	New York	2.75	2.95	3.05	2.85@ 3.25
Pool 1 (Navy Standard)	Philadelphia	2.80	2.95	3.15	*2.75@ 3.15*
Pool 1 (Navy Standard)	Baltimore	2.25	2.30	2.30	2.25@ 2.35
Pool 9 (Super. Low Vol.)	New York	2.15	2.30	2.40	**2.40@ 2.75**
Pool 9 (Super. Low Vol.)	Philadelphia	2.20	2.30	2.50	**2.50@ 2.75**
Pool 9 (Super. Low Vol.)	Baltimore	1.85	2.15	2.15	2.10@ 2.20
Pool 10 (H.Gr.Low Vol.)	New York	1.85	2.05	2.15	**2.10@ 2.45**
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.85	2.05	2.25	**2.25@ 2.50**
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.70	1.95	1.95	1.90@ 2.00
Pool 11 (Low Vol.)	New York	1.60	1.80	1.85	**2.00@ 2.25**
Pool 11 (Low Vol.)	Philadelphia	1.65	1.90	2.05	**2.00@ 2.25**
Pool 11 (Low Vol.)	Baltimore	1.50	1.70	1.70	1.70@ 1.75
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.50	1.60	1.60	1.50@ 1.70
Pool 54-64 (Gas and St.)	Philadelphia	1.50	1.60	1.65	*1.55@ 1.70*
Pool 54-64 (Gas and St.)	Baltimore	1.65	1.65	1.65	1.65@ 1.70
Pittsburgh scr'd gas	Pittsburgh	2.35	2.65	2.65	2.60@ 2.75
Pittsburgh gas mine run	Pittsburgh	2.10	2.10	2.10	2.00@ 2.25
Pittsburgh mine run (St.)	Pittsburgh	1.95	2.05	2.05	2.00@ 2.10
Pittsburgh slack (Gas)	Pittsburgh	1.50	1.55	1.50	*1.40@ 1.50*
Kanawha lump	Columbus	2.50	2.25	2.25	2.00@ 2.50
Kanawha mine run	Columbus	1.60	1.70	1.70	1.55@ 1.85
Kanawha screenings	Columbus	.75	1.05	.90	*.75@ 1.00*
W. Va. lump	Cincinnati	2.15	3.00	2.75	*2.50@ 2.75*
W. Va. gas mine run	Cincinnati	1.30	1.60	1.55	*1.40@ 1.50*
W. Va. steam mine run	Cincinnati	1.30	1.50	1.60	*1.25@ 1.40*
W. Va. screenings	Cincinnati	.80	1.10	1.10	*.50@ 1.00*
Hocking lump	Columbus	2.50	2.35	2.35	2.25@ 2.50
Hocking mine run	Columbus	1.60	1.85	1.85	*1.65@ 1.85*
Hocking screenings	Columbus	1.10	1.20	1.20	1.15@ 1.25
Pitts. No. 8 lump	Cleveland	2.30	2.30	2.30	1.85@ 2.75
Pitts. No. 8 mine run	Cleveland	1.85	1.80	1.80	1.80@ 1.85
Pitts. No. 8 screenings	Cleveland	1.35	1.45	1.40	*1.25@ 1.35*

Midwest	Market Quoted	Jan. 26, 1925	Jan. 11, 1926	Jan. 18, 1926	Jan. 25, 1926†
Franklin, Ill. lump	Chicago	$3.60	$3.50	$3.50	$3.50
Franklin, Ill. mine run	Chicago	2.35	2.50	2.50	2.35@ 2.65
Franklin, Ill. screenings	Chicago	1.85	1.85	1.85	1.75@ 2.00
Central, Ill. lump	Chicago	3.00	3.10	3.10	3.00@ 3.25
Central, Ill. mine run	Chicago	2.20	2.30	2.30	2.25@ 2.35
Central, Ill. screenings	Chicago	1.45	1.40	1.40	1.35@ 1.50
Ind. 4th Vein lump	Chicago	3.10	3.00	3.00	2.75@ 3.25
Ind. 4th Vein mine run	Chicago	2.35	2.30	2.30	2.25@ 2.35
Ind. 4th Vein screenings	Chicago	1.55	1.85	1.85	1.75@ 2.00
Ind. 5th Vein lump	Chicago	2.60	2.50	2.50	*2.25@ 2.60*
Ind. 5th Vein mine run	Chicago	2.10	1.95	1.95	1.85@ 2.10
Ind. 5th Vein screenings	Chicago	1.40	1.50	1.50	*1.20@ 1.35*
Mt. Olive lump	St. Louis	3.00	2.85	2.85	2.75@ 3.00
Mt. Olive mine run	St. Louis	2.35	2.00	2.00	2.00
Mt. Olive screenings	St. Louis	1.80	1.75	1.75	1.75
Standard lump	St. Louis	2.45	2.40	2.40	**2.40@ 2.50**
Standard mine run	St. Louis	1.95	1.80	1.80	1.75@ 1.90
Standard screenings	St. Louis	1.15	.85	.85	**1.00@ 1.10**
West Ky. block	Louisville	2.55	2.00	2.05	1.85@ 2.25
West Ky. mine run	Louisville	1.55	1.35	1.35	1.25@ 1.50
West Ky. screenings	Louisville	1.10	1.00	.90	.75@ 1.10
West Ky. block	Chicago	2.40	2.25	2.25	*2.00@ 2.25*
West Ky. mine run	Chicago	1.50	1.50	1.50	1.25@ 1.75
South and Southwest					
Big Seam lump	Birmingham	2.85	2.75	2.75	2.50@ 3.00
Big Seam mine run	Birmingham	1.75	2.10	2.10	2.00@ 2.25
Big Seam (washed)	Birmingham	1.75	2.30	2.30	2.10@ 2.50
S. E. Ky. block	Chicago	2.60	3.10	3.10	*2.75@ 3.00*
S. E. Ky. mine run	Chicago	1.50	1.85	1.85	1.75@ 2.00
S. E. Ky. block	Louisville	2.75	3.00	3.00	2.50@ 3.25
S. E. Ky. mine run	Louisville	1.35	1.55	1.55	1.40@ 1.75
S. E. Ky. screenings	Louisville	.85	1.00	1.00	.90@ 1.10
S. E. Ky. block	Cincinnati	2.75	3.10	3.25	*2.75@ 3.25*
S. E. Ky. mine run	Cincinnati	1.40	1.60	1.60	*1.25@ 1.60*
S. E. Ky. screenings	Cincinnati	.90	1.05	1.05	*.50@ 1.10*
Kansas lump	Kansas City	4.85	5.00	4.85	**5.00**
Kansas mine run	Kansas City	3.35	3.10	3.10	3.00@ 3.25
Kansas screenings	Kansas City	2.50	2.35	2.30	2.25@ 2.35

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**; declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Jan. 26, 1925 Independent	Jan. 26, 1925 Company	Jan. 18, 1926 Independent	Jan. 18, 1926 Company	Jan. 25, 1926† Independent	Jan. 25, 1926† Company
Broken	New York	$2.34	.....	$8.00@$9.25	.....	.....	.....	.....
Broken	Philadelphia	2.39	.....	9.15	.....	.....	.....	.....
Egg	New York	2.34	$8.50@$9.25	8.75@ 9.25	.....	.....	.....	.....
Egg	Philadelphia	2.39	9.45@ 9.75	8.80@ 9.25	.....	.....	.....	.....
Egg	Chicago*	5.06	8.17@ 8.40	8.08	$9.50@10.00	$8.03@$8.25	$9.50@10.00	$8.03@$8.25
Stove	New York	2.34	9.75@10.25	9.00@ 9.50	.....	.....	.....	.....
Stove	Philadelphia	2.39	10.10@10.75	9.15@ 9.50	.....	.....	.....	.....
Stove	Chicago*	5.06	8.80@ 9.00	8.53@ 8.65	10.00@11.00	8.40@ 8.80	10.00@11.00	8.40@ 8.80
Chestnut	New York	2.34	9.75@10.50	8.75@ 9.40	.....	.....	.....	.....
Chestnut	Philadelphia	2.39	10.00@10.75	9.25@ 9.40	.....	.....	.....	.....
Chestnut	Chicago*	5.06	8.61@ 9.00	8.40@ 8.41	10.00@11.00	8.50@ 8.75	10.00@11.00	8.50@ 8.75
Pea	New York	2.22	4.75@ 5.50	5.50@ 6.00	.....	.....	.....	.....
Pea	Philadelphia	2.14	5.75@ 6.00	6.00	.....	.....	.....	.....
Pea	Chicago*	4.79	5.36@ 5.75	5.36@ 5.95	5.50@ 6.00	5.50@ 6.00	5.50@ 6.00	5.50@ 6.00
Buckwheat No. 1	New York	2.22	2.25@ 3.00	3.00@ 3.15	.....	.....	.....	.....
Buckwheat No. 1	Philadelphia	2.14	2.50@ 3.00	3.00	.....	2.50@ 3.00	.....	.....
Rice	New York	2.22	2.00@ 2.35	2.00@ 2.25	.....	.....	.....	.....
Rice	Philadelphia	2.14	2.00@ 2.25	2.25	.....	.....	.....	.....
Barley	New York	2.22	1.40@ 1.65	1.50	.....	.....	.....	.....
Barley	Philadelphia	2.14	1.50	1.50	.....	.....	.....	.....
Birdseye	New York	2.22	1.60@ 1.75	1.60	.....	.....	.....	.....

*Net tons, f.o.b. mines. †Advances over previous week shown in heavy type; declines in *italics*.

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Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926			1925
	Jan. 25	Jan. 18	Jan. 11	Jan. 26
Index	178	181	180	173
Weighted average price	$2.16	$2.19	$2.18	$2.09

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.

matter of running time are the fortunate exceptions to the general rule.

In the St. Louis local market, domestic demand has recovered from the holiday slump. The poorer sections of the city are buying some Standard coal, but the bulk of the tonnage moving through retail channels is of higher grade. There is a fair demand for smokeless coal and a brisk call for coke. Medium grades are moving to the country trade. Illinois, northwestern Missouri and Iowa are in the market for western Kentucky coals. Carload steam demand in St. Louis territory is weak.

Higher Temperatures Hurt Kentucky

Mild weather on the heels of the holiday lull has hit the Louisville market a sharp blow. Eastern Kentucky appears to have suffered more in the slump than the western part of the state. Some eastern block has been quoted as low as $2.40, although the general range has been $2.50@$2.75, with some well-known brands commanding as high as $3.25.

The heavier demand for prepared coal prior to the recent slump is reflected in the market on screenings. Large industrial consumers are playing a hand-to-mouth buying game, relying upon stockpiles to beat any brief bulges in prices and replenishing their reserves on the downward dips of the market. Producers are hopeful that the heavy industrial consumption of fuel will force the steam plants to buy more freely. The industrial purchasing agents, however, seem to be acting on the assumption that the price trends the rest of this coal year will be a repetition of those of preceding years.

Despite some anxiety in recent months, the car situation on the whole has been favorable. Labor, too, is plentiful and apparently contented. There has been some slowing up in strip-pit mining because of weather conditions, but that is expected at this time of the year.

Dock Operators Marking Time

It has been largely a case of marking time on the part of the docks at the Head of the Lakes since the middle of the month. Mild weather has taken the edge off the consumers' desire to purchase coal. Both the retailers and the steam coal buyers in Minnesota, northern Wisconsin and North Dakota, who received substantial shipments during the first half of January, are niggardly in placing additional orders.

Retailers justify their policy on the ground of credit conditions. For their part, dock operators are not inclined to force the situation as they, too, are watching collections closely. As a result, there are fewer past due accounts on the books than for several years.

Notwithstanding the tendency toward shipments in small lots, the total movement has been comfortably large. Prompt service by the railroads has made it possible to keep the trade supplied. Nevertheless, the docks are making special efforts to reduce the accumulation of coal carried. These stocks are estimated at 4,900,000 tons. Only two dock operators have any anthracite on hand. That tonnage is confined to a limited quantity of chestnut, reserved for consumers with base-burner stoves.

The movement of Pocahontas coal for domestic purposes has been steadily increasing. Reserve stocks, however, are liberal and the market is easier, although prices have not been cut. In view of the failure of anthracite operators and miners to come to an agreement, it is felt that there will be no occasion to shade these quotations, which stand at $8.50, f.o.b. docks, on lump, egg and nut and $5 on mine-run. Kentucky screened lump is $6@$6.50; stove, $6@$6.25; dock-run, $5.75@$6, and screenings, $4.25.

Dock managers and retail dealers report the fuel situation in Milwaukee unchanged. There is plenty of bituminous coal, and consumers are having no difficulty in procuring coke and Pocahontas. The local coke plant is allocating to dealers in order to insure proper distribution under the circumstances, and so far as can be seen there is no likelihood of any hardship for the public on the score of fuel shortage.

Mercury Helps Southwest Markets

Again winter has come to the aid of Southwestern operators. Business is beginning to pick up in Arkansas, and Kansas lump, the price of which had begun to break, again is held steady at $5. Production has been steady through the season. While the winter has been mild, low temperatures have cleared tracks of "no bills" periodically and stacked up orders sufficient to carry operators well into another period of warm weather.

In the late domestic depression, when Kansas lump was quoted off 25c. by some operators, screenings were advanced to $2.50 by many, with a tendency, as lump began to move, to revert to $2.35.

Colorado mines still struggle under the handicap of retarded domestic buying induced by unseasonable temperatures in Missouri River territory. For the field as a whole the running time does not exceed 80 per cent. There is a surplus of unbilled domestic loads on the mine tracks awaiting buyers. The steam coal market, too, is backward. Prices remain unchanged.

Utah Has Good Demand from Pacific Coast

The coal business is improving in Utah following the first real snowstorms of the present winter season. Stove coal was in greater demand than any other size immediately prior to the coming of the snow, but this size is expected to give way now to furnace and domestic lump. Some of the producers are behind on their stove orders. A good demand from the Pacific Coast contributed to a considerable extent to the scarcity.

Slack, too, has been none too plentiful, but with the increased working time at the mines, which the more wintry weather will make possible, this situation is expected to improve at once. There is plenty of coal on hand at some of the mines, if not all, and many "no bill" cars on the tracks, including various grades of coal. Prices remain steady, the car situation is satisfactory and there is an abundance of labor at the mines.

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Cold Snap Saves Cincinnati Trade

A cold snap the latter part of the week arrived just in the nick of time to save the price list in Cincinnati from what might have been positive embarrassment. For four or five days the values had been melting under the influence of a stoppage of trade caused by warm weather. The crumbling of the market started even before that. Detroit and northern Ohio markets were gorged beyond capacity and radical price drops naturally followed. Distress stuff went overboard first, demurrage tonnage followed. Slack and run-of-mine bore the brunt with some reductions on egg, stove and smaller prepared sizings.

Overproduction, of course, played a part, but not in the movement through the Cincinnati gateways. The report of the American Railway Association showed only 12,326 cars passed through, or 139 cars more than last week and a decrease of 686 cars compared with last year. Louisville & Nashville loadings decreased 1,032 cars and since the report was issued the Chesapeake & Ohio reports show dozens of mines down in the Big Sandy, Elkhorn and on the main line. So, it would appear that it is the coal above ground rather than the coal freshly mined that figures most in tipping the market.

In the low-volatile section screenings have dropped to $1.25@$1.50, mine-run is weak at $2.25; but Eastern demand has pushed egg, stove and nut to $5.50, as compared with Western contract deliveries at $4.25 and spot around $4.75 @$5. Lump for Western shipment is $4@$4.25; east 25 to 50c. higher. Nearly all of the producers say that with the exception of screenings they have orders and contracts booked now to carry them over into February.

High-volatile slack and mine-run suffered most in the recent slump. Some distress screenings went down to 50c. Mine-run was freely offered at $1.25 for steam and $1.40 for byproduct and gas. Egg went as low as $1.75, but block and large lump held fairly firm, West Virginia selling on a range of $2.50@$2.75 and Kentucky $2.75@$3.25.

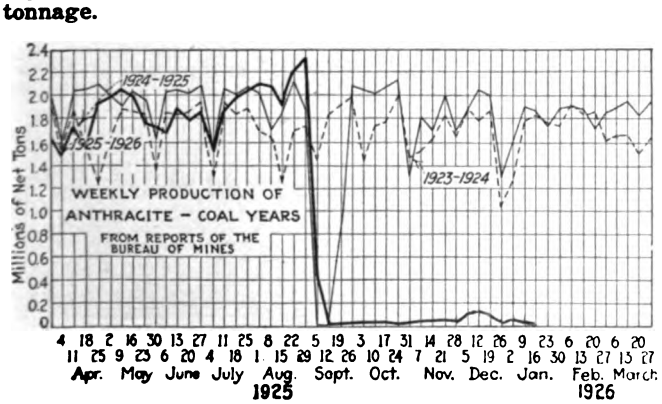
There have been no retail changes in price here. River business again is halted by weather conditions.

The mercury again controlled the destinies of the domestic market in southern Ohio last week and the predicted cold wave came too late to help either prices or demand. The retailers are buying only when absolutely necessary and they find that the stocks they are now carrying are ample to meet the householders' orders.

The retailers are keeping a close watch upon credits, which in some cases have been overtextended. Most of the consumer buying now is held down to one- and two-ton lots. Retail prices, however, have not declined. Smokeless lump is selling for $9.50@$10; splint, $7@$7.50; Hocking and Pomeroy Bend, $6@$6.50; Kentucky block, $7.25@$7.50. Demand farther east is limiting the tonnage of smokeless egg running to Columbus retail dealers.

Industrial demand for southern Ohio coal continues lethargic. Prices are irregular. Some distress coal finds its way to market, but the quantity is much smaller than usual under like conditions. Mine-run was shaded 10c. during the week. West Virginia screenings were easy at about 75c. Public utility and steel plant buying are the backbone of the existing steam market, but the purchasing agents for these institutions are not spendthrift buyers. There is little talk of new contracts.

Southern Ohio production last week was approximately 22½ to 25 per cent of capacity. Pomeroy Bend mines working on the 1917 wage scale captured a large share of this tonnage.



Despite cold weather in eastern Ohio a softening tendency has prevailed in f.o.b. prices on Ohio coal. Cleveland retailers, however, have been rather busy filling orders from householders, but the major portion of this is West Virginia and Kentucky coal.

The feature of the week has been the weakness in spot prices on slack and nut-and-slack. Nevertheless, steam inquiries are stronger because of low stocks and indications that business conditions with industry are beginning to show some improvement. Railroad purchasing is held to contract commitments. There is little distress coal.

Eastern Ohio production for the week ended Jan. 16 aggregated 286,000 tons or about 41 per cent of potential capacity. This was 9,000 under the output of the preceding week but is 9,000 tons over output of the corresponding week a year ago.

Gloom Still Heavy in Pittsburgh

The Pittsburgh district coal market continues in decidedly poor shape. There has been no improvement in the past week, when in some quarters there was expectation of improvement, based in part on the fact that the call for Connellsville coke brought about such high prices that the demand might overflow into bituminous, as it did on the last coke bulge, late in October. What little demand comes from the East is for egg, which brings about $2.50.

Demand for domestic coal is good in a sense, but the area of distribution is so limited that the total tonnage is small relative to the capacity of the region. Industrial consumption is heavy. The steel industry ran at a very high rate in November and December and is doing as well this month.

Coal prices are not quotably changed, except that slack has sagged off a trifle farther.

Failure to end the anthracite strike has materially increased production in the central Pennsylvania bituminous field and prices have stiffened quite materially. The additional demand, however, is far from taxing the capacity to furnish fuel. All grades of coal are affected by the rise in prices, the latest quotations at the mines running as follows: Pool 18, $1.80@$1.90; pool 11, $2@$2.20; pool 10, $2.35@$2.50; pool 9, $2.55@$2.80; pool 71, $2.80@$2.90; pool 1, $2.95@$3.10. Lump is $4.75; egg, $5@$5.50; nut, $5@ $5.25; slack, $2.

Deadly indifference characterizes the attitude of the industrial coal consumer toward sellers in the Buffalo market. In many cases, it is claimed, steam plants are making no pretense of carrying proper storage reserves against winter interruptions to transportation. Prices show a monotonous regularity. Fairmont lump is quoted at $1.60@$1.75; mine-run, $1.40@$1.50; slack, $1.25@$1.40; Youghiogheny gas and No. 8 steam lump, $2@$2.25; slack, $1.30@$1.60; short-rate Allegheny Valley mine-run, $1.75@$2.

Anthracite Rumors Govern New England

The immediate reaction from the anthracite settlement rumor on Friday was enough to show how dependent the New England market is on day-to-day conditions. Prices of screened bituminous dropped 50c.@$1 within an hour or two, not to speak of cancellations that poured in, and it will take another ten days to recover. The absence of severely cold weather has already influenced retail dealers to discount local demand during February. Operators who refrained from commitments beyond January are again scurrying about to place tonnage.

Were the anthracite controversy settled the market for substitutes would flatten out over night. Deliveries have slowed up materially, especially from the smokeless districts all-rail, and buyers generally are cautious in arranging for their probable needs. Splints and other hard-textured high volatiles are less in demand than was the case a fortnight ago. Prepared low volatile enjoyed a buoyancy that had not been seen since November, as high as $7 per net ton being paid at the mine for No. 1 egg, but now the range is $5@$5.50, keeping pace with high grade low volatiles in Pennsylvania that are to be had at from $5.50 up, although on the minimum Clearfield rate.

F.o.b. vessel at Hampton Roads there has been no corresponding fluctuation in price. Coastwise movement is fair, owing to current demand from retailers inland from Boston, Providence and other rehandling ports, but it can hardly be said there is any improvement among the industries. Neither all-rail nor by water is there any noticeable call for Pennsylvania coals.

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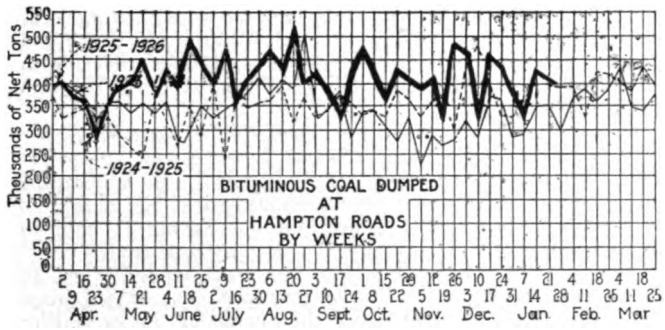

Bituminous More Active at New York

Activity ruled the bituminous coal market at New York last week. Prices were firm and buying of all grades increased. Industrial consumers kept mine-run moving while householders who formerly used anthracite took a fair amount of sized coal and some mine-run. The cream of the domestic trade and the volume too, however, went to coke.

Prices on high-volatile run of mine fluctuated within a narrow range, leaving practically no net change. Quotations on low-volatile were stronger. This was true also of the prepared sizes of high-volatile coal moving into this territory on the Pittsburgh rate. These commanded about $3.25—an advance of $1 within a few weeks. Low-volatile nut was quoted at $5.50@$6; Broad Top mine-run up to $3 and screened coals from this Pennsylvania district at approximately $7 on the average, with a few shippers asking as high as $8. B. R. & P. and Shawmut offerings were on a mine-run basis of $1.85@$2.25.

The New York market is taking more prepared New River and Pocahontas coals for domestic purposes and paying up to $6.50.

Arrivals at the local piers have not been heavy during recent weeks. Some complaint was heard of close deliveries, but no hardship has been experienced.

Greater activity also was the rule in Philadelphia. With the collapse of the anthracite negotiations on Jan. 12 and the approach of the time when consumers would be calling for fresh supplies to tide them over for the rest of the winter, retailers began to cash in on their missionary efforts to sell mine-run. On top of this came a growing demand from industries which normally depend upon anthracite steam sizes. Further tenseness was added to the situation by the suggestion of congestion in transportation service.

Each week sees more call for prepared sizes of Pocahontas and New River coals in the Philadelphia market. There is little surplus available and quotations have jumped from $4.50 to $6 and $7 within a fortnight. Central Pennsylvania low-volatiles have benefited from this advance as dealers who have been unable to buy all the West Virginia coal they desired have turned to the Pennsylvania product with satisfactory results.

Screened gas coal also has moved up several notches in price. Coal selling ten days ago at $2.50 was quoted at $4 last week.

The effect of the anthracite strike on bituminous in the Baltimore market is more noticeable in tonnage than in price. Both the Western Maryland and the Baltimore & Ohio are showing marked increases in coal revenues. Aside from prepared sizes, however, there has been no material change in quotations and high-grade coals can be had at low prices.

Good Coals in Demand at Birmingham

The Birmingham steam market for medium and lower grade coal is easy. High quality fuels are in more active demand. The large stocks accumulated during the first three weeks of December are still being drawn upon and this is having some effect on the spot market. The railroads are taking good tonnages.

The domestic market is in very good shape. Demand is good for all the better grade coals and fair for the medium and poorer qualities, sufficient business being booked or taken on from day to day to clear the output with little or no delay.

While the bulk of the sales are made on basis of quotations which have been in effect for several weeks, some little tonnage has been reported as moving from Walker County at slight reductions. Domestic quotations are stable and without change.

A strong coke market is reported with foundry grades $6.50@$7 per ton for spot business. Egg and nut are in good demand at $5.50@$6. Gas coke, with fair inquiry, is $6.50@$7 ovens.

Peace Rumors Stir Anthracite Market

Rumors of a resumption of anthracite wage negotiations stirred the anthracite trade at New York last week. Both dealers and consumers would welcome a return to peace as the existing situation is to the liking of neither group. The only anthracite still available is a small quantity of No. 1 buckwheat. A few cargoes of this size were quoted at $16 alongside last week. Washery chestnut was offered at $15, f.o.b. washery; No. 1 buckwheat, $8; rice, $6 and barley, $3.

Coke has the edge on competing fuels in the race for the consumer's favor. Mine-run low volatile coal is a close second. The position of the latter is being improved steadily by the sky-rocketing prices asked by the coke ovens. Sized coke is held as high as $12 and $13 at the ovens, and even those quotations hold no definite promise of prompt delivery. In some cases retailers in Greater New York are asking $22 from the consumer.

The Philadelphia trade in the past fortnight settled down to the belief that there would be no early resumption of anthracite mining. Many consumers, watching diminishing cellar stocks, have come to the same view and have rushed to their retail dealers for substitute fuels.

Coke bore the brunt of the charge and ovens asked up to $12 and $13 for their product—to the disgust of the retailers. Many of the latter declared that they would place no orders until prices declined. Turning to bituminous mine-run, the retail men have also been met with rising prices. Necessity, however, has compelled them to order freely.

At Baltimore the retail coal merchant continues to plug away on sales of soft coal and other substitute fuels. The householder is becoming more discriminating in his buying and the less desirable grades of bituminous are becoming a drug on the retail market. Briquets and coke are making new friends. Oil-heating systems, too, are finding a wider market. Fire and building department regulations, however, keep down the number because many of the cheaper burners cannot meet the requirements laid down by the municipal authorities.

Buffalo accepts the anthracite shortage as inevitable, but is bitter in its complaint against what it considers the avarice of the coke producers. Recent oven quotations have mounted as high as $14 although coke may still be bought for curb delivery by the householder for $9.50 from one company.

Sky-Rocketing Coke Prices Continue

Connellsville coke prices are still rising. The advance since last week is fully $1 a ton, perhaps nearer $2. The spot market has been entirely under control of the Eastern demand.

There has been practically no blast-furnace inquiry. The furnaces are, in general, covered by contracts for the quarter, made at what seem now to be very low prices. Since the first of the month two furnaces affiliated with coke ovens have banked to release the coke for the very profitable sale now possible, there being several times as much profit in coke as could be hoped for out of pig iron. Another has been considered likely to do the same at the end of this month.

Run of oven furnace coke is about $8.50@$9.50, with yard crushed at $11@$13 and broken coke, $9@$11.

The *Courier* reports coke production in the Connellsville and Lower Connellsville region in the week ended Jan. 16 at 112,100 tons by the furnace ovens—an increase of 1,300 tons—and 121,100 tons by the merchant ovens, an increase of 2,120 tons.

Car Loadings, Surplusages and Shortages

	Cars Loaded	
	All Cars	Coal Cars
Week ended Jan. 9, 1926	907,119	193,294
Preceding week	741,239	158,944
Week ended Jan. 10, 1925	932,807	217,412

	Surplus Cars		Car Shortages	
Week Ended	All Cars	Coal Cars	All Cars	Coal Cars
Jan. 7, 1926	310,155	115,502	.....	.....
Dec. 31, 1925	267,739	95,295	.....	.....
Jan. 7, 1925	280,921	129,846	.....	.....

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Foreign Market And Export News

British Coal Market Outlook Brightening; Foreign Inquiries Up

The British coal market started the new year under the handicap of a tonnage shortage. Recent gales seriously delayed shipping, and collieries experienced difficulty in clearing supplies. With concessions for immediate shipping obtainable in almost all districts, buyers are covering only urgent requirements. A fairly good business, however, is in hand. There is a strong inland demand for both coal and coke, and further improvement is expected.

Late January inquiry from France is encouraging, but South American demand has moderated after the recent spurt. Shipments are fair to Italy, but new demand is slow to develop. There is good business offering for late January on the part of the coaling depots, particularly the Near East. Three cargoes are loading for the United States. A quieter tone pervades the Newcastle-on-Tyne market and little attempt is made to interfere with the prices which prevailed over December. The decision of the Durham miners' union to allow local settlements had a good effect on the outlook, for it paves the way to the adjustment of many disputes in the country, and the trade should benefit thereby. The steam coal section, while fairly active, was not as steady as the gas and coking coals, the latter having improved in demand since the iron and steel trade picked up. For the same reason coke of all grades showed a better tone when the year opened.

Production by British mines during the week ended Jan. 9, according to a special cable to *Coal Age*, totaled 5,060,000 gross tons, compared with a total output of 4,050,000 tons in the preceding week.

Belgian Steam Coals Still Dull

Many Belgian collieries, particularly those producing industrial coal, have recorded a loss over the year, or such a trifling profit that it is not worth while to mention it. This probably will lead to some concentration schemes among collieries in the Hainaut.

The domestic market is still very lively, with dealers complaining of insufficient tonnages. As the weather is much milder, however, no doubt demand will soon moderate.

The prospects of a general strike of the men are definitely set aside. The general feeling is that the men will accept a curtailment in their wages of 3 fr. per day, and the continuation of the pourparlers engaged with a view to conclude a new wage convention.

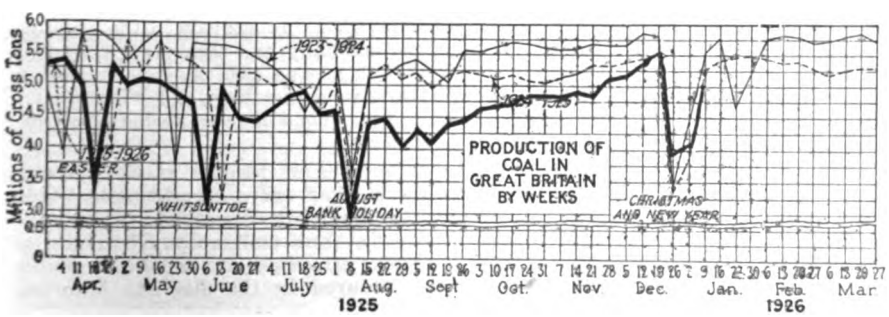
Strong Demand for Domestic Taxes French Market

The French coal market begins the new year auspiciously. Demand for industrial coal is strong enough to take care of output. Domestic coal factors are complaining that French and Belgian shippers are behind on deliveries and that the retail trade has been compelled to turn to higher-priced British coals. Welsh anthracite nuts were quoted at 410@450 fr. at Rouen last week. Transportation difficulties—both rail and water—have held back the French and Belgian collieries. The floods have almost shut off internal water movement.

The new prices on Nord and Pas de Calais coals had not been published when this report was written (Jan. 7), but it was rumored that there would be an increase of 4 to 5 fr. on industrial and domestic coals and possibly 15 fr. on patent fuel. Sharp increases in the price of binder material are held responsible for the greater advance in patent fuel prices. Flaming coals from Marles and Bruay are up 5 fr. The increase in French prices is due to the fresh taxes imposed upon collieries. If the miners' request for higher wages be granted, another boost will follow.

Belgian coals for French delivery show an increase of 3 to 5 fr. because of the difference in the rates of exchange. A comparison of base prices last October with quotations effective Jan. 1, 1926, show advances of 8.75@47.35 fr. due to changes in exchange rates.

In addition to adverse exchange rates, French buyers also are hit by increases in rail transport rates which went into effect the first of the year. Rates from the Pas de Calais field to Paris are up 4 fr., and from Jeumont, on the Belgian frontier, 4.35 fr. Rates for the Belgian haul have increased about 2 fr. Belgian, boosting the cost in French francs from 5 to 7 fr.



It is reported that an agreement on free German coals will be negotiated this month. The first of the year prices on domestic coal were advanced as follows: Sized anthracite, 40 fr.; lean, 5 fr.; semi-bituminous, 5 fr.; lignite briquets, 5 fr.

During December, 1925, the O. R. C. A. received 258,358 tons of coke from the Ruhr.

France produced 4,078,710 metric tons of coal and lignite, 270,342 metric tons of coke and 321,958 metric tons of patent fuel in November, 1925.

U. S. Fuel Exports in December

	1924	1925
Anthracite, gross tons	320,845	7,122
Value	$3,662,129	65,365
Bituminous coal, gross tons.	1,090,486	1,394,693
Value	$5,129,688	$6,063,554
Coke, gross tons	56,307	131,351
Value	$474,364	$1,190,033

TWELVE MONTHS ENDED DECEMBER

	1924	1925
Anthracite, gross tons	3,587,308	2,838,398
Value	$40,067,804	$31,760,627
Bituminous coal, gross tons.	15,268,167	15,590,627
Value	$70,971,302	$68,402,553
Coke, gross tons	588,705	851,618
Value	$4,926,478	$6,871,962

Export Clearances, Week Ended Jan. 23, 1926

FROM HAMPTON ROADS

For Italy:	Tons
Ital. Str. Giovanni, for Genoa	10,397
Ital. Str. Pollenzo, for Portovecchio.	9,326
Ital. Str. Vallemore, for Bagnoli	7,423
For Canal Zone:	
Amer. Str. Marore, for Balboa	8,619
Amer. Str. Lebon, for Cristobal	10,473
For Cuba:	
Amer. Str. Santore, for Dauquiri	10,791
Br. Str. Invella, for Callao	5,017

Hampton Roads Coal Dumpings*

(In Gross Tons)

	Jan. 14	Jan. 21
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week	162,647	163,256
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	83,512	94,822
C. & O. Piers, Newport News:		
Tons dumped for week	140,948	105,873

*Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS

	Jan. 16	Jan. 23†
Pool 1, New York	$6.00@$6.35	$6.00@$6.35
Pool 9, New York	5.50@ 5.75	5.50@ 5.75
Pool 10, New York	5.25@ 5.50	5.25@ 5.50
Pool 11, New York	4.85@ 5.25	4.85@ 5.25
Pool 9, Philadelphia	5.25@ 5.50	*5.30@ 5.40*
Pool 10, Philadelphia	5.00@ 5.30	5.05@ 5.25
Pool 11, Philadelphia	4.70@ 4.95	**4.90@ 5.00**
Pool 1, Hamp. Roads.	4.65@ 4.75	4.65@ 4.75
Pool 2, Hamp. Roads.	4.15@ 4.25	**4.20@ 4.30**
Pool 5-6-7, Hamp. Rds.	4.00@ 4.10	**4.00@ 4.15**

BUNKERS

Pool 1, New York	$6.25@$6.60	$6.25@$6.60
Pool 9, New York	5.75@ 6.00	5.75@ 6.00
Pool 10, New York	5.50@ 5.75	5.50@ 5.75
Pool 11, New York	5.10@ 5.50	5.10@ 5.50
Pool 9, Philadelphia	5.50@ 5.75	5.55@ 5.70
Pool 10, Philadelphia	5.30@ 5.55	*5.25@ 5.50*
Pool 11, Philadelphia	4.90@ 5.15	**5.10@ 5.25**
Pool 1, Hamp. Roads.	4.75	4.75
Pool 2, Hamp. Roads.	4.25	**4.30**
Pools 5-6-7, Hamp. Rds.	4.10	**4.15**

Current Quotations, British Coal, f.o.b. Port, Gross Tons

Quotations by Cable to *Coal Age*

Cardiff:	Jan. 16	Jan. 23†
Admiralty, large	22s.6d.@23s.	**22s.9d.@23s.3d.**
Steam smalls	14s.	14s.
Newcastle:		
Best steams	15s.9d.	**16s.9d.@18s.**
Best gas	16s.6d.	**16s.@18s.**
Best bunkers	15s.6d.@16s.6d.	**16s.6d.**

†Advances over previous week shown in **heavy** type; declines in *italics*.

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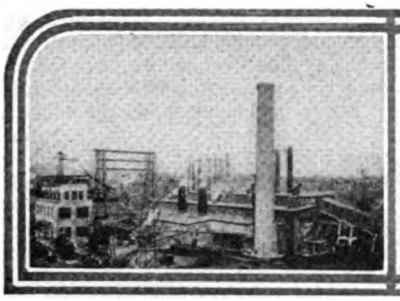
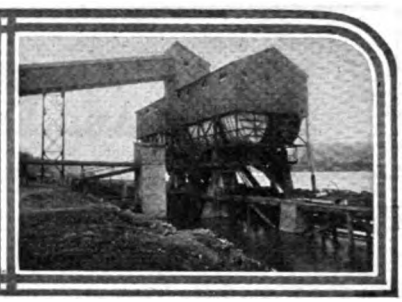


News Items From Field and Trade



ALABAMA

At a recent meeting of the Birmingham chapter of the Joseph A. Holmes Safety Association, at Powhatan Mine, of the Franklin Coal Co., officials of the company stated that since the operation was started in 1919 1,250,000 tons of coal had been mined without a fatal accident in the ranks of the 250 to 300 men in the service. J. Frank Rushton is president of the company; T. R. Jordan, vice-president and general manager; L. T. Daniel, secretary-treasurer and sales manager, and J. H. Tidmore, local superintendent. The general offices of the company are in Birmingham.

ARKANSAS

Mine employees of the Clark-McWilliams coal mine in the Spadra field who had been on a strike since early in December, have returned to work, according to word received from mine authorities there. The controversy was brought about when the workmen demanded a change in working hours. The miners returned to work on their own accord it was said, no agreement having been reached previously by the men and the operators.

COLORADO

The state coal mine inspector's report for Colorado for December shows an increase of 39,000 tons in output over the same month a year ago. Total production in 1925 was approximately 9,402,000 tons, a decrease of 110,000 tons compared with 1924.

ILLINOIS

James F. McDonnell, of Bloomington, has been named receiver for the St. Louis Coke & Iron Co. to succeed the late James Duncan, of Alton. The appointment was made by Federal Judge Louis Fitzhenry. Under Mr. Duncan's administration the properties of the company were sold to the Midland Coke & Iron Co., which was organized by financial groups interested in the affairs of the St. Louis Coke & Iron Co. The new company has made extensive improvements at the plant.

INDIANA

The engine room of the Bruceville coal mine, near Bicknell, a unit of the Knox Consolidated Coal Co., which operates five mines in that vicinity, was damaged by fire to the extent of $20,000 the night of Jan. 13. Officials of the company believe the fire was of incendiary origin. The mine has been idle for several years, since it was consolidated with the Knox company, with headquarters at Indianapolis.

Somerville Mine No. 1, near Princeton, resumed work Jan. 18 following completion of construction work on a new tipple. The old structure was destroyed by fire several weeks ago. With the reopening of the Somerville mine all pits in Gibson county with the exception of the Bosse Coal Co. mine near Buckskin are at work. Labor trouble is keeping that pit closed.

Fire of unknown origin on Jan. 11 destroyed the surface buildings of American Mine No. 1, near Bicknell. More than 1,000 men were thrown out of work. This blaze, discovered as the day shift reported for work, comes on the heels of two others. The operators see an effort of the union men to intimidate mine owners, while the union believes the property was burned to reflect upon the union. Investigation by the State Fire Marshal's office is to be asked by District 11, United Mine Workers.

KANSAS

Thirty-three applicants for certificates of efficiency took examinations in Pittsburg, Jan. 16. This was the largest class to seek such certificates in mining since the passage in 1917 of the law requiring them for certain positions. Of the thirty-three, six took the examination for gas men, eight for mine foremen, three for electrical engineers, twelve for shotfirers and four for hoisting engineers.

KENTUCKY

G. W. Hay, of McRoberts, general manager of the Elkhorn Division of the Consolidation Coal Co., has been named general manager of operations of the concern, acording to an announcement made by Frank R. Lyon, vice-president. At the same time, H. S. Carpenter, general superintendent of the Elkhorn Division, was named general manager of that division. The changes will be effective Feb. 1. Mr. Hay formerly was a mining engineer in the anthracite field but has been employed by the Consolidation Coal Co. since June, 1917. At different times Mr. Hay was superintendent of the Consolidation mines at Dunham and McRoberts.

MARYLAND

C. W. Van Horn has been promoted from general superintendent of the Maryland division of the Baltimore & Ohio R.R. to general superintendent of transportation, with offices in Baltimore. Mr. Van Horn, who has been connected with the company 24 years, formerly was located in Fairmont, Grafton and Cumberland, Md., and is known to hundreds of coal operators.

MASSACHUSETTS

Massachusetts retail coal dealers reported stocks of 118,000 net tons of anthracite in their yards Jan. 1, compared with 178,000 tons on Dec. 1. Cumulative deliveries of hard coal by dealers since April 1, last, total 3,672,558 tons, which compares with deliveries during the entire preceding coal year of 5,115,717 tons. Eugene C. Hultman, Massachusetts Fuel Administrator, reports that during December the coal dealers of Massachusetts delivered to householders 309,434 tons of soft coal, an increase of 90,000 tons over the amount delivered in November. On Jan. 1 the dealers had a total of 326,433 tons of bituminous coal in their yards.

NEW YORK

James P. Geagen, William J. Dalton and Benjamin Wertheim have been elected additional vice-presidents of Burns Brothers, New York City. Mr. Geagen has been assistant general manager for fourteen years. Mr. Dalton formerly was vice-president of the Wyoming Valley Coal Co. and Mr. Wertheim is a brother of the president.

OHIO

The Webb mine of the Cambria Collieries Co., south of Bellaire, where on Dec. 22 nine lives were snuffed out by fumes and smoke from a fire starting in a section off the main entry, resumed operations in full Jan. 11 with practically the entire force of 600 men at work. The mine had been idle since the accident but a force of men had been at work cleaning up the débris left by the fire and getting the workings in shape. The mine has been carefully inspected by state mine officials since the fire as well as by experts in the employ of the company and they state that the workings are as safe as it is humanly possible to make them and with plenty of orders ahead a long period of work is expected.

A number of leaders of the United Mine Workers were arrested last week in the Pomeroy Bend field and it is hoped in that manner to clear up a number of cases of sabotage which have occured in the district. Maurice

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Thornton, a union leader and head of the miner's relief organization, was arrested charged with being implicated in the burning of the tipple of the Blackstone Mine at Rutland, Aug. 8. David Fowler, another union miner, was arrested in connection with the burning of the same tipple. Osby Martin was charged with driving an automobile in a raid on a powder house at the Simpson Coal Co. The arrests followed confessions of Warren Falia and Clyde Tyree, mine workers, made in connection with the powder raid.

Mine No. 1 of the Short Creek Coal Co., Duncanwood, has resumed operations after suspension since last April.

A gas explosion, followed by a fire, last week, caused a loss of about $12,000 in the mine equipment of the Green & Schultz Coal Co., at Sand Run, near Logan. Repairs will be made at once.

PENNSYLVANIA

The Engineers' Society of Northeastern Pennsylvania held its annual meeting at Wilkes-Barre Jan. 21, when officers were elected for the ensuing year. The new men, who were installed at the banquet at the close of the meeting, are as follows: President, C. R. Seem, electrical engineer, Glen Alden Coal Co.; First Vice-President, R. H. Buchanan, president, South Penn Collieries Co.; Second Vice-President, L. H. Vail, assistant electrical engineer, D. L. & W. R.R.; Secretary, B. E. Shaffer, electrical engineering department, Hudson Coal Co.; Treasurer, W. G. Metzgar, manager safety division, Hudson Coal Co.; Directors, E. A. Lewis, general superintendent, Scranton Electric Co.; Myron S. Knight, mining engineer; P. J. Murphy, vice-president and general manager, Laurel Line.

The Pittsburgh Coal Co. in the week ended Jan. 16 produced a new record weekly tonnage in the Western Pennsylvania mines since it started operating on the 1917 scale, when 28,907 tons were turned out. On Jan. 21 the company announced that it had 1,522 men at work. On the same day a new maximum daily production of 5,809 tons from the seven mines was reported..

The Standard mine of the H. C. Frick Coke Co., at Mt. Pleasant, had an unusual record in December. With more than 700 men at work on 25 days in the month, there was not an accident. In December, 1924, there were 10 accidents in which time was lost.

UTAH

Application of the Utah Railway Co. to purchase the 8.9 miles of railroad built into Gorley and Gordon Creek canyons by the National Railway Co. has been approved by the Utah Public Utilities Commission. A request for permission to take over the line also has been filed with the Interstate Commerce Commission. The Utah company proposes to acquire the line as a branch to the 25.78 miles of railroad now operated and owned by it between Mohrland and the Utah Railway Junction connecting with the D. & R. G. W. The consideration involved is approximately $550,000. The branch line of track was built into the Gordon Creek district to open up some new coal fields owned in that region by the Great Western Coal Mines Co., the Sweet Coal Co. and the Union Coal Co.

VIRGINIA

The Virginia Iron, Coal & Coke Co. reports gross earnings of $1,009,713 for the quarter ended Dec. 31, and net income of $9,752 after all charges. In the September quarter the gross was $865,709 and the net $61,997. Based upon the quarterly statements, gross earnings for 1925 aggregated $3,386,308 aganist $3,602,442 in 1924. Net profit, subject to inventory adjustment, amounted to $218,791 last year, against a loss of $53,503 in 1924. The net profit for 1925, after allowing for preferred dividend requirements equaled 93c. a common share.

The Clinchfield Coal Corp. for the quarter ended Dec. 31, 1925, reports net income of $147,698 after all expenses and charges. After allowing for preferred dividends this was equal to 77c. a share on the 145,476 shares of common stock. After payment of both common and preferred dividends the company reported a surplus of $40,591 for the quarter.

WEST VIRGINIA

Robert Lilly, district mine inspector, was unanimously re-elected president of the Fayette County Mining Institute at a meeting held at Mt. Hope, W. Va., Jan. 9. Also re-elected were William Ward, first vice-president; John Whitehead, second vice-president; Hobart E. Gillespie, third vice-president. E. S. Criwell was elected secretary-treasurer to succeed Mose McSpadden. Thomas Allen, a mining engineer from Colorado, delivered a most interesting address on how extreme weather conditions affect mining in Colorado. A feature of the meeting was the exhibition of two interesting moving pictures, entitled "Dynamite at Work" and "Let Dynamite Do It," which disclosed the difficult tasks which could be performed by the proper use of explosives.

The Fairmont coal sales office of the Consolidation Coai Co. opened Jan. 16 in the Watson Building.

A mine fire occurred in the mine of the Buffalo Creek Coal Co. at Accoville, in the Logan field, last week, according to Robert N. Lambie, of Charleston, chief of the West Virginia Department of Mines. From last reports the fire was under control.

New Coal companies organized in West Virginia during December had an aggregate capital stock of $770,000, although two of the seven companies organized have stock of no par value. The new organizations include the Copen Creek Coal Mines, Inc., of Gassaway, with a capital stock of $10,000; Clarksburg Coal Co., of Clarksburg, $50,000; Henry Coal Co., of Nolan, $10,000; Bur-Mar Collieries Co., of Huntington, with chief plants in Kentucky, $200,000; Sturgeon Creek Coal Co., of Charleston, with chief plants in Kentucky, 1,000 shares of no par value; Crown Coal Co., of Johnstown, Pa., $500,000; Octavia J. Coal Mining Co., of Cincinnati, Ohio, 3,000 shares of no par value.

The offices of the Richland Coal Co. near the Richland mine, at Warwood, were completely destroyed recently by a fire of unknown origin. Loss in office equipment was estimated at about $5,000, but valuable records of the company also were destroyed.

The West Virginia State Department of Mines has inaugurated a safety program which was started Jan. 15, according to Robert M. Lambie, of Charleston, chief of the department. It is planned to hold meetings at different mines in the Fairmont region every Wednesday. State mining inspectors and men in charge of rescue stations met in Charleston on Jan. 1 and 2 to discuss routine matters, chiefly the subject of safety, and plan for the safety drive.

O. J. Keys, superintendent of the Pittsburgh-West Virginia Coal Co., announces that a mine tipple, at Cross Creek, Brooke County, replacing the one recently destroyed by fire was placed in operation Jan. 5. A warehouse of the company was destroyed Jan. 4 by an explosion.

The Yukon Coal Co. has ceased to exist as a corporation, having surrendered its charter to the state, and the George Whyel Coal Co. has surrendered its charter.

Abner Lunsford, in charge of the coal mines of the Ford interests, stated in Huntington last week that his company has no further purchases of coal property in mind, as present production just about sufficed to meet the requirements of the Ford factories. He stated that it required the use of between 1,500,000 and 2,000,000 tons of coal annually to operate the Ford plants.

According to reports, the work of rock-dusting Federal mine No. 1 of the New England Fuel & Transportation Co., at Grant Town, has been completed and work will be started soon on Federal mine No. 3, at Everettsville, Monongalia County.

The Brady-Warner Coal Corporation is installing screens at the Osage mine, in Scott's Run, in order to prepare 3- and 4-in. lump.

WYOMING

The Union Pacific Coal Co., the largest mine operator in Wyoming, has bulletined notice that any employee hereafter detected carrying matches into its mines will be summarily discharged, and a charge against him will be lodged with the chief state mine inspector. The mines of the company in Wyoming now are being operated on a 100 per cent safety-lamp basis. Since the passage of the new mine safety code last Feb-

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ruary, the corporation has been conducting an educational compaign among its employees.

CANADA

Unemployment has reached an acute stage at Sydney, N. S., where the Princess Colliery was closed down indefinitely on Jan. 11 and the working time of the Florence Colliery was reduced to six days per month. About 2,000 men are employed in the two mines. J. E. McLurg, vice-president of the British Empire Steel Corp., states that this is due to lack of demand for coal and that the situation is beyond the company's power to help or hinder. The Board of Trade and the Town Council have appealed to the Provincial government for assistance.

A serious situation prevails in the Alberta coal industry, seventeen mines in the Wayne and Drumheller fields alone having been practically closed owing to the mild winter in the West and consequent scarcity of orders.

Traffic

I. C. C. Examiner Advises on Southeastern Rates

Examiner William B. Hunter, of the Interstate Commerce Commission, has made a proposed report in Docket 13823, Virginia Coal Operators Association vs. Aberdeen & Rockfish Railroad Co., et al., in which he recommends that the Commission should find that rates on coal from the Appalachia and Dante districts in Virginia to points in North Carolina, South Carolina and Georgia, and rates from the Harlan County district in Kentucky to the same destinations are not unduly prejudicial.

The examiner further recommends that the Commission should find that the rates to Jacksonville, Fla., and points in Florida basing on Jacksonville are, and for the future will be unduly prejudicial to the complainants to the extent that the rate from Appalachia and Dante districts to Jacksonville exceeds the rate from the Harlan County District Group 4 to Jacksonville. The proceedings in this case were reopened for further hearing for the purpose of developing the facts with respect to the lease of the Carolina, Clinchfield & Ohio R.R. by the Louisville & Nashville and the Atlantic Coast Line and the effect thereof upon the rate situation complained of. It is the examiner's opinion that in light of the changed conditions the Commission should adopt the recommendations made above.

Would Unify Coke Rates to Ohio

The Coal, Coke & Iron Ore Committee, Central Freight Association Territory, announces a hearing at Room 606 Chamber of Commerce Building, Pittsburgh, Pa., Feb. 4, at 10 a.m., on a proposed advance to $3.40 per ton in the rate on coke, coke breeze, coke dust and coke screenings from Boomer, Cannelton, Carbondale, Dickenson, Gauley Bridge, Harewood, Longacre and Marting, W. Va., to stations on the Toledo & Ohio Central R. R., between Toledo and Renner, Ohio, inclusive, and Moline and Granville, Ohio, inclusive. The proposed increase is intended to place the rates on a parity with those carried from the same district by competing lines.

Dismisses Complaint on Rates To Indiana-Michigan Points

The Interstate Commerce Commission has dismissed complaint in Docket 15698, Kalamazoo Chamber of Commerce et al. vs. Chesapeake & Ohio Ry. et al. This complaint also included sub No. 1, Grand Rapids Association of Commerce vs. C. & O. The complaint challenged the lawfulness under Sec. 1 and 3 of the Act, of the rates on bituminous coal from mining districts in Ohio and from the Inner and Outer Crescent regions to Elkhart, Ind.; Grand Rapids and Kalamazoo, Mich., and several other Michigan points in the same general vicinity. The Commission finds that the rates assailed are not shown to be unreasonable and further states that it is not convinced that the spreads between the various assailed and compared rates heretofore fixed by the Commission in the light of all the surrounding circumstances, and which are still maintained, are sufficiently out of line to warrant a finding of undue prejudice, and, therefore, the complaint is dismissed.

Central Cuts N. Y. Coke Rates

The New York Public Service Commission has approved reduced rates of the New York Central (East) on coke, coke breeze and coke dust, from Buffalo, East Buffalo and Harriet to the following West Shore stations: Syracuse, Amhoy, Warners, North Memphis, Jordan, Weedsport, Port Byron and Montezuma, $2.02; Savannah, South Clyde, Lyons and Newark, $1.76; Port Gibson, South Palmyra, Macedon, Wayneport, Fairport and Ridgeland, $1.51; Mortimer, $1.39; effective Feb. 21, 1926.—Supplement No. 4 to P. S. C. N. Y. C. No. C-154.

Rate Cut on Wabash to Hannibal

The Wabash R.R. has cut the freight rate from the Springfield district to Hannibal, Mo., 10c. per ton on steam coal, effective Feb. 11. About 50 per cent of the coal used in Hannibal and vicinity comes from the Springfield district. The reduction is the result of a complaint filed some time ago by the Hannibal Shippers' Association.

The Wabash also has been instrumental in effecting a reduction of 45c. per ton in the rate on coal from eastern Kentucky to Hannibal.

Association Activities

The West Kentucky Coal Bureau, traffic organization of the western Kentucky operators, held its annual meeting in Louisville Jan. 19, after a postponement of a week on account of the death of Fred P. Wright, Crescent Coal Co., of Bevier, vice-president of the organization. Resolutions were adopted by the association in connection with Mr. Wright's death. James D. Overall, of the Reinecke Coal Mining Co., Madisonville, was elected president; A. W. Duncan, of W. G. Duncan Coal Co., Greenville, vice-president, and C. E. Reed was re-elected secretary-treasurer and manager. Percy D. Berry, Providence Coal Mining Co., Providence, retiring president, was elected chairman of the Executive Committee, and W. A. Wickliffe, of the Wickliffe Coal Mining Co. and Greenville Coal Co., Greenville, along with K. U. Meguire, of the Dawson Daylight Mining Co., Dawson Springs, were named to fill vacancies on the committee. C. R. Hawley, of the Hawley-McIsaac Co., Madisonville; G. S. Miles, of the Gibraltar Coal Mining Co., Memphis; M. B. Lanier, of the Norton Coal Mining Co., Birmingham, and C. R. Richardson, of the West Kentucky Coal Co., Sturgis, were re-elected to the committee.

The Hazard Coal Operators' Exchange met at Lexington, Ky., Jan. 22, when the following directors were elected: James Bonnyman, S. R. Jennings, George P. Fitz, Hugh Buford, Dan Pritchard, C. Reginald Riley, W. M. Miller, Calvin Holmes, W. S. Dudley, A. L. Allais, Prentis H. Burlingham, T. J. Cassidy, John P. Gorman, T. Ward Havely, John H. Jones, J. H. Bowling, Carl Robinson and Henry Pfening. These officers were elected: W. J. Brown, Jr., president; Henry Pfening, vice-president; James Bonnyman, chairman executive committee; Irvin Davis, secretary executive committee; J. E. Johnson, secretary, and H. E. Bullock, treasurer.

Better selling methods to popularize high-volatile coal in New England and elsewhere were discussed at the quarterly meeting of the **Kanawha Coal Operators' Association**, in Charleston, W. Va., last week. Despite propaganda against the use of high volatile, reports from many sections of New England indicated that it was being favorably received and that there was strong probability of its being able to retain its markets after the anthracite strike was settled. While no definite action was taken on shipping on consignment, many operators stated that the practice had done much to unsettle market conditions and was not fair to regular buyers of coal.

Obituary

S. Thurston Ballard, 71, president of the Liberty Coal & Coke Co., Louisville, with mines in the Pineville (Ky.) district; also president of the Ballard & Ballard Co., largest winter wheat millers in the South; vice-president of the Louisville National Bank, U. S. Trust Co., and other concerns, died Jan. 19 at his home in Louisville, following a year's illness. Mr. Ballard was one of Louisville's leading business men. Years ago he adopted a profit-sharing policy with all his mill workers, the plan being so successful that he was called on and worked with the government for some years in the Industrial Relations division. From 1920 to 1924 he was Lieutenant-Governor of Kentucky. The Kentucky Legislature, in session at the time of his death, adjourned after adopting resolutions mourning his passing.

Samuel O'Neil, aged 83, pioneer coal operator in the Monongahela Valley, and organizer of the O'Neil Coal & Coke Co., of Clarksburg, W. Va., died Jan. 18 at Pittsburgh, Pa. He had retired from active business several years ago. For many years he was connected with the Fayette City Coal Co., which in 1898 was merged with a number of smaller companies into the Consolidated Coal & Coke Co. The same year he went to Clarksburg and organized the O'Neil Coal & Coke Co., which in 1903 was sold to a larger concern. After the sale of his West Virginia company he went to Pittsburgh and had resided there since.

Philip S. Emmons, 60 years old, wealthy coal operator, of Scottdale, Pa., was crushed to death Jan. 13 beneath his automobile, which skidded and overturned in the Connellsville-Scottdale highway, at Pennsville, near Connellsville.

Joseph Byron Echard, 66, widely known throughout the Western Pennsylvania coal and coke region, died at Connellsville, Pa., January 14. Pneumonia was the cause. Born at Pennsville, he spent his boyhood days on a farm there and attended school in that district. When a young man he went to Connellsville and for a time was employed as a fireman on the Baltimore & Ohio R.R. Later he engaged in the coal business, purchasing that beneath the Murphy and Stickel farms at Star Junction. He built 60 ovens at what is still known as Echard, near Star Junction, and formed the Echard Coal & Coke Co. When that coal was worked out he became identified with the Etna-Connellsville Coal & Coke Co. He was president and manager of that company for a time and at the time of his death was manager and vice-president.

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Coming Meetings

American Institute of Electrical Engineers. Annual convention, Feb. 8-12, 1926, at Engineering Societies Bldg., New York City. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

Pittsburgh Vein Operators' Association. Annual meeting, Feb. 15, Cleveland, Ohio. Secretary, D. F. Hurd, Marion Bldg., Cleveland, Ohio.

American Institute of Mining and Metallurgical Engineers. Annual meeting, Feb. 15-17, 1926, at Engineering Societies' Building, New York City. Secretary, Dr. H. Foster Bain, 29 West 39th St., New York.

The Rocky Mountain Mining Institute. Winter meeting, Feb. 23-25, 1926, at Albany Hotel, Denver, Colo. Secretary, Benedict Shubart, Boston Building, Denver, Colo.

Canadian Institute of Mining and Metallurgy. Twenty-eighth annual and general meeting, March 3-5, at the Windsor Hotel, Montreal, Quebec, Canada. Secretary, G. C. Mackenzie, 603 Drummond Bldg., Montreal, Que., Canada.

New England Coal Dealers' Association. Annual meeting at the State Armory, Worcester, Mass, April 7 and 8. Secretary, E. I. Clark, 141 Milk St., Boston, Mass.

Industrial Notes

Clarence R. Claghorn, credited with having originated the idea of using conveyors in coal mines, has been appointed sales representative of the **Conveyor Sales Corp.,** of New York, to handle the Eickhoff conveyor in the states of West Virginia, Virginia and Maryland. Mr. Claghorn has an office at 715 Continental Building, Baltimore, Md. The Vulcan Iron Works of Denver, Colo., has the Rocky Mountain district sales rights on the Eickhoff.

The Okonite Co. and the **Okonite Callender Cable Co., Inc.,** have opened an office in the Hoge Building, Second Avenue and Cherry Street, Seattle, Wash. This new office, in connection with the branches already established at San Francisco and Los Angeles, places Okonite products and service within the immediate reach of buyers all along the Pacific Coast.

A. S. Urquhart, representative of **Madeira, Hill & Co.,** in eastern New England, with headquarters at Boston, having resigned, the following changes will be made in the company's district representatives: **E. C. Hitchcock,** from New Haven to Boston; **G. M. Stauffer,** from Elizabeth to New Haven; **John Jacobson,** from New York to Elizabeth, N. J.

The Timken Roller Bearing Co., Canton, Ohio, announces the appointment of Ernest Wooler as chief engineer, in full charge of all automotive, industrial, experimental and service engineering.

The Penn Electric Co., of Scranton, agent jobbers for the Westinghouse Electric & Mfg. Co., has been awarded a contract for electrification of the Buck Mountain Coal Mining Co.'s new operation at Gowen, near Hazleton. The contract covers substation, compressor and locomotive haulage.

The Terry Steam Turbine Co., Hartford, Conn., has appointed **John M. Rittelmeyer,** 332 Healey Building, Atlanta, Ga., as sales representative in the territory in the vicinity of Atlanta.

Publications Received

Annual Report of the Department of Mines of West Virginia for the Fiscal Year Ending June 30, 1924. Sections I and II. Pp. 392; 6 x 9 in.; tables.

Practical Coal Production, by Frank H. Kneeland. McGraw-Hill Book Co., Inc., 370 Seventh Ave., New York City. Price, $3. Pp. 419; 5½ x 8 in.; illustrated. Describes the preliminaries of coal mining, including prospecting, explosives, development, drainage and ventilation.

Fuels and Their Combustion, by Robert T. Haslam and Robert P. Russell. McGraw-Hill Book Co., Inc., 370 Seventh Ave., New York City. Price, $7.50. Pp. 809; 6 x 9 in.; illustrated. This book is a comprehensive treatise on the economic utilization of fuels.

New Equipment

Pneumatic Gun Projects Refractory Cement

In the field of refractories two new products have recently been placed on the market by the Carborundum Co., of Niagara Falls, N. Y. One of these is a cement for lining or repairing furnace walls, and the other a gun for its application. Carborundum, one of the most highly refractory substances known, forms the chief ingredient of the new cement which is known as "Carbolastic." Through the proper selection of bonding material this cement is made to inherit the heat-resisting properties of carborundum. At the same time it lends itself readily to application by means of the gun which is shown in the accompanying illustration. Preparation of the cement consists of merely adding water until the material attains the proper consistency. Upon application it soon sets in the air with a strong bond and is highly resistant to even intense heat.



Air Gun Shoots Cement

This little instrument, which weighs only 12 lb. and operates on either steam or air, can project cement onto a furnace wall at the rate of 100 lb. per minute. It is readily portable and can be used on short notice for either lining or patching furnaces. Its manipulation is extremely simple and it can be operated by any ordinary laborer.

Minimizing the effects of flame impingement on brickwork, filling up cavities that are the result of spalling or of the destructive barring off of clinker formations or which arise from other destructive agencies employed in furnace operation, maintenance or repair, are the chief uses of this new cement. Its application as a coating over a firebrick furnace wall or its use as a plastic refractory in patching, the makers claim, will prolong the life of firebrick settings while at the same time the necessity for frequent shutdowns for repairs is eliminated. It can be applied to either hot or cold settings.

The gun is an extremely handy little device for applying this cement. It weighs only 12 lb. and has no moving parts to get out of order. It is controlled by a single valve placed near the handle. It may be operated on either steam or air at 100-lb. pressure and will shoot the cement at the rate of over 100 lb. per minute. The principle of the ordinary injector is utilized in its construction and it sucks the cement from a pail or bucket, no auxiliary hopper being necessary.

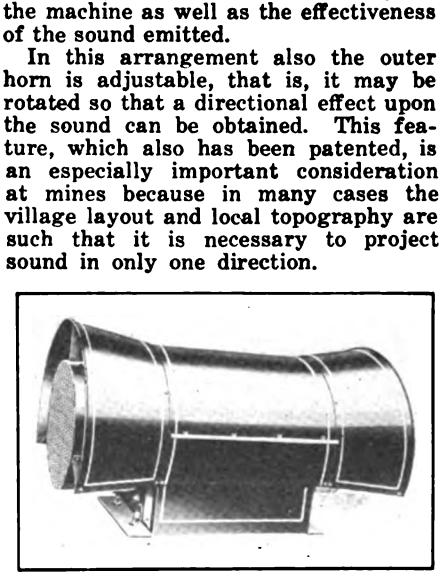
Adjustable Horn Siren Is an Efficient Noise Maker

Sirens have been used as a substitute for bells or steam whistles at electrically operated mines for many years. By and large, these machines have given excellent satisfaction. In several respects, however, they have been much improved in detail. Thus the double-head type B siren as now built by the Federal Electric Co., 8700 S. State St., Chicago, Ill., has several new features.

In the latest model a 5-hp. motor operating at 3,000 to 3,500 r.p.m. is used. The fans or rotors that generate the sound are of 15-in. diameter. A bent steel plate is used as a motor footing or base which lightens the machine and makes it easier to erect than the older machine with its cast-iron base. The hood also has been improved until it now resembles that of an automobile, being hinged at the back and provided with wing nuts in front so that when it is raised the motor is entirely accessible and open to view.

Probably the greatest improvement in this device, however, and one that has been patented is the double horn effect over the slot openings. By means of this double horn the incoming stream of air is separated from the outgoing stream, the friction of the two currents being thus reduced to a minimum. This materially increases the efficiency of the machine as well as the effectiveness of the sound emitted.

In this arrangement also the outer horn is adjustable, that is, it may be rotated so that a directional effect upon the sound can be obtained. This feature, which also has been patented, is an especially important consideration at mines because in many cases the village layout and local topography are such that it is necessary to project sound in only one direction.



Improved Adjustable Siren

This compact unit is lighter than its predecessors. It is fully housed yet the housings may be readily lifted, giving access to the motor. The double horns may be adjusted so as to project the sound in the direction desired.

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New Scale Weighs Big Trucks Used for Local Track

At many coal operations local trade absorbs a large part of the mine output. In these days of good roads and motor haulage much of this local fuel is delivered by motor truck. It therefore becomes necessary for the mine to provide a scale of sufficient size to accommodate and weigh these machines.

To meet this need the Fairbanks-Morse Co. has produced the scale shown in the accompanying illustration,

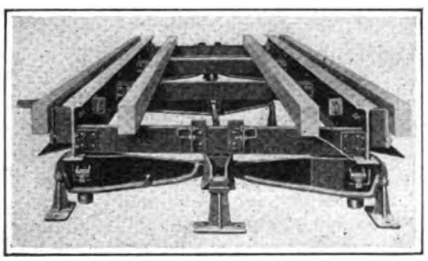


Fig. 1—Platform Foundation and Balance Beams

This scale is designed for quick, accurate work. The platform is 10 ft. wide and 28 ft. long or big enough to accommodate even the largest of motor trucks. The scale beam proper may assume any one of several shapes to suit the needs of the user.

several of which have been placed in operation during the past year or so. This is a scale of 30 tons capacity having a platform 10 ft. wide and 28 ft. long. It may be furnished with a variety of beams. Thus it may be equipped with a plain full-capacity beam with a tare bar of sufficient size to accommodate the largest of trucks, or it may be furnished with a full-capacity type registering beam. This latter type of beam records the weight in type on a ticket. If business is "rushing" or where trucks follow each other in quick succession the scale may be fitted with a full-capacity direct-reading dial that will indicate the weight up to the limits for which the scale is built. Such a dial is shown in Fig. 2.



Fig. 2—Indicating Dial for Quick Weighing

This scale may be fitted with a variety of beams. The one here shown, consisting of an indicating dial, is particularly useful if rapid weighing must be done. All of the ordinary types of weighing beams may also be had to suit the customers' needs.

New Valve Built to Withstand High Pressures and Heats

After much experimentation the Hydraulic Press Mfg. Co. has evolved a new forged steel valve intended for high pressures and superheats. This is known as the Forgsteel valve and is of straight-way or gate type. The metal body is of uniform thickness throughout, thus equalizing expansional and contractional stresses, as well as providing a full opening for the steam flow, which reduces friction to a minimum.

In this valve the seat, disk and stem are all of non-corroding, acid-resisting metal, either steel or monel. Because of the construction, wire drawing is eliminated and the valve remains tight when cold even though it was closed while hot. Ample packing space is provided and the valve may be repacked in five minutes without in anywise interfering with operating conditions. The packing nut is made of monel metal, the yoke of steel and the stem is extra large.

This valve, which was designed especially for high temperature and high pressure work, is built to withstand extremely severe operating conditions. It is the product of over fifty years of experience in this kind of work.

Master Switch Is Protected Against Moisture and Fumes

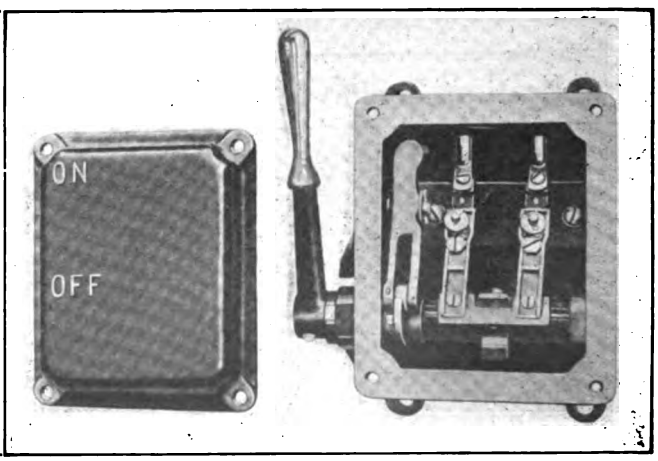
For those places where it is desirable to protect electrical apparatus against moisture and acid fumes, the Cutler-Hammer Mfg. Co., Milwaukee, Wis., has introduced the control station shown in the accompanying illustration. The mechanism is inclosed in a cast-iron case, and has a cover fitted with a gasket, which excludes all moisture and fumes. A stuffing gland fitted to the shaft provides a tight fit, and the thick wall of the cast-iron body allows enough threads for a tight conduit or pipe connection.

Contact is made on the brass cylinder by two heavy fingers of standard non-stubbing design. These fingers are mounted on asbestos lumber and are zinc-plated as are all other small parts. The contact tips are of heavy rolled copper. The fingers are of sufficient capacity to permit the use of this master control station on any pilot circuit at all commercial voltages.

The large polished brass handle gives a convenient grip to the average operator. It extends far enough from the case to indicate whether the station is open or closed. All parts are generously proportioned to reduce chances of breakage in rough or careless handling. The case is sprayed with a protecting paint to withstand submersion in water or the effect of acid fumes.

Tight Case

This cast-iron box incloses the master switch mechanism so snugly that it seals out moisture and acid fumes. The switch is ruggedly constructed and generously proportioned to withstand rough treatment.



Recent Patents

Safety Brake for Mines; 1,561,348. Richard L. Mugford, Minersville, Pa. Nov. 10, 1925. Filed Feb. 12, 1924; serial No. 692,339.

Longwall Mining Machine; 1,561,481. Edward O'Toole, Gary, West Va. Nov. 17, 1925. Filed Feb. 14, 1924; serial No. 692,694.

Perforated Indented Screen; 1,561,632. Herbert S. Woodward, Carbondale, Pa. Nov. 17, 1925. Filed Feb. 27, 1924; serial No. 695,391.

Coal Temperature Indicator; 1,561,659. Robert P. Nichols, New Rochelle, N. Y., assignor to Federated Engineers Development Corp., Jersey City, N. J. Nov. 17, 1925. Filed Jan. 24, 1921; serial No. 439,444.

Plant for Washing Coal and Other Minerals by Means of Liquid Streams; 1,561,919. Antoine France, Liege, Belgium. Nov. 17, 1925. Filed Feb. 26, 1924; serial No. 695,262.

Mining Drill; 1,561,975. H. H. Des Roches, Butte, Mont., assignor of one-half to Frank F. Hayes, Butte, Mont. Nov. 17, 1925. Filed March 21, 1924; serial No. 700,958.

Mine-Car Stop; 1,561,987. Jozef Latoszewski, Plymouth, Pa. Nov. 17, 1925. Filed March 7, 1925; serial No. 13,743.

Carbide Lamp; 1,562,026. Karl Kovalchik, Bradley, Ohio. Nov. 17, 1925. Filed April 15, 1925; serial No. 23,210.

Treatment of Finely Divided Coal and the Production of Briquets; 1,562,876. Edwin Edser and Walter H. Beasley, London, England, assignors to Minerals Separation North American Corp., New York City. Nov. 24, 1925. Filed July 29, 1922; serial No. 578,477.

Coal Plow; 1,563,153. Daniel B. Brackett and Clarence F. Bloch, Whipple, West Va. Nov. 24, 1925. Filed March 18, 1925; serial No. 16,517.

Coal Breaker or Crusher; 1,563,173. John H. Doerres, St. Louis, Mo., assignor to Pennsylvania Crusher Co., New York City. Nov. 24, 1925. Filed May 8, 1924; serial No. 711,778.

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Output of Coal Mine Goes to Market by Flume—Page 185

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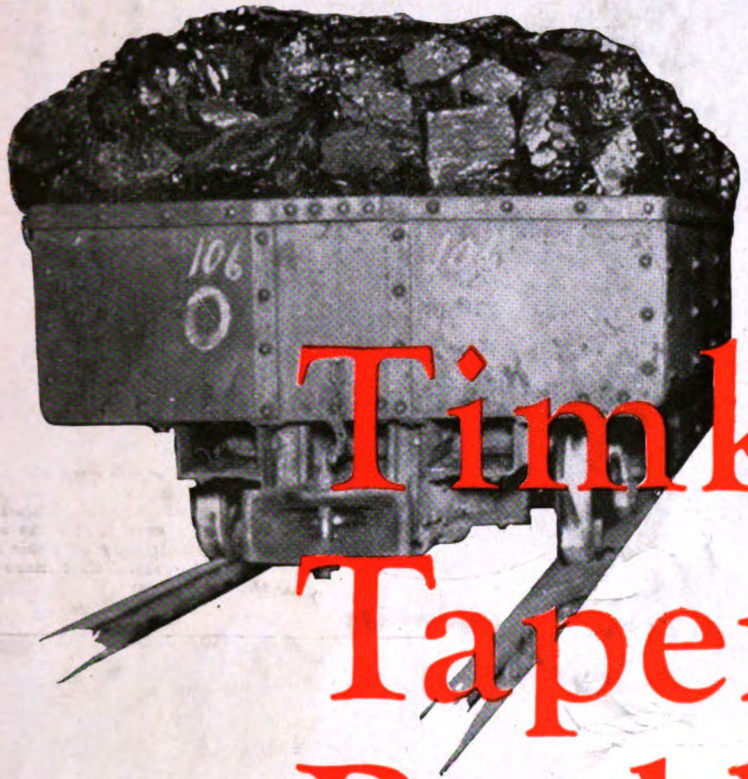
COAL AGE

The World's Accepted Authority on Coal Mining

McGraw-Hill Co., Inc. **February 4, 1926** 20 Cents per Copy



Timken Tapered Roller Bearings

Timken Tapered Roller Bearings come nearer and nearer to universal use in mounting mine car wheels. The cost of labor, power, materials and maintenance drops accordingly, throughout coal mining.

THE TIMKEN ROLLER BEARING CO, CANTON, OHIO.

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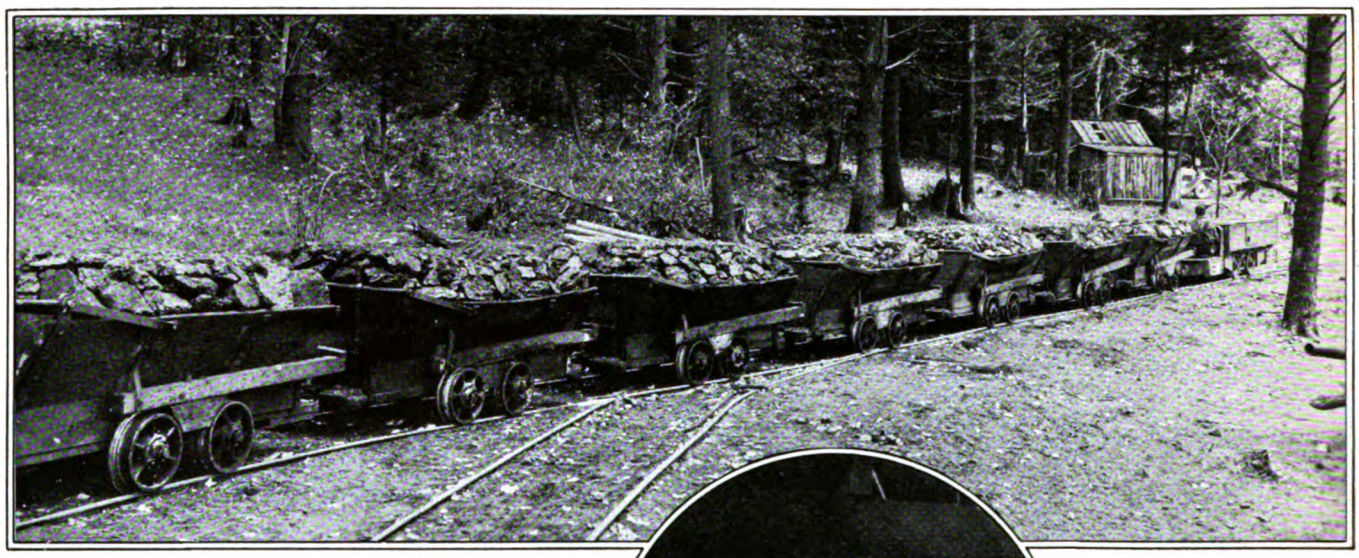
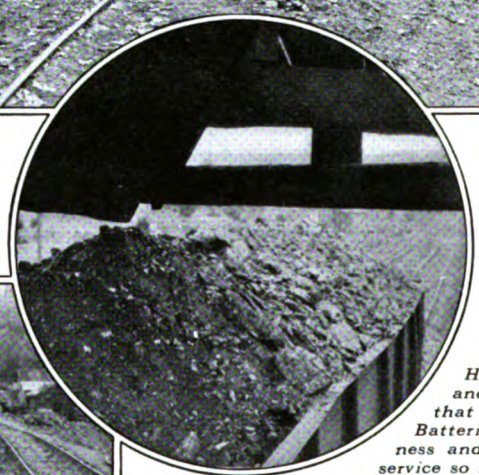
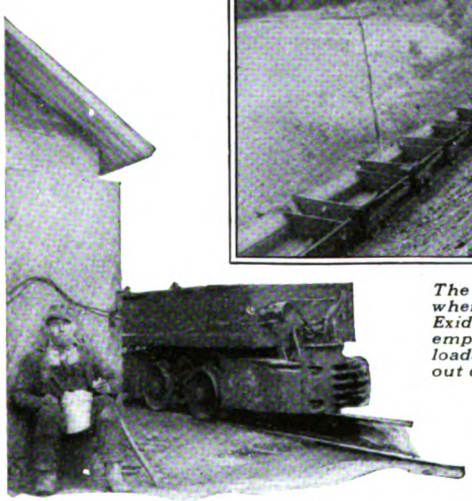


An Exide-Ironclad-equipped motor hauling a heavy trip up a steep grade at W. R. Gallagher & Bros. Coal Company, Houtzdale, Pa. An Exide-Ironclad Battery always has plenty of power in reserve for grades or extra heavy loads.



How many cars did you load and ship today? Many mines that have tried Exide-Ironclad Batteries have found the smoothness and efficiency of their haulage service so increased that more tons go over the tipple.





The empties are ready, but where is the motor? When an Exide-Ironclad is on the job empties are hustled in and the loads brought right out—without delay.

* * *

The motor is ready to take the empties in and the motorman is giving the Exide-Ironclad a "boost" while he eats his lunch. The battery takes its charge quickly, easily, and with little waste of current.



The miner and his helper rarely have to quit work for lack of cars, when the gathering motors are equipped with Exide-Ironclad Batteries.

Hauling more coal for less money

MORE and more are the important coal mines of this country standardizing on Exide-Ironclad Batteries for haulage service. They are doing so because they have found this battery handles the most coal, in the quickest time, at the lowest cost.

It does this because its first cost is reasonable, its life long, its power and speed great, its charging efficiency high, and its repair and maintenance cost negligible.

It will pay you to know more about Exide-Ironclad Batteries. A representative from our nearest branch will gladly call, or you can write for free booklet No. 1791, "Facts for Consideration in *Selecting a Battery* for Locomotive Service."

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THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 29 — New York, February 4, 1926 — *Number* 5

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Long Flume Transports Coal in Hilly Region 185
BY G. TOWNSEND.

How Long Will Anthracite Region Produce Coal? 187

Bureau Tells How to Build Life-Saving Barricades 188

Ingenuity and $125,000 Rejuvenate Old Mine 189
BY J. H. EDWARDS.

Coal Industry Can Raise Its Own Timber and Cut Big Cost Item 192
BY H. S. NEWINS.

Operators and Miners Deadlocked Over Arbitration 202

Operators' Association of Northeast Kentucky Meets 204
Suggests Polar Bear as Emblem of G. O. P. 204
27 Saved as Coal Ship Sinks 204
Wakenva Coal Co. Issues Bonds to Finance Merger 204
Open-Shop Miners Keep Wolf from Door 204
Eastern Roads Move Ample Anthracite Substitutes 204
Senators Approve Proposal to Enlarge I.C.C. 204
Jamison Inquest Deferred 204
Bell Jailed and Fined 204
Washington Dealers Fail to Put Blame for High Prices on Operators 205
Industry Has Coal Stocks for 54 Days 205
British Coal Industry Awaits Commission Findings 205
Rock Dust Prevents Heavy Loss of Life in Orient Blast 206
Three Dead in Colorado Blast 206
Panic in Gassy Mine When Worker Puffs Cigar 206
Hemelright Quits Presidency of Temple Company 206
Explosion in Alabama Mine Takes 27 Lives 206

Editorials 183
Problems in Underground Management 197
Practical Pointers 198
Viewpoints of Our Readers 200
Book Reviews 201
Weekly Review and the Market 207
Foreign Market and Export News 212
News Items from Field and Trade 213
Traffic 216
New Equipment 217

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"Making Weather" With Coal

"COOLING WITH COAL" is no idle dream. Next summer a good many more owners of hotels, restaurants, offices, factories and homes are going to be thinking about it—and perhaps *doing* something about it, with the encouragement of power companies that see increasing business for themselves. This means an increasing summer consumption of coal, as R. Dawson Hall will point out in next week's *Coal Age*. It is the second of his articles on this subject.

* * *

CONVEYORS IN THIN COAL are doing good jobs in various parts of the country. Dr. J. J. Rutledge, chief mine engineer of the Maryland Bureau of Mines, made a survey of them with a number of other well known mining engineers and coal company officials and has some encouraging things to say in next week's *Coal Age* concerning what he saw.

The "hutch conveyor" in the longwall region of Illinois, at Spring Valley, reminiscent of a skid conveyor used in British Columbia years ago, was one of the striking installations. It is a trip of steel sheets on wheels, shuttling back and forth along a 400-ft. face, unloading at midpoint by scraper into cars on a depressed track. He describes some other thin-seam conveying schemes in Oklahoma and Alabama, concluding that some substantial progress has been made.

* * *

A NEAT BOOKKEEPING PLAN which can be used by a company operating several mines will be described by John C. McNeil, a certified public accountant with a good deal of coal mine accounting experience. It provides a simple and efficient way of controlling the accounts of the group of mines by office machine methods.

Advertising Index—Alphabetical, 54; Classified, 51; Consulting Engineers, 44; Searchlight Section, 47-49

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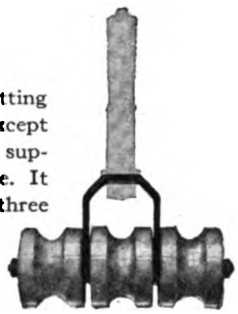
This is a modification of the single spool Type C Insulator long used in mines. This assembly, suspended from the roof will carry the wires along the side wall out of the way.

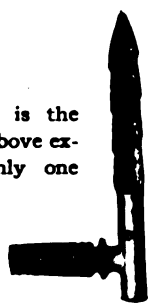
Similar to the fitting shown above except the spools are supported side by side. It will carry the three wires along close to the roof and out of the way.





A barbed pin supports the three insulator pins. If supported in the roof the insulators are carried one above the other. If supported in wall the insulators are side by side.

This fitting is the same as the above except it has only one insulator pin.





A pipe suspension for use with O-B Security Feeder Insulators.

New —and only One Hole to Drill

Have you the problem of stringing a 3-phase feeder circuit in your mine?

Do you want to run a signal or telephone wire along on the same bracket with the two wires of your D.C. feeder?

These new O-B fittings will make the job speedy and easy for you. They only require one hole in the roof or wall— for the expansion bolt or barbed pin.

In fact, there are dozens of combinations of distribution wires that are taken care of. And — only one hole to drill.

Here are combinations that have been developed from an understanding of the practical needs of the man trying to make a real job on his feeder lines. They cut down on time in installation and that means dollars and cents saved.

You can be proud of your distribution wires strung up out of the way in this neat fashion.

Ohio Brass Company, Mansfield, Ohio
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10-M

PORCELAIN INSULATORS LINE MATERIALS RAIL BONDS CAR EQUIPMENT MINING MATERIALS VALVES

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COAL AGE

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 29 NEW YORK, FEBRUARY 4, 1926 Number 5

Longwall and Explosions

PERHAPS no publication on coal-dust explosions has appeared in many years having greater significance than that which the British Safety in Mines Research Board has just issued through His Majesty's Stationery Office. It has long been known that openings and enlargements in cross-section have a marked effect on the violence of explosions of dust, but it remained for H. P. Greenwald and R. V. Wheeler to give quantitive figures on the effect of the former. There will no doubt be an immediate desire on the part of the public to obtain this brief report, which explains in large part the restriction of mine explosions in British mines before the rock-dusting era. So much of the British mining consists of longwall workings that such explosions as occurred in mines even when not naturally rock-dusted were placed in a position peculiarly favorable for their extinction. That method of operation gave opportunity for the air to expand beside and in front of the point of ignition.

In these experiments the passage or passages by which the air entered, though choked down, were extremely short. Who can say definitely if mine passages of area equal to that of the main gallery would give equal expansive opportunity with that of a free entry of air arriving through an opening one-eighth, one-quarter or 64 per cent of the full entry as in the experiments? It is to be hoped that U. S. Experimental Mine at Bruceton will solve that problem by experiments with blown-out shots with openings in front and behind the point of ignition. In the British experiments no coal dust was placed behind the ignition point, whereas in actual practice not only the area in the rear but the intersecting passages have coal dust spread over their roof, ribs and floor.

But enough is unveiled in this report to show to the public, as the experimenters declare, that openings whether in front or behind, and especially behind, the ignition point are effective in reducing the ultimate violence of explosions. Is it to be assumed that an opening covered by a temporary stopping which an explosion will blow out readily is almost as great a deterrent to violence as if the stopping did not exist at all? It seems almost as if it would be found that this is true. If it is by all means let there be temporary stoppings near the advance workings, even at the risk of a little leakage. Perhaps also it will be well in advancing longwall to have an entry driven through the coal to some other roadway in advance of the longwall face as has been done at Sublet, Wyo., for other reasons.

One explosion initiated immediately behind an opening 64 per cent as large as the gallery in which the explosion occurred developed a negligible pressure and actually died out after a travel of 70 ft. with plenty of dust on the floor in front of it. On the other hand with the same initiating conditions and the same rock-dusting the explosion traveled to the end of the gallery 500 ft. and developed a pressure of 73 lb. per square inch and a mean speed of 2,600 ft. per second, tearing the steel gallery apart.

A sad reflection is that the need to quench explosions is greatest near the face; and less in the main haulageways where a network of crossing roadways helps to extinguish the explosion; yet at the face where the coal is obtained is just where it is difficult to rock-dust without covering the coal with a deposit that will make it unmarketable. This again is an argument for longwall, that gives a less dangerous condition than room-and-pillar workings. However, longwall gives concentrated mining and a general dustiness that may give an explosive content as great per cubic foot as in a narrow place with equal or more distressing consequences. A test made by the British with both of the ends of the tube wide open might have thrown some light on this if the dust had been strewn in equal measure at both ends of the gallery.

Coal Laws of Pennsylvania

TWO ECONOMIC factors in the coal situation, which are not being commonly discussed these days, recently were referred to in Congress by Representative Treadway, a Republican. He said that Pennsylvania should repeal its export tax on anthracite, which cost the users $7,000,000 to $9,000,000 every year. He observed that "every ton of coal going into interstate commerce is paying a direct subsidy into the treasury of Pennsylvania and therefore adding to the cost of fuel to the consumer. If that is not profiteering at the expense of other citizens of the Commonwealth of Pennsylvania, then I do not know what is."

He added that there is another law in Pennsylvania which is important to the coal consumer. "I refer to the miners' license law. That law provides that nine men who are themselves members of the union must pass on the qualifications of every man going to be a licensed miner. Can you think of anything more ridiculous than a law that places in the hands of nine men that power? In other words, this board composed of the union says to every miner that wants to do anything in the mines of Pennsylvania: 'You must belong to our union or you cannot mine coal.'"

The miners' license law was enacted before the organization of the mine workers' union and in the interests of safety, a cause which demands the maximum support. Still, it is true that the union has captured the operation of the law, and thereby made it impossible for anyone who is not a member of the union to obtain a miner's license, thereby diverting the effect of the law from enforcing safety to enforcing unionism. The enforcing of an individual to ally himself with any one group, or to take a certain political or public course, regardless of his views and inclinations, is un-American and should not be tolerated. Should the

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union obtain that other much-desired whip over the individual miner—the check-off—his pocketbook would no longer be his own any more than his views, and the infringement of his rights and options as a citizen would be complete.

The Value of Technical Staffs

THE METAL mining industry has learned to value highly the abilities of its managerial and technical staffs; it is disposed to claim a real financial value for an assemblage of engineering and directing talent, and to believe that the men it has discovered and developed are as much a part of its real assets as the ore which it has uncovered after years of effort and expense.

Instances are not lacking of coal properties which failed to produce a profit because of a low order of the skill in their operation; such properties, put in skilled hands, have proved that all they needed was the application of proper methods of mining and marketing, to make them profitable. Readiness to pay sufficient salaries to procure the best men, and recognition of the importance of a high-grade mine staff will produce in the coal industry the same rapid advances that the metal-mining industry has experienced through the same means.

One of the economies that shows least imagination and foresight is the buying of technical talent in the lowest market with an eye solely to price. The talent that makes for success is not secured by such injudicious shopping.

The mining industry of the United States in general is conducted with great ability. Not only has it recently been discovered that we have an exportable surplus of managerial and technical talent at our metal mines, but also that we have engineers in the coal industry capable of increasing the output and decreasing the operating cost of the mines of Germany and Russia; and recent visitors from Great Britain have found that we have some practices and equipment that are needed for economic operation in the mines of that country.

The Danger Hour

AN OLD PLAINSMAN and Indian fighter once remarked, "Injuns is most dangerous between the fust o' May an' the fust o' December. That's when they're on the move. But when a feller is in the Injun's country, if 'e values 'is hair he'll keep 'is eyes peeled *all the time!*"

He who works underground in a coal mine—or above, for that matter—is figuratively speaking, just as truly in the Indian's country as he who in former days pioneered beyond the Western frontier of civilization. Accidents are liable to occur at any time and he who would avoid them must keep constantly on the alert. But strange as it may seem, they are most liable to occur at certain well-defined hours of the day, when everything else is moving most rapidly.

The exact hour of maximum danger changes from mine to mine. A period of the day that may be extremely dangerous at one operation may be comparatively safe at another. Not infrequently, two distinct danger peaks during a shift may be encountered. These may be either close together or widely separated. Records kept at one large group of sizable mines in West Virginia year after year have shown that the hour of greatest danger is at 9 a.m. with a secondary danger peak between 4 and 5 p.m. Similar records kept at another group of mines in Kentucky show that the time of greatest peril is not attained until between 2 and 3 o'clock in the afternoon. Here also a secondary danger peak is reached between the hours of 4 and 5 p.m.

A variety of theories have been advanced to account for these periods of greatest danger. In general they appear to coincide with the hours of greatest hurry—the times when the coal is moving the fastest. Thus the major peaks occur at the hours when those at the face are working the hardest to load out their coal. The minor peaks in both instances coincide with the time when all hands are finishing up the day's work—hustling to get places cleaned up, to get the last trip out, or what not.

Regardless of what may be the actual cause of these periods of maximum danger, they unquestionably exist, and the lesson to be drawn from them is that at these times not only should the foremen and assistant foremen, but all mine workers as well, observe if possible extra precautions and practice if possible extra vigilance. In doing so, however, the mine worker should bear in mind that these are hours of extra hazard only—that real danger exists at all times.

And so, while extra care to avoid accident may logically be taken during certain definite periods of the day, the exact time of which can be determined only from careful records, the miner who would preserve his skin whole may well follow the advice of the old plainsman and "keep his eyes peeled all the time."

Let There Be More Light

ONE ADVANTAGE of concentrated mining is that it makes better illumination possible, yet the opportunity is being neglected in many instances. Electrically-operated loading machines are, as a rule, equipped with headlights which provide a fair degree of illumination at the face. But much of the concentrated mining is being done with scrapers or by hand loading into face conveyors; and headlights are not logical equipment items of the machinery designed for these systems.

Adequate illumination is perhaps more important with scrapers and face conveyors than with true loading machines, because the coal at the face usually can be cleaned when the former methods are used but must be abandoned when loading by a machine. It is often the necessity of cleaning the coal at the face that decides which method should be adopted.

That better light results in increased production, decreased accidents, and a higher quality of product was proved, long ago, to industry in general. Coal mines have been backward in the "better light" movement because of the scattered nature of the work. Now with the advent of more concentrated mining better illumination has become practicable.

With portable flood lights a face that is being worked rapidly can be illuminated at a reasonable expense for the power cost will be less than half a cent per lineal foot of face in an 8-hr. shift. The floodlights should be of the type having an extra large reflector and a diffusing lens. This will reduce the intrinsic brilliancy and so prevent unnecessary glare. Units of from 300- to 500-watt capacity lend themselves well to face illumination. However, no doubt conditions exist where 1,000-watt units would be desirable and within reason.

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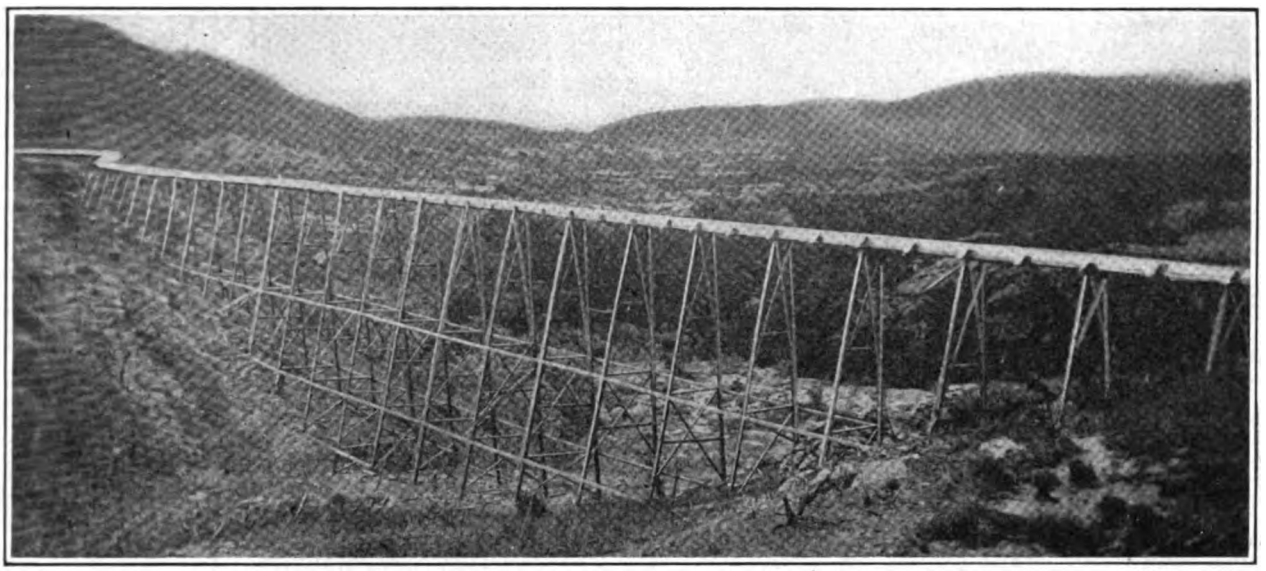


Long Flume Transports Coal in Hilly Region

New Zealand Company Flows About 150 Tons per Hour by Trough 5¾ Miles to Screening and Loading Plant with Water Impounded in Conservation Scheme

By G. Townsend*
Westport, New Zealand

A SYSTEM of transporting the output of a New Zealand coal mine more than five miles by flume to a screening plant and railroad loading point has been installed by the Westport Stockton Coal Co., Ltd., at Ngakawau near Westport, N. Z. The system was built to reduce the cost of bringing this coal in fine sizes down from the mine in the hills. It is the largest coal flume in the world.

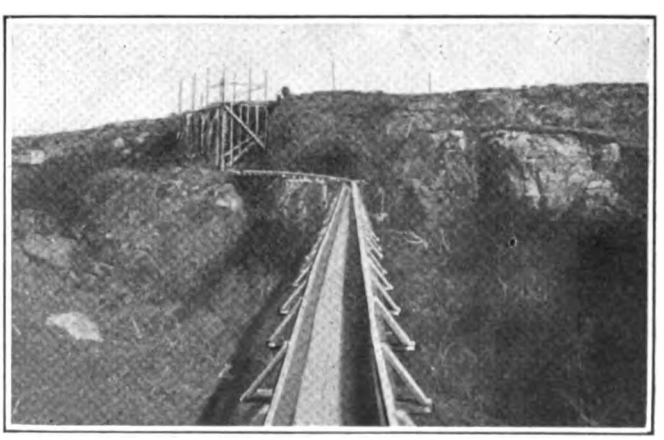
The water is obtained from natural sources, a dam having been built for conservation purposes. The installation is new and no accurate measurements of the quantity of water used have yet been taken but probably about 1,000 gal. per minute is required to move the approximate 150 tons of coal per hour that can move in the flume. The speed is between 8 and 10 m.p.h. This speed, of course, varies slightly with the volume of water and coal in the trough at any given time. It has also been found that heavy rain has an appreciable effect upon the flow of the water as the flume presents a large catchment area.

FLUME SUPPLANTS TRACK HAULAGE

Within the coal industry of New Zealand the principal method of transport from mines to railway is one of rope haulage of gravitation, although in some instances other methods are adopted such as aërials, electric trains, and winding appliances. At Ngakawau, the Westport Stockton company has been using both rope and haulage and electric locomotive. At this mine the coal had been conveyed some five miles from the mine to the head of the inclines by electric trains thence to the storage bins situated alongside the railways by rope haulage down steep inclines.

After many years of indifferent results from this system, a new scheme of operations was adopted. This fluming method of transport is not altogether new in New Zealand, as small flumes have been operated successfully in the Reefton district and at Seddonville, the seat of co-operative mining. But a flume of such length never before has been operated in the Dominion.

The coal won by the miner at the face is conveyed by electric haulage to new storage bins situated outside the mine. These bins have an approximate capacity of 600 tons and are built of the best of New Zealand timbers, procured from the sawmillers of the district. Here the coal is weighed, classified, and then stored within the bins. After dumping their loads the cars



Where the Coal Starts Its Ride

This picture, taken during the construction of the flume, shows the 600-ton storage and loading bin in the background where the coal is dumped near the mine and fed into the flume. When the photograph was made the flume box had been constructed but the iron lining had not been installed.

In the headpiece is shown a length of the Westport-Stockton Coal Co.'s flume running across ravines and curling its way through the hilly country bearing coal in a swiftly flowing current of water from the mine to Ngakawau, near the town of Westport, N. Z.

*General manager of the Westport Stockton Coal Co., Ltd., Westport, N. Z.

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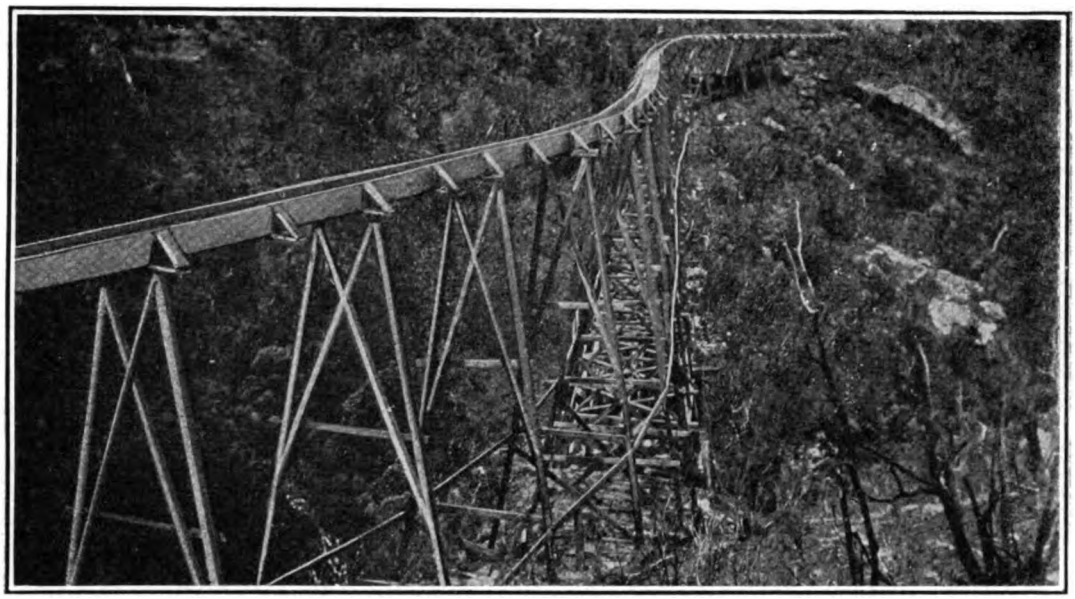


High Trestle

The country through which the Westport - Stockton Coal Co.'s flume runs is far from level. It is so hilly that the flume itself is 5¾ mi. long though the airline distance from mine to discharge point is but 3½ mi. At some places it crosses gullies on trestlework as high as 90 ft. There are a few hairpin turns and three tunnels in the course, but the coal negotiates the route successfully at a rate varying from 8 to 10 m.p.h.

continue their journey and by a circuitous route return to storage sidings and thence to the mine again. Thus on each journey from the mine and back the cars are not reversed.

The coal gravitates into the flume by means of doors, the size is regulated by several grids through which it passes.

The flume proper is 5¾ mi. long from the new bins to Ngakawau though the distance between these two points is only 3½ miles in a direct line. Many difficulties were experienced by the survey to find a suitable gradient.

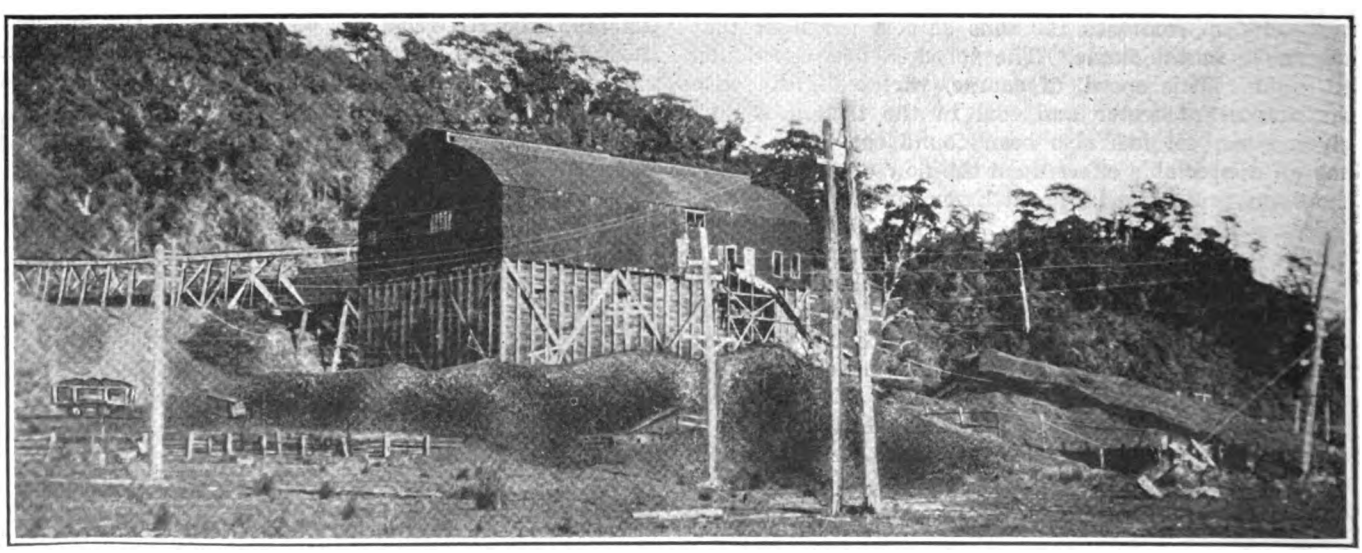
After leaving the storage bins the flume passes over Mangatina Creek at a height of 90 ft. and continuing from there enters a tunnel about 275 ft. long. Emerging from there it negotiates several high places and sharp bends, passing through the mining township of Stockton, thence to Mine Creek, over which it passes and enters the virgin bush, and wends its way round the natural line of the hill, passing through two more tunnels and finally approaching Ngakawau from a northeasterly direction.

The dimensions of the flume are 17 in. across the bottom and 12 in. high. This box is placed on trestle legs. The inside is sheathed with special high grade, galvanized iron ⅛ in. thick. This iron was imported from England in flat sheets and in order to conform to the shape of the flume it was necessary to have the sheets bent.

For this purpose a special machine was designed and constructed by the company's staff and two men with the aid of this machine completed about 200 sheets per shift.

These plates are joined together with galvanized bolts and the plates at the joints are separated by felt lining. In difficult traverses the flume is protected by works to guard against possible land slips which are prevalent in some parts.

A screening and loading plant is installed at the mouth of the flume for the handling of the coal on its arrival. Passing from the flume the coal and water traverse a two-level screen. The top plates have ¾-in. perforations to screen out the household coal for which Stockton is famed. This coal will pass immediately to



This Is the End of the Line Where the Flume Discharges Its Coal and Water

The water, drawn from a reservoir high in the hills near the mine, bears its load of about 150 tons of small coal per hour to this preparation plant at Ngakawau, near Westport, N. Z., where, having been separated from the coal by several sets of screens, it flows into the Ngakawau River, its natural destination. Four or five sizes of coal ranging downward from "household" size, which is caught on ¾-in. grids, are screened out and loaded into railroad cars. The yard is used for storage.

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the railway cars by a retarding belt, the water and the balance of coal meanwhile passing to the second screen of a ⅜-in. mesh to catch the Stockton nuts, which in turn are conveyed to the storage spaces by a scraper conveyor.

The water and coal of under ⅜-in. measurement then enters a gigantic revolving screen which rotates at 120 r.p.m. It is 27 ft. long composed of two sleeves, the first having a diameter of 4 ft. 6 in. and the second 5 ft. This machine separates the peas from the water and slack.

Two identical sets of this machinery will deal with different classes of coal which will be run in the flume by arrangement. In addition to this, auxiliary machinery has been provided in case of breakdowns, for once the coal is placed in the flume at the top it must come right to the bottom and cannot be sidetracked halfway.

The water subsequently passes through a minute mesh to separate the dust and finally reaches the Ngakawau River where, if it had been untramelled by man it would naturally have gone, finally being lost in the Pacific Ocean.

The whole scheme from start to finish has received minute attention and scrutiny and nothing of an emergency nature has been left unprovided for. When the topography of the country is known, one can easily realize the colossal undertaking, and the almost insurmountable difficulties experienced by the builders.

At a trial run of the flume 65 tons of coal were conveyed the 5¾ miles from the head receiving bins to the bins at Ngakawau in 36 min. without any appreciable damage to the product. Some specimens were rounded by the wash of the water, but when the flow increased in volume, the coal slid along easily and freely and arrived at its destination at the seaboard without breakage. The flume system is regarded by many as the best future method of transport of coal from the high country to sea level.

How Long Will Anthracite Region Produce Coal?

Pennsylvania Survey Gives Eastern Middle Field 35 Years and Southern District 110 Years of Active Life—Extraction Improves

THERE IS anthracite coal still in the ground that will last for thirty-five years, in the Eastern Middle district of Pennsylvania, while the life of the reclaimable coal in the Southern field of the state is estimated at 110 years according to the Pennsylvania Geological Survey. A recent bulletin, prepared by Dr. George H. Ashley, state geologist, shows that there is 16,354,676,000 tons of anthracite in the ground, of which 8,979,474,000 tons are recoverable. It further points out that the anthracite industry has increased its percentage of recovery of coal in the ground about 16 per cent since the middle nineties.

About 30 yr. ago a state commission studied the mining of anthracite with reference to its recovery and the waste of coal. The report showed that recovery then averaged 41.5 per cent of the coal in the ground; or, omitting certain collieries in the Southern field one of which reached a recovery of 51.5 per cent, the average of the rest was only 38.5 per cent of the coal originally below the surface.

This new publication of the Geological Survey indicates that the recovery in the anthracite fields in 1921 averaged 61.1 per cent with a total loss of 38.9 per cent, of which 4.3 per cent was in preparation. This indicates clearly that mining and preparation methods in the anthracite regions are improving rapidly.

In the olden days, particularly in the early years of the anthracite industry, only lump coal was shipped. All the smaller sizes were either left in the mine or carted to dump piles, which are now known as culm. The coal was separated inside by means of a long-toothed hand rake. After more efficient means of burning the anthracite was invented, sizes down to pea coal were used, and only the smaller sizes, such as buckwheat, rice, and barley, were discarded.

In the last few years by means of patent grates and forced draft the various industries have been using these finer sizes with much success. In the last five years efficiency has gone even further, and the fine silt, most of which will pass through a ⅛-in. round screen, is being reclaimed and burned under boilers by forced draft. The anthracite operators and consumers are utilizing practically all of the coal mined.

Some coal losses are unavoidable, says the Survey report. The anthracite regions are thickly populated and mining is carried on beneath cities. Large quantities of coal must be left to support the surface. In the anthracite fields there are from 12 to 26 coal beds one above another, many of them lying close together. In order to mine all of these beds it is necessary to leave large pillars for supporting the coals above. Some of the coal in these pillars eventually can be removed but much of it inevitably is lost. Bad roof and floor mean the loss of valuable coal which must be left in these positions. Areas of thin coal, which can not be mined profitably, must be left behind and, in most mines, is lost forever. Coal under streams and rivers must be left in place to prevent the seepage of water into the mines and eventual flooding.

In the Northern anthracite field the mines have drifted into an old buried stream channel of glacial origin. The gravels in this channel are water-bearing and large barriers of coal must be left around these gravels in order to prevent the flooding of the mines and the loss of life. Other forms of pillars which are necessary to mining cannot be wholly recovered.

Big Loss Caused by Fires

Disastrous mine fires have also resulted in the loss of large areas of coal. These fires in most instances have been entirely extinguished and the coal in their immediate vicinity may be loaded out eventually; in fact, some coal companies are reburning coal which has been burned underground. Mining hazards, such as squeezes, flooding, and creeping, also cause temporary loss.

The entire anthracite field raises an average of 10.9 tons of water per ton of coal mined. In areas where the water is in too great a volume to permit mining the coal at a profit, this coal must be left behind as lost. There are many other causes of loss in mining anthracite, such as reservations under railroads, water lines, and other public utilities.

In the production of coal there is always a loss in preparation and transportation. In the bituminous fields of Pennsylvania this loss is not large because 90 per cent of the coal is shipped as it comes from the mine. Anthracite is prepared in elaborate breakers,

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some of which cost as much as $2,000,000. Public demand for sized coal means that there is a loss in breaking the coal. Coal is lost off of cars in transportation. These losses are unavoidable.

In answer to a question often asked in these days, this bulletin states that there are 16,354,676,000 tons of anthracite remaining in the ground. Of this quantity 8,979,474,000 tons are recoverable. The accompanying table gives the distribution of these tonnages.

Field	Total Remaining (in Billions)	Per Cent Recoverable	Recoverable Tonnage (in Billions)
Northern	3,276,763	67	2,195,431
Eastern Middle	248,628	69.4	172,548
Western Middle	3,573,025	58.1	2,075,928
Southern	9,256,260	49	4,535,567
Total	16,354,676		8,979,474

This report estimates the original content of the fields to have been more than 20 billion long tons, which is a somewhat larger estimate than that of the Pennsylvania Second Geological Survey. Of the total 9 billion odd tons less than 4 billion tons are thought to be recoverable within the next 40 years, leaving more than 5 billion tons to be recovered after that period. The Northern field is estimated to have a life of 50 years, the Eastern Middle 35 years, the Western Middle field 100 years, and the Southern field 110 years.

Bureau Tells How to Build Life-Saving Barricades

"The fortunate rescue of 21 coal miners from No. 8 mine of the Jamison Coal & Coke Co. at Farmington, W. Va., after their having been entombed Jan. 15 for a period of 18 hr., affords a striking example of the great possibilities of underground barricades as a means of saving human life following mine fires and explosions" said Scott Turner, director of the Bureau of Mines, when he heard the news of the disaster. "Press dispatches report that these 21 survivors of a disaster that snuffed out 19 lives preserved their lives by bratticing themselves in a room, thereby protecting themselves from the deadly fumes and gases that permeated the wrecked mine.

"The Bureau of Mines has records of the saving of approximately 300 lives in coal mines through the erection of barricades of cloth, board, coal or rock following explosions. The Bureau believes that many lives may be saved in the future by disseminating among the miners the knowledge of how to erect such barricades."

The following practical recommendations for the guidance of miners entrapped at mine disasters are made by the Bureau in Miners Circular No. 25:

When entrapped by gases from fires or explosions, and forced back into workings in which there is comparatively good air, men should keep uppermost the thought of building a bulkhead or stopping, and collect on the way tools, timber, canvas, water, dinner buckets, and anything else that might be useful.

If there is no compressed air, the best thing for miners behind a barricade to do is either to lie down or sit on the floor in the hope that the rescue-crew will find them before they are overcome. In this relaxed position they will breathe much less air than if they exert themselves.

As soon as a place is chosen for a barricade, its erection should begin, for the gases often travel quickly. The movement of gases by air currents should be checked as soon as possible by the opening of doors outside the barricade and the hanging of brattice cloth or by the moving of a door to a new place across an entry. The permanent barricade should be started 50 to 75 ft. from the outer barricade. As much of an entry, room, or drift, as possible should be barricaded off so as to provide a maximum quantity of air. Before constructing a bulkhead men should make sure than there is no connection with other workings through which gases could come. At some place outside of the first stopping, if more than one stopping is built, a sign should be placed to show that men are behind it.

If a barricade be made of lumps of coal, slate, or other debris, two walls 2 to 3 ft. apart ought to be built and the space between filled with fine material or mud. The stopping must be air-tight. Board stoppings are not as easily made gas-tight as those built of dirt or rock and dirt. All chinks and holes in the barricade should be stopped with clay, rags, clothes, and similar material.

If a piece of pipe is available, it should be placed through the stopping and plugged at the inner end, in order that tests of the air outside the barricade can be made by removing the plug.

After the barricade has been built, in order to conserve the oxygen of the air, the men should keep as quiet as possible. However, occasionally somebody should walk around so as to mix the air. All the men should not congregate in one place.

The first barricade recorded in the reports of the Bureau of Mines was built by entombed miners during the fire at the Cherry mine in Illinois, in 1909. Six days after the outbreak of fire in this mine a rescue crew met a party of eight men who had barricaded themselves with twelve others, saved later, but had come out when the air improved and were making toward the shaft. They had walked over half a mile, past cars and dead mules, in the dark, and in an atmosphere (afterdamp) that would not support a flame light. These men were in comparatively good condition when found.

Barricades Save Many Lives

By bratticing themselves in an emergency shelter, by closing the "creep-hole," a sliding door in a stopping above a compressed-air pump, and then breathing the exhaust from the pump, thirteen men saved their lives in the No. 2 mine of the San Bois Coal Co., at McCurtain, Okla., in March, 1912.

At the time of the explosion in No. 5 mine of the New River Collieries Co., at Eccles, W. Va., seventy-four men were in No. 6 mine above it; of these eight were overcome at afterdamp, thirty-one were rescued, and thirty-five saved themselves by retreating from the hot afterdamp to a sump room, where they bratticed themselves off by means of canvas. Here they remained for four hours, until rescued.

There were 153 men in No. 7 mine of the West Kentuck Coal Co., at Clay, Ky., when an explosion on Aug. 4, 1917, killed sixty-two miners; forty-three of the others saved their lives by bratticing off an area not affected by the explosion where they were rescued three and a half hours later.

On March 2, 1915, an explosion at No. 3 mine of the New River and Pocahontas Consolidated Coal Corp., at Layland, W. Va., killed 115 of the 169 men in the mine. Of the fifty-four that escaped, forty-seven saved their lives by erecting bulkheads at two different points.

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Ingenuity and $125,000 Rejuvenate Old Mine

By J. H. Edwards
Associate Editor, *Coal Age*,
Huntington, W. Va.

A NUMBER of unusual features were introduced in the rehabilitation program carried out since 1924 at the Empire mine of the DeBardeleben Coal Corp. in Alabama. With an eye for the future the company spent more than $125,000 equipping the property to better prepare its 1,000-ton daily output and effecting changes underground to make operations in the 28-in. coal continue profitable in spite of growing competition. The old mine has been rejuvenated by improvements to the tipple, a complete new washery, the construction of a new mine yard, the addition of more haulage locomotives and the installation of a slate disposal larry. The chief interest, however, centers in the alterations to the top works where novel devices were required because of the wide variety of cars used.

In order to speed up the handling of cars at the tipple the use of a modified rotary dump located on the mine track level was decided upon. This necessitated the installation of a 42-in. belt conveyor, 238 ft. long, to handle the coal from the dump house to the shaker screens of the old tipple.

In the construction of the rotary dump and the car feeder special features of design were incorporated. Variations in width, height, shape, size of wheels and other details of the cars precluded the use of a standard dump. A two-car equipment was designed and built especially for the case by the Charles T. Steward Machine Co., of Birmingham.

When the dump is upright, two sets of arms actuated through a cam on the driving mechanism are forced to a position releasing the sides of the cars. There then is no possible interference with the free movement of the cars. But when the dump starts to revolve the cam causes the arms to close in over the top edges of the car bodies. Heavy springs interposed between the actuating arms and the holding tips provide the flexibility made necessary by the varying shapes of cars and by large lumps of coal that may be in the path of the arms.

The dump is turned by a 5-hp. squirrel-cage motor. Control and reversal of the motor are by means of an inclosed double-throw line switch. A spring-set brake, which is released automatically by the switch lever, holds the dump in any position, when the power is cut off. The dump has handled 225 cars in one hour.

The installation of a trip feeder, also was complicated by the dissimilarity of mine cars. However a design was worked out which required no changes or additions to the cars. The channel which forms the runway or guide of the upper strand of the feeder chain, is built in 4-ft. hinged sections and held up above the track by coil springs. This brings the chain high enough so that the dogs will catch the car bumpers if no engagement with any lower part is made, yet allows the chain to be depressed by the axle or any low projection on the cars.

The speed of the car feeder is timed so that a trip cannot be moved forward faster than the cars can be handled through the dump. This speed is always within the limit of the tipple capacity.

Preparation at the tipple consists of separating the coal into three sizes and picking the lump and egg sizes. A horizontal reciprocating screen is used. First the coal passes over a plate having 1½-in. round holes. Everything going through is conveyed to the washery. Next the coal goes over a plate having 2½-in. holes, separating the egg and lump. The lump is picked as

A general view of the Empire tipple and washery is shown in the headpiece. The conveyor in the foreground is that from the dump house up to the shaker screens in the old tipple. All of the equipment seen in the picture is new except a part of the old tipple, which is still in use. The small building at the extreme right houses the drive of a bucket conveyor which deposits slate and rock from the dump house into a bin, for disposal with a motor-driven larry. Back on top of the hill is the discharge end of the washery refuse conveyor.

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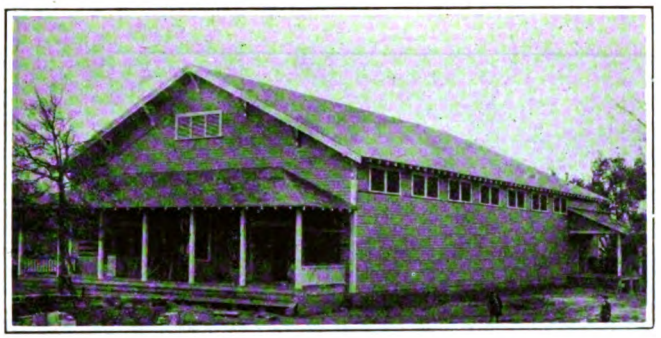


The New Commissary Nearing Completion

A portion of the ruins of the old two-story building which formerly housed the commissary and office can be seen in the foreground. It burned last summer.

it passes over a blank plate of the screen, and the egg picked on the loading boom.

In the new washery a 50-ton-per-hour jig, and four 7½-ton-per-hour tables make up the principal equipment. A 30-in. belt conveyor 209 ft. long brings the 1½-in. screenings from the tipple to the headhouse of the washery.

The order of preparation in the washery is as follows: First the coal is fed to a rotary screen having 1-in. holes. All of that which goes over passes directly to the jig while that which goes through is next screened on a vibrating equipment of ⅜-in. mesh. Everything through the latter screen passes directly to the tables and that which goes over is mixed with the large size from the rotary on its way to the jig.

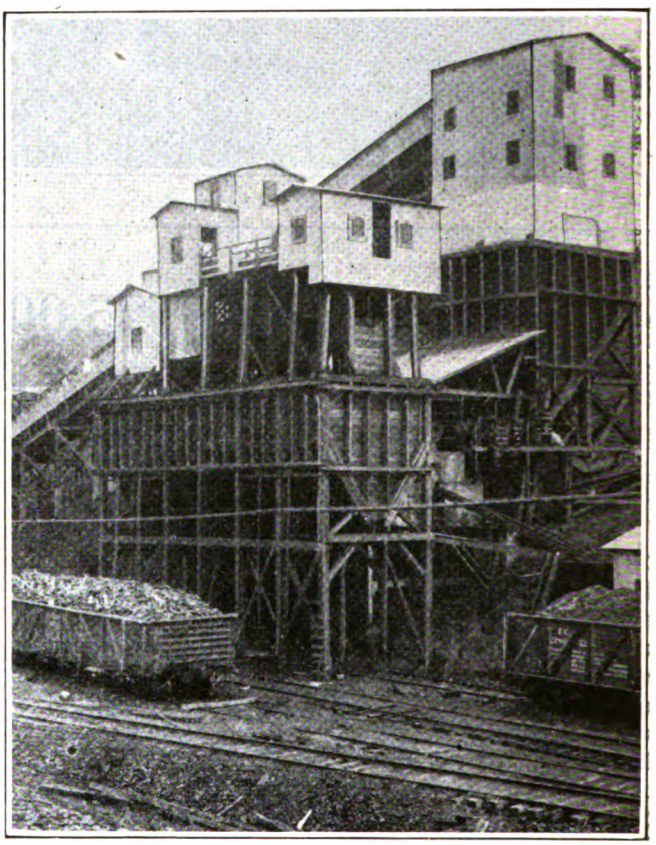
Washed coal from the jig and from the tables passes into separate settling tanks. That from the jig is then elevated in perforated dewatering buckets to a rotary screen of 1-in. mesh located above the loading track bin. Here it is separated into nut which goes over and chestnut which passes through the screen. The fine coal from the settling tank of the tables is dewatered in the same way and is either shipped as ¼-in. smithing or mixed with the nut or chestnut to make steam coal.

An analysis selected at random from a number of the regular runs, showed ash contents of the washed coal as follows: nut 2.05 per cent, pea and slack 4.10 per cent, blacksmith 2.16 per cent. The superintendent explained to a visitor that this report happened to be somewhat better than the average, and stated that percentages of 2.25, 4.5 and 2.75, respectively, came nearer being representative.

When the new washery was put into use it was found that considerable breakage resulted from the dropping of the washed nut from the rotary screen into the loading bin below. After considerable planning and experimenting a spiral chute was installed which has proved entirely satisfactory in lowering the coal without breakage.

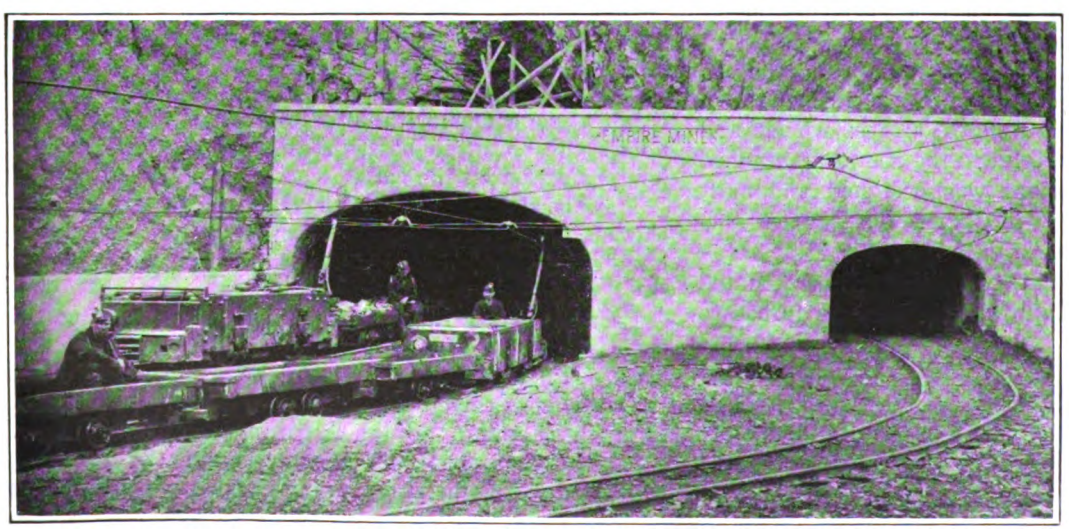
This chute has a vertical height of 18 ft., and extends down into the bin about 10 ft. It is composed of 10-in. sections of ⅛-in. curved steel plates electrically welded and supported by ⅝-in. rods on a center column of 3-in. pipe.

Refuse from the washery is carried on an 18-in. belt conveyor, about 200 ft. long, to the top of a low hill



The New Washery at Empire

This was put into use early in 1925, and represents part of the $125,000 recently spent at the mine for improvements. A plunger type jig and four tables make up the washing equipment. Two primary sizes are turned out by the washery, however, by later separation and combination, five sizes are made available for shipment.



New Portal

This concrete entrance was finished last October. The locomotive bringing out a trip of loads, is a new 10-tonner. Most of the mine cars are rather old and are not of uniform design, but all are necessarily of a very low type. The coal per car averages about 1,500 lb.

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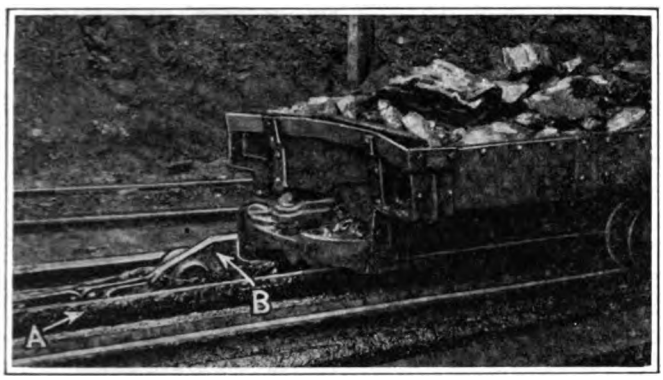


Car Haul

The channel which acts as a runway for the upper strand of the chain is made up of hinged sections supported by coil springs. This provides flexibility and brings the dogs high enough to catch some part of the car, regardless of its design. No special angles were added to the car bottoms. "A" is the runway and "B" the dog.

nearby. To the same point the used water from jig and tables is pumped. This water discharges on the refuse falling from the conveyor flushes it away thus eliminating the necessity of frequent extensions to the conveyor. The water, freed of solids by filtering through the refuse pile is reclaimed at a pumping station located beside a dam which has been constructed at a point several hundred yards down the hollow.

The Empire mine is in the Black Creek seam of the Warrior basin. The coal lies practically level, contains no parting, and is of a grade which finds a ready market for domestic and steam purposes. Generally speaking, the mine top, a hard sandy shale, is fairly good.

THIRTEEN MACHINES CUT COAL

Room-and-pillar methods are followed, the rooms being driven 25 ft. wide on 45-ft. centers. The coal is undercut with electric machines having 7½-ft. cutterbars. About 12 in. of top is brushed from above the track in the center of the rooms mainly to give sufficient height for unloading the mining machines. The added clearance also has the advantage of making it possible to load larger lumps over the sides of the cars. The cutting equipment is made up of thirteen machines.

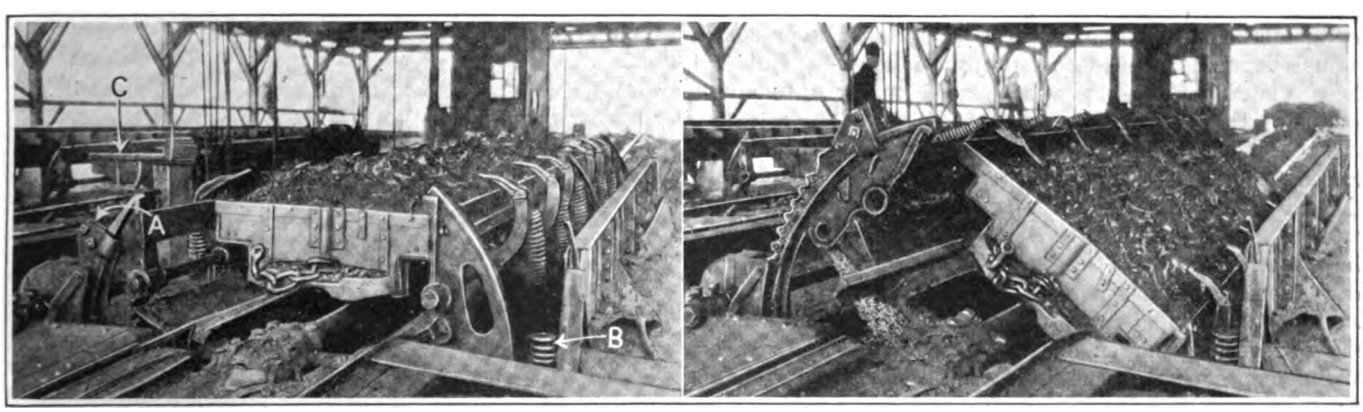
Practically all of the coal is loaded by contract at approximately 65c. per ton, this including, drilling by hand and shooting, pushing cars to and from the entry, laying track in rooms, and timbering where necessary, setting the posts on 4-ft. centers. Yardage is paid for separately at varying rates on butt and face headings and for brushing in rooms.

Haulage is one of the big problems at Empire. The coal per car averages only 1,500 lb., the mean length of haul is 2½ miles, the longest haul 3½ miles, and there are 23 miles of main haulway in use, some of it running through hills and across hollows, winding about like a scenic railway. Locomotives of the storage battery, combination, and trolley types gather the loads from the entries or room necks and assemble them for main haulage by 10-ton trolley locomotives. The company uses a haulage boss whose rank corresponds to that of assistant superintendent.



Spiral Chute

Before this chute was installed to lower nut into the loading bin the coal had to be dropped about 20 ft. when the bin was empty and about 9 ft. when the bin was full. When the photograph was made the bin was nearly full, thus backing coal up in the lower end of the chute. The pitch of the chute is such that it unloads itself as fast as the level in the bin lowers.



Empire's Rotary Dump Had to Be Built to Handle Various Shapes and Sizes of Cars

The cars not being of uniform design, it was difficult to find a dump suitable to the condition. With this special arrangement designed for the purpose, there can be no binding or sticking of the cars. In the level position, shown in one photograph, the holding arms of the dump are forced back from the top edges of the car by a cam-operated mechanism. "A" is the bumper, "B" a bumper spring, "C" is a car in the rock dump nearby.

In the picture showing the dump in action the holding arms have closed in, over the tops of the cars. The dump makes about one-half a revolution and returns. It is driven by a 5-hp. squirrel-cage motor, controlled by an inclosed double-throw line switch. A brake, released from the controller handle and set by springs, holds the dump in a fixed position, wherever it may be stopped.

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Coal Industry Can Raise Its Own Timber And Cut Big Cost Item

Idle Forest Lands Near Mines Can Yield More Than 2½ Million Cords Used Annually—Preservation Pays

By H. S. Newins*
State College, Pa.



Photos Courtesy of U. S. Forest Service

WOOD is required in enormous quantities to maintain the coal industry. Uses are so numerous and so large in the aggregate as to total 0.7 cu.ft. for each ton of anthracite produced from the mines and 0.33 cu.ft. for each ton of bituminous coal. No complicated calculation is required to reveal the tremendous drain necessitated by this industry upon our forests. Forest resources have been lavishly wasted but the cut-over and idle forest lands in the vicinity of all our coal-producing mines are more than capable, when placed under management, of supplying the industry's requirements indefinitely.

Statistics compiled by the United States Forest Service, Department of Agriculture show that for the year 1905 the coal industry absorbed for underground use 134,985,700 cu.ft. of round timber and 242,000,000 board feet of sawed timber. (Table I.) These exactions have continued and today the Department of Commerce announces that according to data collected in co-operation with the Departments of Agriculture and Interior 152,342,217 cu.ft. of round timber and 296,641,000 board feet of sawed timber were used underground in 1923 by 5,205 coal mining establishments. This amount when converted by the factor of six board feet per cubic foot constitutes a grand total of 201,702,383 cu.ft. or reduced to cords by the equivalent of 80 cu.ft. per cord (solid wood), a total of 2,522,279 cords.

Based upon conservative figures of growth our unmanaged forests in the vicinity of coal mines should be capable of producing an average yearly growth of one half a cord of wood per acre. At this rate 5,044,558 acres of forest land, provided they were protected from fire, could be employed indefinitely to satisfy the present annual demands of the coal mining industry. But if these visionary forests were placed under intensive forest management it is not too much to expect an average production in growth of one cord per acre, thereby reducing the area by one-half.

Each of our large mining regions has ample forest land within the immediate vicinity to more than supply the requirements of the industry. The 156 mining establishments reporting from the anthracite region actually own 500,000 acres of land and this alone placed under forest management would almost fulfill their requirements permanently. Yet this region is forced by the lack of sufficient local timber to import the bulk of the required stock, drawing these supplies chiefly from the loblolly pine districts of Virginia and Maryland, and even from Oregon via the Panama Canal and the Port of Philadelphia, and paying a price more than four times as great as that paid when the mine timbers were available locally. The average cost of mine timbers in 1905 was 6.6 per cubic foot. Today the average cost is 27.5c. per cubic foot of round timber delivered, of which amount more than 57 per cent is for freight alone.

In the bituminous regions of central and western Pennsylvania the supply of sawed timber is almost exhausted and the mines are now importing from the South. In fact, the Pittsburgh district uses alone more lumber annually than is produced each year in the entire state of Pennsylvania. Round timbers chiefly for props are available in sufficient quantities within the state but in many cases must be hauled 200 or 800 mi. and this material is fast disappearing. In the earlier days of coal mining this region was so well furnished with available timber that the valuable white pine was used. After the supply of this species was exhausted white oak, hemlock and chestnut were taken each in turn until today the industry must depend upon the second growth hardwoods for all temporary uses.

Table I—Quantity of Mine Timber Used Underground, by Classes of Mines: 1923 and 1905[1]

	Number of Establishments[2]		Round Timber (Cubic Feet)		Sawed Timber (Board Feet)	
	1923	1905	1923	1905	1923	1905
Total	6,384	5,163	174,389,004	165,535,900	507,359,000	435,944,000
Bituminous	5,149	2,940	110,983,610	91,309,700	227,340,000	140,790,000
Anthracite	156	216	41,358,607	43,676,000	69,301,000	101,210,000
Iron	165	143	13,123,228	13,484,000	16,685,000	13,929,000
Other metal	879	1,718	8,780,092	15,282,500	193,333,000	164,95 ,000
Fireclay	35	....	143,467	.....	700,000	.....
Miscellaneous	.....	146	.....	1,783,700	.....	15,059,000

Table II—Quantity of Mine Timber Used Underground, by States: 1923 and 1905[1]

	Number of Establishments[2]		Round Timber (Cubic Feet)		Sawed Timber (Board Feet)	
	1923	1905	1923	1905	1923	1905
United States	6,384	5,163	174,389,004	165,535,900	507,359,000	435,944,000
Pennsylvania	1,923	754	76,008,347	47,606,500	145,528,000	157,324,000
West Virginia	965	325	17,430,303	8,716,000	49,519,000	19,645,000
Illinois	344	400	14,964,030	10,342,300	15,045,000	7,025,000
Montana	126	153	4,416,894	4,008,400	61,817,000	62,852,000
Arizona	115	139	1,085,844	1,045,500	61,858,000	40,498,000
Ohio	530	(3)	6,045,014	(3)	23,341,000	(3)
Kentucky	410	(3)	6,534,541	(3)	20,989,000	(3)
Michigan	81	60	6,550,501	12,602,600	10,108,000	11,487,000
Minnesota	57	(3)	6,336,415	(3)	10,256,000	(3)
Colorado	227	487	5,404,933	4,340,900	6,743,000	13,518,000
All other states	1,606	2,845	29,612,182	78,873,700	102,155,000	123,595,000

(1) Statistics for 1905 compiled by the Forest Service, Department of Agriculture.
(2) Reported as number of mines for 1905 and number of mining establishments for 1923. An establishment in some cases comprises a group of mines.
(3) Included in "All other States."

In the headpiece is shown an area of forest land maintained by the Philadelphia & Reading Coal & Iron Co. A forest lane which adds some protection against brush fires is to be seen in this illustration.

*Professor of wood utilization at Pennsylvania State College. This article contains material read by Prof. Newins at the meeting of Coal Mining Institute of America in Pittsburgh, Pa., Dec. 10, 1925.

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Pine and hardwoods from the South are used for the more permanent type of construction as in entries, haulage ways, and main openings. However, 75 per cent of all the wood products used in these mines is of round timber rather than sawed timber. Since these timbers are employed in the smaller dimensions as well as in the larger sizes it is possible to utilize a great quantity of products from local forests for which there is no competition except in some cases where there may be a demand for post material. This region has sufficient forest land within its boundaries to supply easily the requirements of the mining industry. If these forest lands were placed under management a longer rotation would be necessary for sawed timber but the round timber of much smaller size could be produced meanwhile in abundance and the cutting of the round timber largely as thinnings would benefit the forest.

West Virginia uses approximately 25,000,000 cu.ft. of timber per year in the coal mines of the state. Until recently West Virginia ranked first in the total production of hardwoods in the United States, but now these valuable stands of hardwoods as well as those of pine and spruce are being rapidly exhausted by commercial exploitations, and already the mines of this woodland state are required to use an inferior grade of second growth timber.

Illinois, according to the Second Report on a Forest Survey of Illinois by Herbert H. Chapman and Robert B. Miller, ranks third in the consumption of wood for coal mining and used during 1921 an estimated total of 21,552,260 cu.ft. as follows:

Props, 13,375,989 cu.ft.
Mine ties, 2,691,399 cu.ft.
Caps, 1,902,220 cu.ft.
Legs and bars, 2,537,970 cu.ft.
Riprap, or lagging, 202,422 cu.ft.
Mine cars, 1,329 800 cu.ft.
Construction, 512,460 cu.ft.

The more recent estimate for 1923 by the United States Department of Commerce shows a consumption of 17,471,530 cu.ft. for underground use instead of 19,710,000 cu.ft. as in 1921. On the basis of the year 1921 a total of 246,375 cords of wood is required to mine all the coal produced in Illinois.

Exactly 91.24 per cent of all this wood is in the form of round or hewn products of which but 7.12 per cent are legs and bars of sizes large enough to yield lumber. Thus 84.12 per cent of all the wood used in these coal mines consists of relatively small props, mine ties, and lagging which utilize trees down to 3 to 4 in. in diameter breast high.

The average price paid at the mines for all classes of timber reduced to cubic feet was in 1921, 18.3c. per cubic foot. The larger sizes such as for legs and bars cost 26.7c. or an amount 46 per cent greater than the average, while mine props cost 16.2c. per cubic foot or 11.5 per cent lower. Therefore the larger sizes command a price per cubic foot 64.3 per cent greater than the smaller. It has been computed that an area of less than 500,000 acres of forest land will furnish a perpetual supply of mining timbers for Illinois. The mining companies own 799,000 acres, or 60 per cent more than they require to produce their own needs.

Although known as the prairie state, Illinois continues to draw more than 60 per cent of the mine timber used from within its own boundaries. Most of the introduced woods come from the Ozark region of Missouri and are chiefly white and post oaks of small dimensions.

The Clinton district of Indiana uses mostly local timber of small sizes and these are of second growth and of inferior quality.

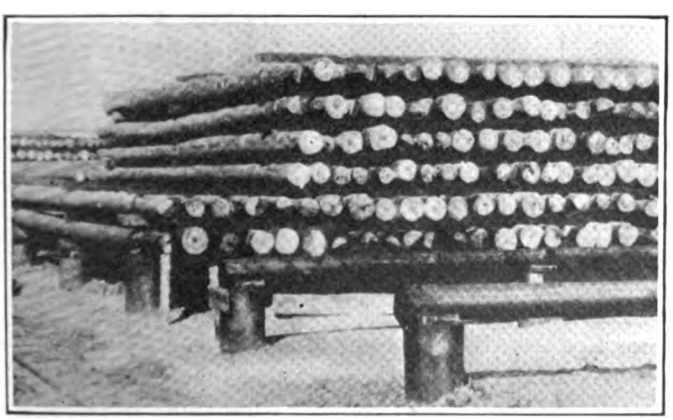
KENTUCKY AND TENNESSEE WELL SUPPLIED

Kentucky produced in 1924 about 45,000,000 tons and Tennessee about 5,000,000 tons of coal. On the estimated basis of 0.33 cu.ft. per ton these states must consume jointly a total of nearly 17,000,000 cu.ft. of timber. These states, like West Virginia and Virginia, are well supplied with valuable forest land and have already been large factors in supplying timbers to the coal mines of Pennsylvania. Hardwoods, chiefly oak and chestnut, constitute the principal species, although spruce and pine were at one time abundant.

Virginia produces about 9,500,000 tons of coal annually and probably uses more than 3,000,000 cu.ft. of timber.

Alabama now produces about 20,000,000 tons of coal per year, and it is safe to assume that the annual requirement for timbers is almost 7,000,000 cu.ft. for these coal mines alone. The Alabama forests have been cut over pretty generally but continue to yield longleaf, shortleaf, and loblolly pines, white oak, red oak, cypress, and red cedar among numerous other species not used in the mines.

The problem of timber shortage which confronts the





Proper Handling of Timber in a Mine Yard Saves Money

At the left is shown a stock of peeled timber properly piled. When handled this way, the wood is little subject to decay and will season quickly. The other picture illustrates an excellent way to pile untreated ties and other short, sawed timber for seasoning or storage. In this arrangement a minimum area of wood surface is touching.

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coal mining industry may be solved in just two ways: Greater production of timber and more careful use and preservation of wood in mines. In scientific timber production, on cut-over and idle lands within the commercial vicinity of the mines, federal and state aid can well be expected, but, as a matter of sound economy, the coal operators themselves should note the handwriting on the wall and take heed by focusing their foresight some thirty years in advance and organizing now their forestry departments and employing forest experts to supervise, manage, and properly protect from fire the large holdings of timber land which they control.

Encouraging progress along this line has been made in some sections. The Pennsylvania coal companies which have taken the initiative in practising forestry upon their holdings include at least the following:

Clearfield Bituminous Coal Corp., Lehigh Coal and Navigation Co., Berwind-White Coal Mining Co., Philadelphia & Reading Coal & Iron Co., Bethlehem Mines Corp., Rock Hill Coal & Coking Co., Rochester & Pittsburgh Coal & Iron Co., Cambria Mining & Manufacturing Co., Eastern Bituminous Coal Mining Co., Homer City Coal Co., Vinton Colliery Co., Arrow Coal Mining Co., Pittsburgh Coal Co., and Graceton Coal Co.

Other companies are practising forestry in a small way and it is hoped their influence may spread to the larger number of operators who have taken no action in this regard.

WHAT 40c. PER ACRE WOULD DO

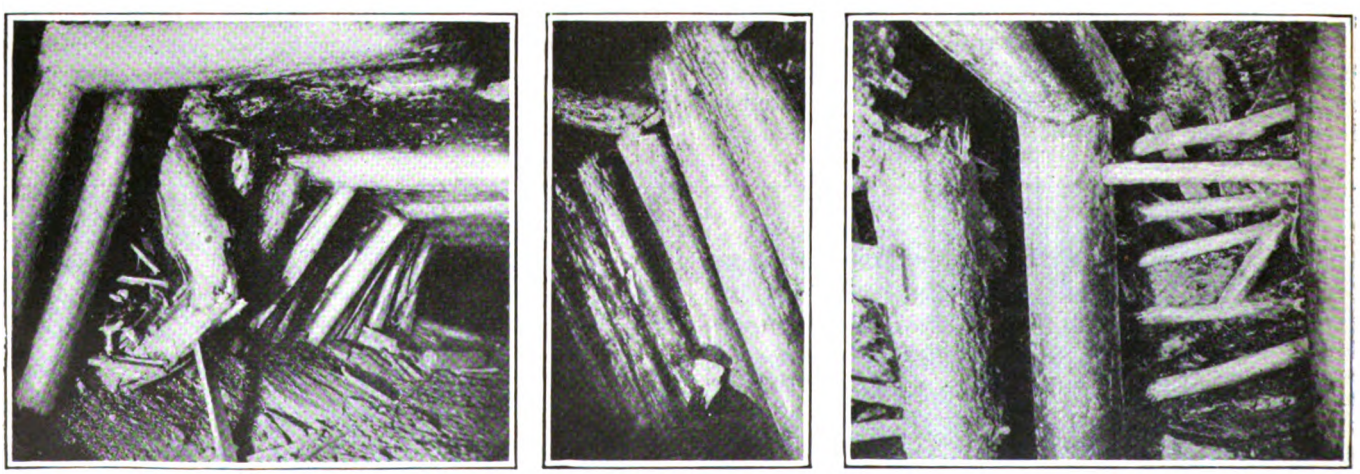
The Philadelphia & Reading Coal & Iron Co. of the anthracite region is now spending 30c. per acre annually for the protection and development of the forest land which it controls. It has been estimated by A. C. Silvius, the forester of this company, that if 40c. per acre were expended each year by each of the anthracite establishments it would take 33 years to expend for this purpose the equivalent of the present annual freight bill on wood timbers imported to this region. Mr. Silvius suggests that if the 500,000 acres of land controlled by these operators were divided into units of 5,000 acres or more, the expenditure of 40c. per acre might well be made as follows:

For roads, trails and fire lanes	15c.
For surveys and maps	2c.
For forest planting	4c.
For fire prevention	4c.
For fire extinction	2c.
For tools and supplies	1c.
For supervision	5c.
For miscellaneous expenses	2c.
For slash disposal	5c.
Total	40c.

The Clearfield Bituminous Coal Corp. offers an excellent illustration of what may be achieved in the bituminous regions when the responsible parties are thoroughly aroused to the forestry situation. The forestry branch of this company was first organized in the spring of 1920. The company's holdings comprise 150,000 acres, of which 24,000 acres are owned in fee and are available for reforestation. A survey of this land indicates that 2,000 acres are covered with a good stand of timber, 16,000 acres contain natural reproduction, 4,000 acres are barren, 1,000 acres are semi-barren near the mines and 1,000 acres are of farm land.

Since 1920 rapid strides have been made in the proper care of this forest land. The natural reproduction has been encouraged in its growth, fire lanes have been cut, roads opened, and a fire tower connecting by telephone with the state system has been erected. But the biggest development has been this company's forest tree nursery. The nursery site was established in September, 1923, near the town of Clymer, Indiana County, Pa., and the first seed sown in March, 1924.

An inventory taken in August, 1925, showed for this nursery about 2,215,000 two-year-old coniferous seedlings and 2,140,000 one-year-old coniferous seedlings. In addition the nursery contains about 16,000 hardwood seedlings and 170,000 transplants. This nursery is the largest and most successfully operated of any forest tree nursery controlled privately in Pennsylvania. This company is contemplating the planting of 1,000,000 trees each year.



This Is Why It Pays to Practice Timber Preservation in Coal Mines

In the picture at the left the broken part above was weakened by decay to the point of failure after one year's service in the mine. It was sound when installed but was not treated with a preservative. The post next to it which was treated with a preservative and placed at the same time remains sound and uninfected by decay. Two other untreated timbers in the foreground show fungus attack.

In the center picture, the timber at the left of the man—being the second upright shown in the foreground of this haulageway illustration—was set after treatment with lime chloride in 1908 and is still sound after 17 years' of service. The untreated timber immediately at his right is decayed and due for early replacement. The timber was installed only four years ago to replace a treated timber which had been in service for 14 years. The original treated cap of this set seen supported by the decayed timber is sound in its 18th year of service.

The other photograph shows—left to right—an untreated timber, a zinc chloride treated timber, and one treated with creosote after all three had been in service in a coal mine for 18 months. The two treated timbers are still free from decay.

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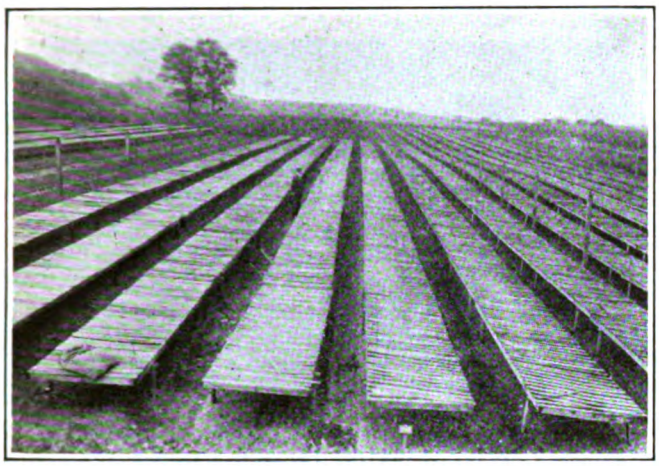

Some Coal Companies Have Nurseries Like This

Seedlings are under the protection shown here during a part of the year before they are ready for transplantation to the open acreage the company maintains.



Seedlings with Protective Covers Removed

At the end of each season these tiny trees in a coal company's nursery are "given the air." Usually in the third season the trees are ready to be set out for their larger growth.

The planting of forest trees upon idle land not only increases the value of the property but also reduces the tax bill of the property owner appreciably. The state of Pennsylvania provides for placing such improved forest lands in a class called the auxiliary forest reserve and assesses each acre at a sum not to exceed one dollar until the time when the protected timber is ready to cut and then the state claims one-tenth of the stumpage value of the products. This affords one of the best arguments in favor of forestry on coal lands and is really too good a business proposition to pass unaccepted.

Utilize Every Timber in Mine

Besides increasing timber production, the other solution of the mine timber problem is that of the closest utilization of every piece which enters the mine. Wood is essential because it is cheaper than substitutes, such as masonry and steel; it is easily worked and fitted to place and involves no great difficulty in handling.

To insure the greatest strength values in mine timbers the strongest pieces should be selected for the most important places, and especially is this true today when there is but little choice between good and bad local timber. Density is an important factor in this regard and is an indication of the quantity of wood substance present, and considering two pieces of wood of equal moisture content the denser piece will have the greater strength.

Defects such as decay, knots, shakes, splits, checks, and cross grain seriously depreciate the strength values in wood, and where possible woods containing these defects should be avoided. Wherever possible timbers should be carefully seasoned before use. Timbers free from bark and properly air seasoned have greater strength and durability than those which are green and may harbor disease, insects and moisture beneath the bark.

Decay in wood is caused by a disease we term "fungus." The fungus feeds upon food substances stored within the sap-wood cells. It obtains this food by the penetration of small threads called mycelium. Wood which is apparently sound may contain these tiny threads and will eventually succumb to decay. This fungus will thrive in the presence of air, moisture, and warmth, all of which are required. Since light is no factor it may readily be understood why this disease develops to such an extent underground where it often presents itself to the miner in many grotesque forms adhering as fruiting bodies to the decaying wood.

If the moisture content of wood can be reduced to a point lower than 20 per cent (based on dry weight) these fungi cannot endure—hence the value of seasoning wood products to remove the fungus and thereby increase the durability of the wood. But, of course, seasoned wood placed in most mines will absorb moisture. Therefore, in these cases and where durability is required it is necessary to impregnate the wood with preservatives which are toxic against decay. The creosotes are more generally used for this purpose than the zinc chloride because the latter, being soluble in water, is subject to leaching.

Mine timbers are destroyed by decay, insects, fire, and mechanical abrasion and of these, decay is by far the most destructive. Where the natural durability of the wood extends beyond the period of temporary use it is not necessary to use preservative treatments. However, it is safe to presume that of all the timbers used underground for coal mining fully 15 per cent or 30,267,357 cu.ft. are employed for the more permanent uses, such as in main entries, shafts, and haulage ways.

Timber Preservation Essential

These timbers if untreated will, in some cases, barely endure one year of service, but assuming three years to be the average life there will then be required in the average mine shaft, drift, and gangway three renewals during a twelve-year operating period and, perhaps, as many as five to ten. On the basis of the minimum number of renewals, there is used in our coal mines during a twelve-year period for these more permanent purposes a total of 121,069,428 cu.ft. of timber, of which 90,802,071 cu.ft. could have been saved by preservative treatment. At the average cost of 25c. per cubic foot this amounts in value to $22,700,516.

Wood preservation has passed far beyond the experimental stage and is now a recognized necessity in the nation's scheme of closer utilization of wood products. Fortunately, some of our large mine operators have taken the initiative and are already setting the pace for others to follow. There is really nothing objectionable in the use of creosoted products in coal mines. Some miners have complained that the odor is objectionable, and they have expressed a fear of so-called

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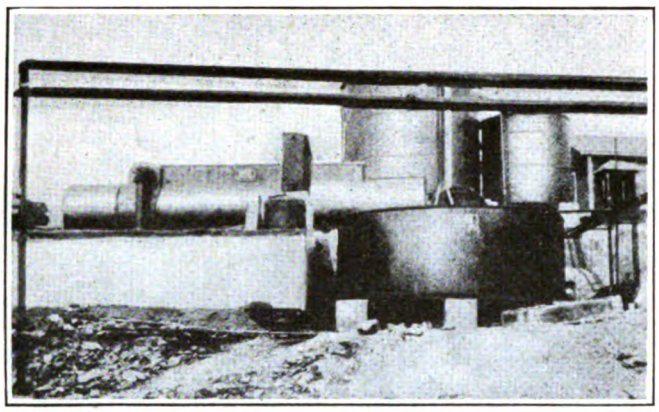
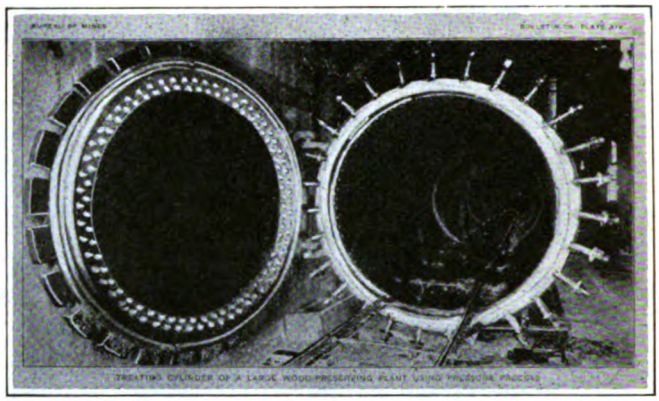


A Non-Pressure Plant in Pennsylvania for Treating Mine Timbers



The Treating Cylinder of a Large Wood Preserving Plant Using the Pressure Process

explosive gases coming from the timber preservatives. This objection has no foundation of fact.

Proper ventilation of mines is an important factor in the life of timber as well as it is a factor in the more important consideration of the life of the operating miner. A perfectly dry, well ventilated mine gives the longest life to timber, while a poorly ventilated mine which is alternately wet and dry gives the shortest life and a mine which is wet all the time but well ventilated rates between the two. Ample ventilation in essential to the prolonged life of mine timbers whether they be treated or untreated.

We hear much of the fire hazard. Under any circumstances where the fire hazard is great, as in timbered downcast shafts and shaft stations, the timbers, whether treated or untreated, should be protected by a fireproof coating preferably of gunite, plaster, cement, concrete slabs, or other non-inflammable substances.

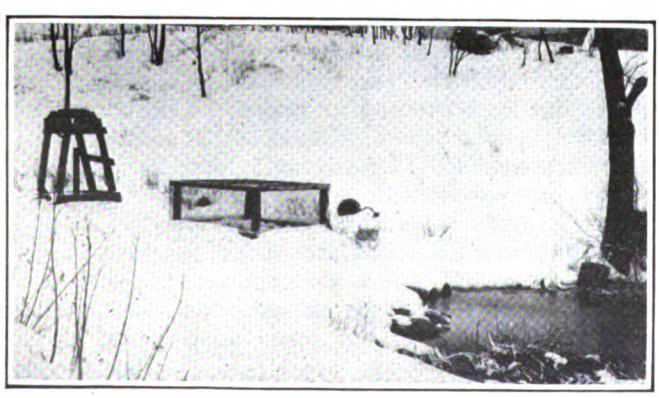
The reclaiming of mine timbers or their salvage after temporary use would be an important utilization factor were it not for the hazard and cost involved in drawing the mine timbers from these working places. A post puller is on the market which partially eliminates this danger to the operator but on account of the cost the practice is not general.

The present indications are such that in all probability steel and concrete will substitute wood in the more permanent locations in additional quantities as time goes on. In coal mines where the waters are strongly acid, corrosive action tends to destroy these steel supports, but otherwise the conditions in these mines favor the use of substitutes as the cost of the large wood timbers advances. Brick and stone are sometimes used in constructing bulkheads or stoppings, but no satisfactory substitute for the wooden temporary roof support has as yet been found and since the aggregate of these temporary uses totals 85 per cent of the wood consumed underground it is important that conservation measures be undertaken to provide indefinitely these necessary timbers.

Borehole Enables Mine to Drain Itself Without Pumps

Approximately 1,600 gal. per minute is the natural flow into the stream at the right from the 176-ft. borehole, the top of which is protected by the fence in the center of the accompanying illustration. This 12-in. borehole into the abandoned mine No. 39 of the Pennsylvania Coal & Coke Corp., at Patton, Pa., drains the No. 28 mine without the aid of pumps. The two mines are in a bed which in this locality has a general pitch of 6 to 7 per cent. Mine No. 39 was abandoned in 1924 but pumping was continued in order to get rid of the water from mine No. 28.

A careful check of the levels indicated the top of the borehole to be 3 ft. above the lowest point in No. 28 mine. On the strength of these measurements the pump in No. 39 was removed and the abandoned mine allowed to fill. In order to increase the differential head, the top of the borehole casing was cut off about 14 in. below the surface and two large pipes run from here to a discharge point about 15 ft. away.



Gallons per Minute Cut No Ice Here

The borehole in the center of the picture once served a mine long ago abandoned. Now it is merely an outlet through the abandoned operation for water flowing down from a higher-level mine.

Light Needed, Not Glare

Bare lamps in mines are all too prevalent, and are an especial hazard because such brilliant light sources directly in the field of vision will cause pupilary contraction and partial blindness, with the result of risk of injury. Glare under mine conditions, where surroundings are black is more detrimental to the eyesight; it is almost a criminal negligence. Light that does not fall directly upon surfaces to be illuminated is absorbed by the black surfaces, as there is no diffusion of light in a coal mine, and hence light is wasted if not directed exactly to the proper place. For this purpose porcelain-enameled steel reflectors should be used which not only direct the stray light to the proper area, but shield the light source from the eyes of the miners.

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Problems In Underground Management



Bottom Layout Increases Efficiency Of "Wireless" Mine

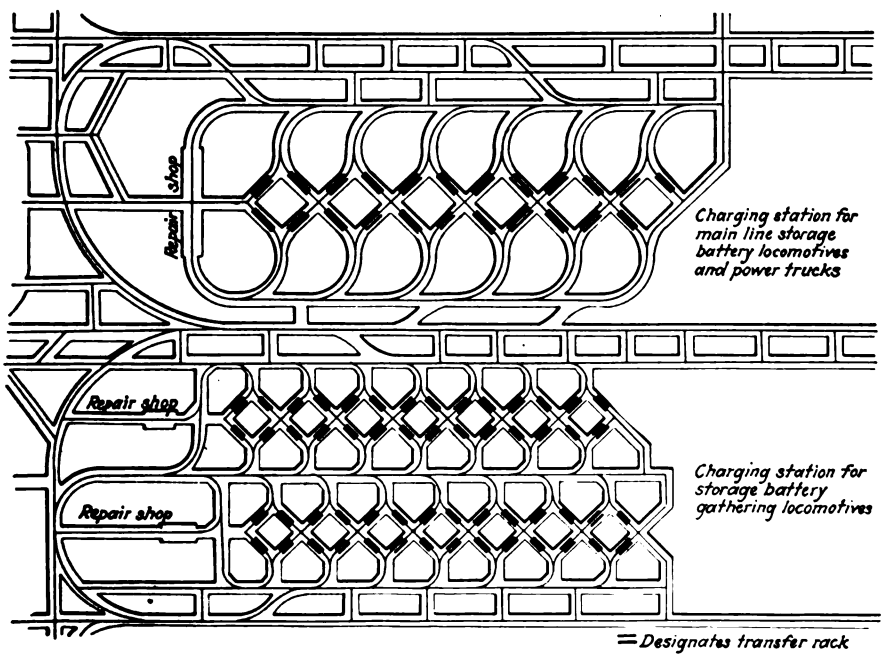
The Consolidation Coal Co.'s new mine at Caretta, W. Va., has a bottom unique in several respects but interest centers for the moment in the charging station for locomotives and portable power units. Inasmuch as this is a "wireless" mine, all gathering, haulage and cutting being done by means of storage batteries, the charging facilities must be ample or operation is liable to be seriously hampered.

In the accompanying illustration, as may be seen, each charging stall is double, that is, it contains two charging racks. One of these will always carry a battery either in the process of charging or fully charged.

Suppose that a locomotive or portable power unit, the battery of which has been discharged in operation, comes to the station. The battery compartment of these machines is a separate component part readily attached to or detached from the chassis. The exhausted locomotive accordingly enters a stall where one charging rack is empty depositing its battery. Then the chassis, running on power from a cable, backs out and runs under a rack on which is a charged battery. Drawing this down from the rack in the customary way the locomotive returns to service.

Facilities are provided on this bottom for 28 gathering and 12 haulage locomotives or power trucks. Either charging station may be readily extended whenever necessity may require.

In gaseous regions the "wireless" mine possesses many advantages over the trolley-equipped operation. Heretofore one of the chief objections to haulage and other equipment operated on storage batteries has been the time required to charge the accumulators or the difficulty involved in changing battery boxes. Such bottoms as the one at Caretta, and locomotives and power units from which the batteries can be removed and replaced as easily as those there employed, will doubtless do much to overcome this difficulty and permit the wireless mine to operate on far more nearly equal terms with its trolley-equipped competitor.



Caretta Bottom Has Large Carrying Capacity

The charging station for locomotives and power units is practically double, one-half being for the accommodation of main line or haulage locomotives and the other half for gathering locomotives. By providing each machine with two batteries one can be kept on charge while the other is furnishing current for mining operations. It requires only about 5 min. to change batteries.

Blowing Out Old Grease Saves Bearings

Many automobile owners nowadays prefer renewal of their crankcase oil at definite intervals or after a certain mileage has been covered to periodic replenishment of this lubricant. The idea back of this practice is that oil deteriorates with use, losing a certain amount of its lubricating quality. It is therefore believed to be cheaper and more satisfactory in the long run to throw the old oil away and substitute new than to replenish the supply already in the crankcase.

A somewhat similar idea is followed by certain coal companies who make it a practice to blow the grease out of their roller-bearing car wheels at definite intervals and then to repack the bearings. Compressed air at 100 lb. pressure is used to blow out the old grease and the new lubricant may be shot in by the same means. Much of the old grease may be melted, strained, filtered or otherwise purified and reused if desired.

At first glance this might appear to be an expensive practice as it would seem to entail the consumption of an excessive quantity of grease. What is lost in lubricant, however, seems to be saved in bearings. Last year one large company following this practice and using 1,840 mine cars or 7,360 bearings consumed about 20 tons of grease. It makes a practice of packing its car bearings four times per year. But in the past five years this operator has been compelled to purchase only 125 cages of rollers for renewal purposes, making a renewal rate of approximately 0.34 per cent annually —a cost so small as to be negligible.

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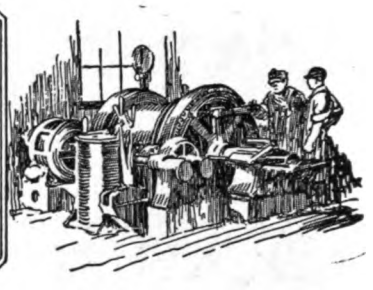
Practical Pointers For Electrical And Mechanical Men



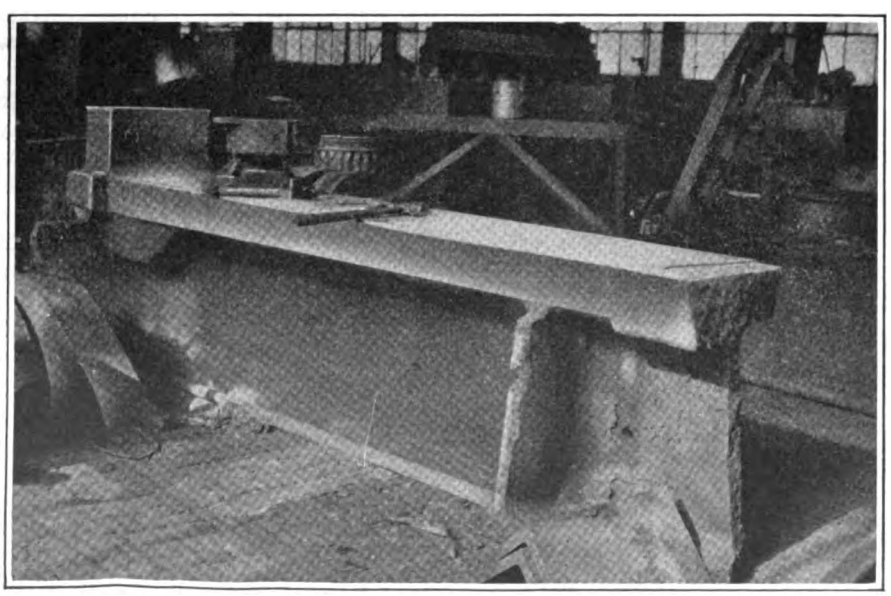
Improvised Plane Table Facilitates Work In Mine Shop

In the performance of many shop operations the work is greatly facilitated by the use of a true and even surface. This is especially the case in certain layout and assembly jobs where a solid, even foundation for the work in hand is essential. The supporting surface may then be taken as a sort of "origin of coordinates" and measurements and heights taken from it.

Unfortunately what is known in the shop as a machinist's plane table, (and this must not be confounded with the surveyor's instrument of the same name) is quite an expensive piece of equipment; so expensive, in fact, that few mine shops are provided with them. Sometimes it is possible to salvage some part of an old or broken machine and make it perform the function of a regular plane table.

Such an instance of salvage and application to a useful purpose is shown in the accompanying illustration. The shop where this photograph was taken once employed a bulldozer, but this machine was too small for the work in hand, gave trouble and finally broke down completely. A new and larger machine of the same kind accordingly was ordered. The guides of the broken machine were 10 in. or more in width on top and, of course, were planed to an even finished surface. The possibility of using one of them as a plane table was at once recognized by the management and in the accompanying photograph it is being employed in this capacity.

Although the height of this old guide is perhaps a little less than that of an ordinary plane table it is not particularly inconvenient on this account. If this were the case it would be an easy matter to raise the guide to the desired height upon either a temporary or a permanent foundation. Upon the other hand, this guide is amply big and heavy and has a surface sufficiently accurate to satisfy most requirements.

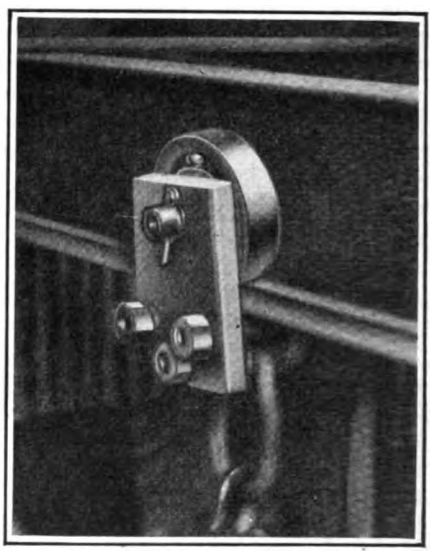


Bulldozer Guide Used as a Plane Table

When the bulldozer after giving much trouble finally broke down completely the shop management was quick to recognize that one of the old guides possessed more than its mere scrap value. By means of the acetylene torch it was cut to proper length and is now used in the shop as a small plane table upon which fine work can be done with satisfactory accuracy.

Old Ball Bearings Make Good I-Beam Trolleys

High-grade I-beam trolleys of commercial types usually are equipped with anti-friction bearings. Because of the wheel and bearing difficulties, not many home-made trolleys are in use. One of this type and of unique construction forms part of the repair-shop equipment of the Fordson Coal Co., at Nuttallburg, W. Va.



A Sturdy, Easy-Running Trolley

The wheels are "all bearings." They consist of worn ball bearings removed from the motors of 10-ton mine locomotives. The outer race of the bearing rides directly on the beam.

The wheels and bearings of this trolley, which is shown in the accompanying photograph, are one. They are nothing more than worn ball bearings removed from the motors of 10-ton locomotives. The outer race of the bearing rides directly on the I-beam. Because the balls are exposed to dust and the service is comparatively light no grease is used on the balls.

The I-beam on which the trolley is mounted is a short one extending from the main I-beam serving the track and motor pit, to a point above the shop lathe. Even with a load the trolley operates so easily that with but a slight start it will coast the length of the beam.

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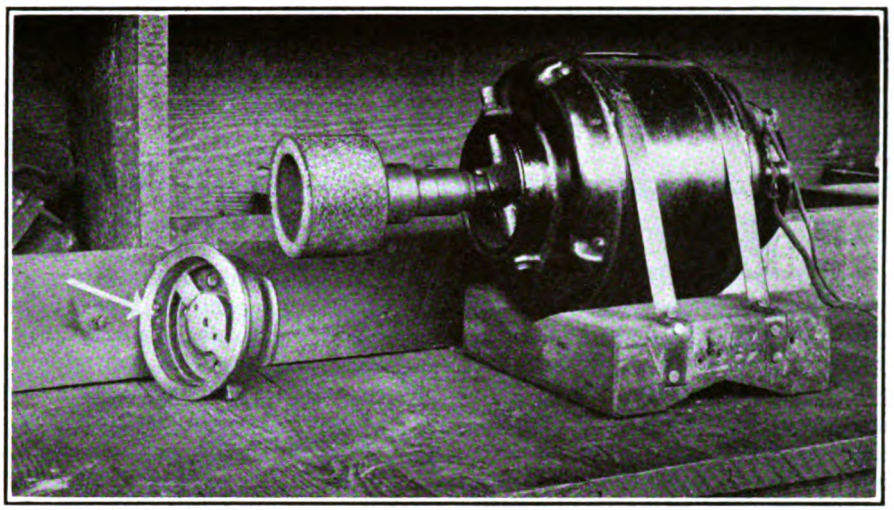
Small Grinder Reclaims Old Switch Covers

When G. L. Birch went to Balkan, Ky., as chief electrician of that operation of the Southern Mining Co., he found in the scrap many reverse-switch covers of CE-6 mining machines. In practically every case the covers had been thrown away because of a small burr or roughness on the inside, caused by an arc. This roughness prevented removal of the insulator for repair or renewal.

Arc deposits on cast iron are, as a rule, too hard to file or machine. Grinding is then the only method which can be used for smoothing a surface thus affected. But to grind the inside of a reverse cover requires a special wheel of small diameter. For this purpose Mr. Birch purchased a 3-in. cup-shaped wheel and attached it to a ½-hp., single-phase 110-volt, 3,400-r.p.m. motor. This grinder removes the burrs and smooths the surface in a few seconds. The insulator can then be taken out and the cover is again ready for use.

For several years it has not been necessary to buy new reverse covers at Balkan. Those damaged by arcs are repaired, and the ones lost or broken are replaced by covers reclaimed from the scrap and made servicable with the grinder.



Arc-Damaged Cover, and the Grinder

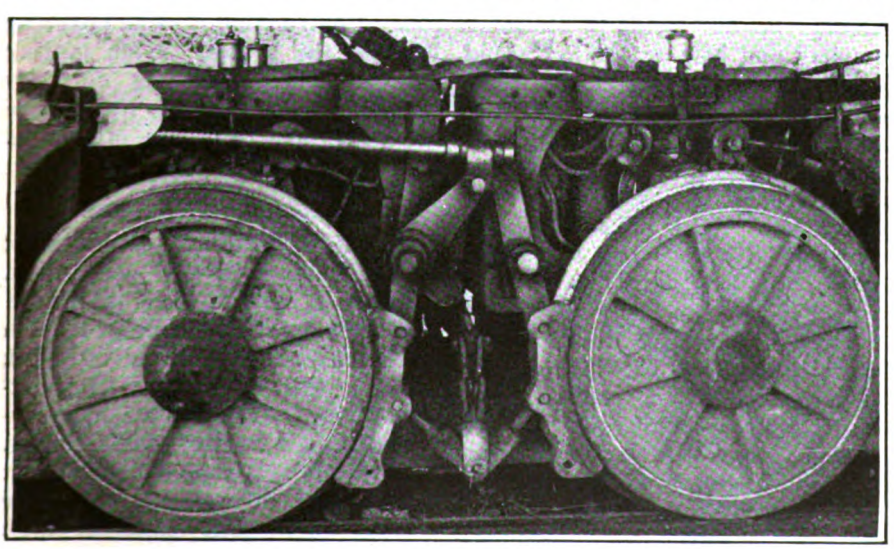
The arrow indicates the arc burrs or blisters which were the reason for junking many mining-machine reverse-switch covers. The grinder was made by attaching a 3-in. diameter, cup-shaped wheel to a ½-hp. alternating-current motor. This grinder in a few seconds removes the burrs which could not be "touched" with a file.

Discarded Tires Put to A Second Use

In the motor barn of the New Caryville Coal Co., Caryville, Tenn., is an 8-ton veteran locomotive which after many years of active service has been retired to the reserve. It is still maintaind in good condition ready for use when a breakdown of the regular equipment occurs. One reason why it was taken out of service was because of the small track clearance. In all the years of its service, the worn tires were never turned and used again, but instead new ones were put on in order to maintain proper height.

In 1917 when J. E. Gider came to the mine as chief electrician he wondered what use could be made of the large pile of slightly worn tires which had been removed from the "veteran."

Measurements showed the inside diameter of these tires to be 1 in. greater than that of those used on a 5-ton locomotive of more recent design. The next time that this locomotive needed new tires, the worn ones were left on, and were turned flat to a ½-in. thickness. Over these were applied turned tires from the old locomotive. Since that date in 1917, no new tires have been purchased for the 5-tonners. Eight sets (32 tires) from the old locomotive have been used on the newer machine.



Locomotive from Which the Tires Were Removed

During the many years that this locomotive operated at the New Caryville mine, tires of but one wearing were removed and piled in the scrap. Since 1917 this pile of tires has been the base of supply for all renewals on another type of locomotive. The old tires are turned and then applied over a ½-in. remnant of the original tires.



"Lamp Pick" Has New Uses

Now-a-days a lamp pick for pulling up a wick is a curiosity, and more so when carried by a man wearing a carbide lamp. This snap shot of C. C. McGraw, mine foreman of the Roden Coal Co., Marvel, Ala., shows him carrying a lamp pick, in the regular place on his cap, to use as a "signal rapper." The principal use of this tool is to signal the hoist operator by making a connection between the bare signal wires which parallel the tracks where rope haulage is used. The "boys" in the blacksmith shop state jokingly that Mr. McGraw wears out one of these rappers every week, and he admits that he uses it "for almost everything"—testing timbers, ties, brattices, and so on.

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Viewpoints of Our Readers

Did Mr. Reynders Prove Coal Mines Reasonably Safe?

On page 818 of the issue of Dec. 10, J. V. W. Reynders, president, American Institute of Mining & Metallurgical Engineers is quoted as saying that the dangers of coal mining had been greatly overestimated by the public, adding that out of 86,000 fatalities in the United States less than 2,400 occur at coal mines.

This may appear a small proportion but I view it otherwise. There are over a hundred million people in the United States, and less than a million are mine workers, or under 1 per cent of the whole. These work less than 200 days a year for eight hours only, yet with 2,381 fatalities in 1914 the proportion of fatalities in the mines to all those incurred is 2.77 per cent, so the mine workers' death rate is 2.77 and more times the average.

FIGURES SHOW UNDUE PROPORTION

Using S. D. Keller's statement that 25 per cent of all accidents occurred in industry, the total number must have been 21,500 and those that occurred at the mines must have been 11.07 per cent of these, certainly an undue proportion.

Again, I cannot accept the conclusions which Mr. Reynders derives from a study of automobile accidents, for if 70 per cent of the American people are exposed to the automobile hazard, that is 70 times as many persons as are exposed to the mine hazard, and the number of fatalities would be 166,670 instead of 18,000 if the hazards in each case were of the same severity.

GREAT BRITAIN CORRECTING ERRORS

Writers are always comparing the United States accident rate with that of Great Britain. I believe Great Britain is learning her mistakes and correcting them, but I fail to note that the United States is doing so. From 1887 until 1891 inclusive 13 per cent of all fatal accidents in Great Britain were caused by explosions. In 1924 only 35 men died from this cause in Great Britain. In the United States in 1923 the fatalities from explosions were 15 per cent of all fatalities and in 1924 there were 536 lives lost from this cause in the United States or 22.5 per cent of all the fatal accidents, 75 per cent of these being caused by gas explosions and 60 per cent of these fatalities occurring in mines where open or mixed lights were used. ROBERT EMERY.

Neffs, Ohio.

Break the Roof on the Bias And Avoid Trouble

I conclude from your recent articles in *Coal Age* on the use of face conveyors that such aids to coal loading are yet in the experimental stage in the coal fields of this country. The different methods of working that appear, from your articles, to be the most successful happen to be identical with those I have seen used in the British coal fields—namely, modifications of the straight longwall face. The only difference noticeable is the shortness of the wall. I believe better results will be obtained by lengthening these faces, especially under roofs that will bend. This will enable the roof to settle down in the waste.

DISAGREES ON METHOD

There is one point Mr. Hall mentioned in the Oct. 8 issue which does not fit in with my experience in the working of conveyors with longwall mining. In the article he said, "another helpful factor in attaining complete and safe extraction would be afforded if the face of the working was arranged to parallel the natural break lines or steps of the roof." That is a state of affairs which should be avoided and not encouraged. When it has developed it has many a time had to be corrected by cutting lightly on one end of the wall so as to bring the face at an angle of about 45 deg. to these natural break lines or slips.

By the method of working advocated by Mr. Hall the slips will be exposed from end to end of the wall thereby deliberately inviting trouble and giving the coal a good opportunity to sit down on the machine when cutting, provided one of these breaks should be coincident with the back of the cut. Also, should the face start working and one of these slips be in line with the last cut then the wall will close from end to end. This unhappy result will be avoided if the face is so aligned with the slips that the latter run into the coal instead of parallel with the face.

With this method systematic timbering of the face is needed in order to aid in the control of the roof.

ARTHUR JOHNSON.

West Virginia.

Grate Scheme Saves This Coal Consumer's Money

When the coal strike was announced I had no coal to speak of in the cellar and to tell the truth I was a bit worried. However, I have fared pretty well, in fact, much better than if there had been no strike. The city eased up on the ruling in regard to the use of soft coal and I bought a few tons of pea coal and soft coal mixed. The first week I tried to burn it I built a fire every morning and then came home at night and rebuilt it. The fire simply would not maintain itself in the firepot but persistently went out on me no matter how carefully I prepared it before leaving the house.

WIRED GRATES TOGETHER

I knew there must be some way of burning it as others were using it with satisfactory results. I finally hit on a scheme to keep the fire in the proper place. I wired the grates together on the outside of the furnace making them absolutely stationary so that they could not be moved. I started the fire and it has not been out since.

It is not necessary to shake the grates as the fire can easily be cleaned by running a small poker up between the grates. I am getting just as much heat as formerly though perhaps with a little more attention than with the other coal which I had been using.

ATTRACTIVE SAVING MADE

The thing that strikes me most is the saving to my pocketbook. Hard coal even if bought in the summer time costs about $14 a ton in the city and now I understand it is better than $25 a ton. The mixture cost me about $10 a ton, a saving of $4 at a conservative estimate. On the winter's supply it means at least $20 saved, which is not to be sneezed at in these times of high prices. Consequently you can easily see why I, as an individual am not worrying about the strike.

Brooklyn, N. Y. KEN BLAINE.

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Book Reviews

How to Start a Coal Mine From the Grass Roots

All coal publications receive frequent inquiries as to the procedure that should be adopted in opening a coal mine, frequently from those who have little knowledge of the art of coal mining. To such the answer has had to be that no American book was available. Many British books have been written on the practices of the mining fraternity in starting a mine and operating it, but there was an entire dearth of books giving the practices which American conditions make necessary.

A book of 419 pages, measuring 5½x8½ in., has been prepared by Frank H. Kneeland, one of the editors of *Coal Age*, for the Mc-Graw-Hill Book Co., 370 Seventh Ave., New York City. Its major title "Practical Coal Production" is evidently one that two or more books will bear in turn. The subtitle is more explanatory, "Preliminaries of Coal Mining: Prospecting, Explosives, Development, Drainage, Ventilation." Modestly it is said by the author to be merely a compilation but in truth is no mere collection of other men's writings but a well-balanced study of the whole subject in which due use has been made of the best practice of the mining profession with much material derived from the author's own experience.

Mr. Kneeland has a mechanical bent which shows itself in a careful study of details such as only a man who likes to spend his time in actual manual construction work would develop, a man who enjoys the mechanical work of prospecting and who is never so happy as when in a workshop. The best feature of the book is its eminent practicability. It is not a collection of generalizations but a careful study of each operation from the point of view of one who has to perform the work. Those details which some engineers would leave entirely with a false confidence to their subordinate mechanics are carefully treated so that the reader knows exactly how the various tasks should be performed.

Mr. Kneeland has not the flair for geology so common among engineers. The geological phases of prospecting on which some would spend page after page he dismisses briefly. After all, each section has its own problems, its peculiar geological conditions and if any should attempt to give the geologist all he wants he would easily fill a book like this and never succeed in satisfying each and every engineer in some one or other of the regions into which the country is divided geologically.

Prospector's Equipment and Methods

There is enough, however, in the book to lay the basis for such studies, and the reports of the U. S. Geological Survey for any particular area will provide in detail all that is known if not all that is desired. Here are described, however, in detail the equipment of the prospector, the methods of prospecting by inspection, by earth augers, by churn and diamond drills and test pits with something on determining the thickness and quantity of coal in the area prospected with information as to faults, wants, rolls and folding.

Explosives are also treated exhaustively and with due attention to the needs of the man who must make them do their work economically and effectively. Here also will be found a chapter on drifting, tunneling and shaft sinking and one on planning, projection and development. Mine layout is left presumably for later treatment. Drainage is given careful consideration and ventilation also, not, however, to such a degree as to enter into the vexed question of fan design.

Electrical Measurements

When mines everywhere are either equipping themselves for complete electric operation throughout or are modernizing their equipment in order to secure greater efficiency, thus reducing unit costs, the little volume just issued by the Weston Electrical Instrument Corporation, Newark, N. J., is of particular interest. Although this book is dedicated to the advancement of the electrical laboratory of the public utility it, nevertheless, contains much that is of interest to the coal mine manager and electrical engineer. Time was when a mine official was a coal producer exclusively; today in order to be successful he must understand at least the principles governing the control of the form of energy upon which the operation of his plant depends.

Electrical engineers as well as mine executives will find this book useful because of its descriptions of many electrical instruments and instructions for their proper use. Some of the chapter headings are as follows:—Designing and equipping a laboratory; high voltage laboratory; accessory fittings; facilities for field work; portable electric measuring instruments; proper selection of portable measuring instruments; instrument connections; electrical measurements; instrument standardization; explanation of a few electrical terms; conducting tests in the field; number system for instruments, meters and transformers; systematizing, testing and standardizing work; inspection of meter equipment; inspection of power plant equipment; testing of electrical appliances; the testing of industrial plant equipment; a few suggestions on the case of measuring instruments; protection against personal injury; appendix and tabulation sheets.

Illustrations Are Helpful

Illustrations, both halftones and line drawings, have been profusely employed throughout this volume. The latter comprise both working drawings and diagrams. Many of them are particularly useful to the man who is not an electrical engineer because they show the proper arrangement of instruments and connections for making tests.

Many explanations and definitions of electrical terms, the meanings of which are usually more or less nebulous and hazy in the mind of the ordinary coal mine official, are also included. Thus the meaning and significance of "power factor," with which every electrified mine must reckon whether current is purchased or not, is explained at some length. Load factor, maximum demand and regulation are similarly treated.

The book contains 155 pages 6x9 in., 113 figures together with several tables and form sheets. It is available to all responsible interested parties. And, although as has been stated it is intended primarily for the use of those interested in central stations and public utilities, it doubtless will become a valued reference in many coal-mine offices.

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News Of the Industry



Hard-Coal Peace Conference Breaks Up Again; Negotiations Split on Arbitration

Anthracite wage negotiations again have been broken off.

The third wage conference, meeting at the Bellevue-Stratford, Philadelphia, Pa., adjourned *sine die* on Tuesday night in another hopeless split over the question of arbitration. Arbitration was also the rock upon which the two preceding conferences were wrecked.

Neither side would yield the slightest on this main question. When the conference broke up, the president of the union characterized the position of the operators as a lockout of the workers for the purpose of starving the latter into submission. The operators retorted that the break was attributable to the blind determination of the union chief to impose his will upon the industry and upon the country regardless of cost. The producers further announced that they would carry the fight to the region and seek the approval of the idle workers for the proposals rejected by the union scale committee.

The break had been clearly foreshadowed by the developments of the meetings last week. From Jan. 26 to Jan. 30 plan after plan had been discussed only to be cast aside. Proposals embodying arbitration were rejected by the miners. Counter-proposals making no provision for avoiding deadlocks were turned down by the operator members of the conference.

Lynett Plan Scrapped

The Lynett plan fell by the wayside the first day the conference was reconvened (Jan. 26). A proposal for a flat two-year contract at the old rates put forward by the United Mine Workers as a modification of the Lynett plan was voted down by the operators after a bitter debate with Mr. Lewis. In presenting that modified plan, the president of the union argued that the first Inglis letter to Mr. Lynett had raised no objection to the provisions of the plan for the continuance of the old rates until 1928. Therefore, declared Mr. Lewis, the operators anticipated no crisis in the industry within that period and they might well let the future take care of itself.

To this Major Ing'is replied that "the fundamentals of any workable contract were a long period of duration and a means of adjusting wages, if necessary, without strikes and suspensions." A five-year contract was the minimum to be considered. On no other basis could the industry function in competition with other fuels.

"Substitute fuels," continued the spokesman for the operators, "encroach on markets where anthracite is the natural market for two reasons—high prices and frequent interruption of supply. Many former customers have changed to other fuels. To maintain anthracite sales, assure work for the men and prosperity for the region, these customers must be regained, further defections prevented, or new customers secured by the natural growth of population in the anthracite-consuming territory.

"When a new house or building is erected, consideration must be given to the type of heating apparatus to be installed. Once installed, changes are infrequent. If we should sign a two-year agreement only, we venture to assert that few buildings erected during that period would be equipped with apparatus designed to burn anthracite, owing to the uncertainty of supply.

"In making our proposal, which included agreement to pay the old wage scale until Aug. 31, 1926, the industry felt that it would further reduce the margin of profit, which during the operations of 1924-25 was below a fair return. The operators believe that this condition can be mitigated by closer co-operation from our employees. They further believe that this co-operation could be made so effective—assuming that the market will absorb full production—that there would be no necessity for a wage reduction."

Lewis and Inglis Debate

Mr. Lewis retorted by inquiring why the operators had refused an extension of the old contract when that offer was made in March, 1924. Major Inglis replied that the anthracite producers were too fearful of the effects of the Jacksonville agreement upon the bituminous operators signing that pact to obligate the anthracite industry in the same manner.

Mr. Lewis charged the anthracite operators with keeping the miners in idleness because the hard-coal producers were concerned with the problems of the bituminous industry. Major Inglis answered that had the union accepted the suggestion made at Atlantic City last summer there would have been no suspension.

Later in the same session, Mr. Lewis offered a resolution that the negotiating committee be increased by the addition of S. D. Warriner, chairman of the Anthracite Operators' Conference; W. J. Richards, president of the Philadelphia & Reading Coal & Iron Corporation, and two representatives of the mine workers "acceptable to the operators." George B. Hadesty, general manager of the Reading company, assured the conference that the present committee of operators had full power to act and that an increase in its membership would not increase the possibility of making an agreement. The motion was lost.

The Anthracite Operators' Conference, at a meeting held at the Ritz-Carlton Hotel, Philadelphia, on Jan. 29, took cognizance of Mr. Lewis' demand by unanimously adopting the following resolution:

WHEREAS, The negotiating committee, duly authorized by the operators with full power to negotiate a working agreement, has reported to the conference the action and policy it has pursued,

Resolved, That the committee's action and policy is unanimously approved and has the support of the entire industry. The vote of confidence in previous meetings is hereby reaffirmed.

Discuss "Final" Plans

For the next three days the principal topic of debate was the two "final" plans of miners and operators. The operators' plan read as follows:

(1) A five-year contract ending Aug. 31, 1930.

(2) The wages in effect under the last contract to be paid until Aug. 31, 1926, as a consideration for an immediate resumption of work, and to continue thereafter, subject to revision when and as economic conditions may require, in the manner outlined herein.

(3) Either party may on June 1, in any year, make request of the Board of Conciliation for a reconsideration of the wages paid.

(4) The board shall meet forthwith, consider the facts presented and render a decision within thirty days.

(5) If the board deadlocks, the questions at issue shall be referred to three persons to be appointed by the Hon. Charles Evans Hughes or, in the event of his inability to act, by some person of similar standing to be mutually agreed upon.

(6) The personnel of the appointees to consist of one man representative of labor, but not affiliated with the United Mine Workers, one man representative of industry, but not affiliated with the anthracite industry, and one man of eminent reputation and attainments.

(7) The three men thus appointed shall sit with the Board of Conciliation, hear the arguments, ask for and obtain any additional data they may consider essential and render a decision on the points in dispute before Sept. 1.

(8) The decision thus rendered shall be final and binding on both parties for the remaining term of the contract unless reopened as provided in paragraph 3.

(9) No change in the wage rates paid shall be made except in case of economic necessity.

The miners' plan read as follows:

(1) The agreement to continue for five

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years, except as it may be changed as hereinafter provided.

(2) The wages and conditions in effect under the last contract to be continued until Aug. 31, 1928, subject to the revisions as may be later determined by the agencies hereinafter provided.

(3) Either party may on June 1, 1928, make request of the Board of Conciliation for revision of the agreement. If this request is made, a fact-finding commission shall be appointed, consisting of the Hon. Charles Evans Hughes, the Hon. James J. Davis and the Hon. Gifford Pinchot, or, in the event of their inability to act, some persons of similar standing to be mutually agreed upon.

This commission thus constituted shall exercise the authority to make complete investigation of all the facts relating to the operation of the anthracite industry and shall make recommendation to the Board of Conciliation, exclusive of the umpire, affecting wages and profits.

(4) In furtherance of this constructive work three reputable and expert public accountants shall be employed, one representative of the public, one the operators and one the mine workers, the expenses to be borne as the expenses of the Board of Conciliation are now fixed.

The Board of Conciliation, exclusive of the umpire, upon receipt of the report of the fact-finding commission, shall proceed to dispose of the matter as promptly as possible.

(5) The Board of Conciliation, exclusive of the umpire, shall also investigate and recommend practical methods for increasing efficiency and reducing the operating costs of mines and recommend the most practical manner for avoiding suspension of mining, and for assuring the public of an uninterrupted supply of coal.

(6) It is further agreed that in each district there shall be established a joint commission of one miner and one operator working with the conciliators from each district, the latter who shall also be members of such commission in each district. This commission shall endeavor in every practical way to strive for greater co-operation, harmony and efficiency in the industry, and in this work it shall have the support and co-operation of the operators, the district organizations and the international union of the mine workers.

(7) In consideration of this co-operation it is agreed that the operators shall also co-operate in a business way by recognising voluntary, individual, written requests of any mine worker to assign a portion of his wages or earnings for the purpose of conducting the administrative affairs of the mine workers' organization and paying the pro-rata share of the mine workers to the commission set up in this agreement, and for the further purpose of carrying out the provisions of this agreement in general, said amount to be assigned and deducted not to exceed the sum of $14 per annum.

(8) The Board of Conciliation shall proceed to equalize wages as per the agreement of 1923 and they are also empowered to handle matters with relation to conditions, etc.

Collapse of Parley Foreseen

These two propositions came to a vote on Jan. 30. Many impartial observers predicted that a speedy collapse of the conference was imminent. Nevertheless the negotiators hung on. With every plan out of the way, it was suggested that a recess be taken until Tuesday of this week in order to give the conferees a chance to juggle the many planks which had been discussed into a platform upon which both sides could stand.

"I move," said E. H. Suender, manager of anthracite operations for the Madeira-Hill interests, "that we adjourn until next Tuesday [Feb. 2] in order that at least one more sincere and conscientious effort may be made to bring about a settlement of this controversy."

"In rising to second Mr. Suender's motion," declared Major Inglis, address the miners, "I would like to suggest to you before we adjourn this afternoon that you, as well as ourselves, consider a plan or plans that would embody the workable provisions contained in the various plans we have considered and received and see if a plan cannot be framed that would, on due consideration, be acceptable to both parties."

Fiction Mocks Stern Fact

Over 500 plans for ending the anthracite strike have been submitted to the joint wage conference — and new proposals still flow in. The newspaper men covering the parleys, banded together as the Union League Club Anthracite Conference Correspondents' Association, set up an unofficial oubliette in the Bellevue-Stratford last week for the reception of hare-brained schemes to end the strike.



Operators Submit Revised Plan

When the conference reconvened this week, the operators submitted a revision of their proposals which provided:

(1) A five-year agreement.

(2) Wages and working conditions of the last agreement to continue to a date to be mutually agreed upon.

(3) Either party to have the right to request once each year a wage revision by the anthracite board of conciliation. If such request was made, the board should ask Charles Evans Hughes to appoint a commission of three to investigate the facts and make recommendations to the board affecting the matters in controversy.

(4) Said commission would be empowered to employ certified public accountants to aid in the assembling of the facts.

(5) Upon receipt of commission's report, the board would write a contract incorporating the findings of the commission with such modifications as might be mutually agreed to.

(6) In case of disagreement as to any of the commission's recommendations, either party could appeal to Mr. Hughes, who thereupon would make a finding which would be binding upon both parties.

(7) The board to investigate and recommend practical means for increasing efficiency and avoiding suspensions.

(8) The board to equalize wages in accordance with the agreement of 1923.

This proposal was rejected by a tie vote.

The operators then proposed an immediate resumption of work at the old rates until March 31, 1927, subject to the further agreement that the Anthracite Board of Conciliation, functioning as it normally does (that is, including the umpire to break deadlocks when the board members are unable to agree), shall take under consideration and decide the terms of a contract extending until Aug. 31, 1930. Under the terms of the proposal the board's contract would cover wages and methods of wage revision, if revision were necessary from time to time.

The miners moved to amend this by continuing the initial wage term until March 31, 1928, by eliminating the umpire and by granting the check-off. This amendment the operators declined to accept because it made no provisions against suspensions, would bind the industry to the old rates for another year and included the check-off, still anathema to the operators.

The miners then asked that the full joint scale committee be called. This the operators rejected as unnecessary.

Andrew M. Fine, vice-president, Hudson Coal Co., then moved the adjournment, "in view of the conditions as they now are and the apparent impossibility of coming to an agreement," he said, "I move we adjourn *sine die* to meet at the call of the chair on his own initiative or at the request of either side."

Major Inglis seconded the motion, the question was put and the conference was at an end.

Future Clouded in Doubt

What the next move will be and when it will be made nobody knows. Last week, belated knowledge of the presence of Secretary of Labor Davis in Philadelphia gave rise to rumors that Federal pressure was being exerted to end the tie-up. Spokesmen for the operators denied that the Secretary had conferred with them; Mr. Lewis declined to make any comment. The next day the admission came from Washington that Mr. Davis had conferred with his conciliators while in Philadelphia and, following the Cabinet meeting that day, it was stated that the national administration was hopeful that an agreement would come out of the present conference. On Feb. 1 objection by Senator Reed of Pennsylvania blocked consideration of the Copeland resolutions for mine seizure.

The death of State Senator Harris at Harrisburg led to a postponement of the scheduled consideration of the Pinchot coal bills until this week. In the meantime, Representative B. F. Evans introduced a resolution naming Senators Pepper and Reed and ex-Governor Stuart as a conciliation commission to represent the public in attempting to effect a settlement of the strike. This resolution is not considered seriously by those in touch with state politics.

The House Committee on Mines and Mining, after a lengthy hearing, in which the Senate committee participated, voted on Feb. 2 to report negatively the bill to declare anthracite a public utility and the proposal to authorize the Governor to enter into an interstate compact with other states to control prices and distribution. The Senate also held a public hearing on the Woodward bill amending the state mine certificate law.

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Operators' Association Of Northeast Kentucky Holds Annual "Powwow"

Coal-tax legislation, past-sales reports, freight rates and publicity were the chief subjects of discussion at the eighth annual meeting of the Northeast Kentucky Coal Association, held at Ashland, Ky., Jan. 29. Production records compiled by F. E. Durham, statistician of the association, showed that the Big Sandy field mined 10,822,260 tons during the past year, a gain of 27 per cent over 1924 and 90 per cent over 1920.

Among the coal bills reported as having been introduced in the Kentucky Legislature that providing for a state tax of 2 per cent on the sale value of all mineral as extracted, with provision for an additional 1 per cent at the option of the county for school and road purposes, attracted the most attention. The legislative committee of the association reported, however, that the open-faced publicity campaign which is being carried on has caused many former proponents of the bill to see and acknowledge the unfairness of the proposed tax.

Geo. Bauswine, Jr., secretary of the Williamson (W. Va.) Operators' Association, and T. H. Huddy, manager of the Bailey Fuel Co., of the same locality, explained to the Kentucky operators the working of the past-sales reporting system which was inaugurated last May by the Williamson association.

Mr. Bauswine announced that the Kanawha (W. Va.) operators have voted to start a statistical program in conjunction with that of the Williamson association. An office is being established in Huntington, W. Va., to serve both fields. The northeast Kentucky operators were invited to join the other two associations in the use of the Huntington office. A committee was instructed to investigate the proposition.

Harry Gandy, executive secretary of the National Coal Association, urged the reporting of past sales. He stated that at present 20 per cent of the whole tonnage of the country, or 33 per cent of the commercial tonnage, is being reported to the various bureaus.

At the close of the meeting, and before the banquet of the evening, the following new officers were elected: President, Henry Laviers, manager North East Coal Co., Paintsville, Ky.; first vice-president, Lew Roach, manager Elkhorn Piney Coal Mining Co., Powellton, W. Va.; second vice-president, T. T. Rogers, manager Rogers Elkhorn Coal Co., Virgie, Ky.; treasurer, N. M. White, manager Colonial Coal & Coke Co., Prestonsburg, Ky. C. J. Neekamp continues as secretary.

27 Saved as Coal Ship Sinks

Captain Carl Graalfs of the Hamburg-American Liner Westphalia rescued the captain and crew of the freighter Alkaid on Feb. 1 about 1,800 miles from New York, when the Dutch freighter caught fire in a heavy storm. The Alkaid, which weighed 3,028 tons net, was on her way to New York with a cargo of briquets consigned to the Shipping & Coal Co., 17 Battery Place.

Suggests Polar Bear as Emblem of G. O. P.

Commenting on the administration's policy of non-interference in the hard-coal strike, Senator Copeland, Democrat, of New York, told the Senate on Jan. 30 that the Republican Party should change its emblem. Expressing the hope that something could be done to bring the suspension to an end, he said:

"During the campaign there was one promise which the Republicans made which they have kept. They are keeping cool with Coolidge. That is all very well in August, but in January, with present prices of coal, that slogan is not so popular, and I am wondering why the Republican Party does not give up its emblem of the elephant and take the polar bear instead."

Senator Copeland said that if the President would invite the operators and miners to the White House and point out to them the necessity of ending this situation, the strike "would be settled in two hours."

Senators Approve Proposal To Enlarge I. C. C.

The bill of Senator Smith, Democrat, South Carolina, providing for regional appointment of members of the Interstate Commerce Commission and for increasing the membership of the commission to twelve was unanimously approved Jan. 27 by a Senate Interstate Commerce sub-committee.

The sub-committee amended the bill to increase the number of regions to six instead of four and to change the representation of each region from three to two.

Bell Jailed and Fined

John A. Bell, of Pittsburgh, Pa., formerly head of the defunct Carnegie Trust Co., the Carnegie Coal Co. and other enterprises, was sentenced on Feb. 1 to six and one-half years in the Allegheny County Jail and fined $19,000. Bell was convicted of misappropriating $643,743 of the funds of the trust company when the coal companies which he controlled got into difficulties.

Open-Shop Miners Keep Wolf from Door

Government income tax returns by the Bethlehem Mines Corporation, which operates the Barrackville and Dakota mines, near Fairmont, W. Va., on the 1917 scale, strikingly refute the oft-repeated charge that open-shop miners labor for starvation wages. Tables compiled by the company reveal that in 1925 one loader earned over $5,400, 8 over $4,200, 26 over $3,000, and 74 over $2,400. One day man earned more than $5,000, 10 over $3,000, and 52 over $2,000.

Eastern Roads Move Ample Anthracite Substitutes

Forty industries of the Eastern Atlantic States expect an average increase of 10 per cent in business for the first quarter this year over the corresponding period last year, according to the trade survey submitted at the second annual conference of the Atlantic States Shippers Advisory Board, held in New York City, Jan. 14. Approximately 400 shippers and railroad representatives—the buyers and sellers of transportation in the Eastern territory—were in attendance.

Coal dealers in the territory of the Atlantic States Shippers Advisory Board—which includes New York, eastern Pennsylvania, New Jersey, Delaware, Maryland and the Virginia peninsula — reported through the coal committee that their trade was being handled successfully by the use of substitutes; that they had no difficulty in getting all the substitutes necessary for the comfort of their trade and that they proposed to keep on hand during the balance of the anthracite strike a sufficient supply of substitutes to take care of all customers' requirements.

The coal committee stated that normally the Eastern territory would use in the first quarter this year 7,469,800 tons of prepared-size anthracite and 2,935,900 tons of steam-size anthracite. Dealers will take care of the bulk of this tonnage through the use of substitutes. At the present time half of the dealers are carrying less than 50 per cent of their usual stocks. The other half of the dealers are carrying the same amount of substitutes as when they were handling anthracite. Practically all dealers reported that they were getting unusually prompt delivery of coal and coal substitutes by the carriers.

Wakenva Coal Co. Issues Bonds to Finance Merger

An issue of $1,000,000 Wakenva Coal Co., Inc., 7 per cent first mortgage (closed) sinking fund bonds is being offered by a syndicate composed of Robert Garrett & Sons, Baltimore; Spencer Trask & Co., New York City; Caldwell & Co., Nashville, and the Geo. C. Riley Co., Cincinnati. This is part of the plan to finance the consolidation of fourteen coal properties located in southwestern Virginia, eastern Kentucky and adjacent fields in West Virginia (see Dec. 24 issue of *Coal Age*, page 897), with C. Bascom Slemp as chairman of the board of directors.

Jamison Inquest Deferred

The inquest into the cause of the explosion at mine No. 8 of the Jamison Coal & Coke Co., Farmington, W. Va., has been postponed from Jan. 29 to Feb. 5 in Fairmont. The safety conference that was to have been held in Fairmont last week between Safety Service Director Read of the U. S. Bureau of Mines, and Robert M. Lambie, chief of the West Virginia Department of Mines, also was postponed. Mr. Lambie was unable to go to Fairmont last week, because of a mine fire in the southern part of the state.

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Washington Dealers Fail to Put Blame For High Prices on Operators

By Paul Wooton
Washington Correspondent of *Coal Age*

The investigation of coal prices before the District of Columbia Committee of the Senate impresses some members of Congress as being an interesting controversy between the pot and the kettle as to their respective colors. Out of the jumble of figures which have been presented as to costs and margins the average legislator seems to have reached the conclusion that the anthracite strike has given a scarcity value to prepare sizes of soft coal which has made for price increases in which both producer and middleman have shared. The usual assumption is that the extra profit is more or less equally divided.

Members such as Senator Copeland, of New York, and Representative Treadway, of Massachusetts, are trying to establish that the acceptance of this unusual profit constitutes some sort of crime. Other members see in this action only the natural course followed by the producers of other commodities, who sell at the highest available price regardless of the circumstances responsible for having run up the price.

The retailers have not been entirely successful in the effort to lay at the door of the operators the major responsibility for a $14 price for prepared sizes of smokeless coal. There were general statements as to high prices paid at the mines but when actual invoices and receipted bills were requested by way of substantiation they were refused on the ground that legitimate business secrets would be revealed. This led Senator Neely, of West Virginia, to remark that only the operators would be hurt were invoices presented showing high mine prices. A few invoices were presented, but they covered isolated shipments. What the committee wants to know is the price paid by the dealers to the operators with whom they have their principal relationships.

Enough was brought out at the hearing, however, to indicate that any established dealer who paid more than $5 at the mine had demonstrated his inefficiency as a trader.

Say $12 Price Is Justified

The testimony on behalf of the retailers, however, made it quite apparent that a $12 price, at least, could be justified. The additional $2 apparently was not explained to the committee's satisfaction, but the Senators were impressed with the extra risk which the retailer is running when there can be no certainty as to the duration of the strike.

The favorable impression made on the committee by E. J. McVann, counsel for the Smokeless Coal Operators' Association of West Virginia, gave the operators' side of the question an advantage at the beginning of the hearings. Mr. McVann had precise information on many of the points in which the committee was particularly interested. His figures covering New England, north Atlantic and District of Columbia sales for the week ended Jan. 16 showed prices ranging from $3.50 to $5 for lump; $3.75 to $6 for egg and $2.75 to $5 for nut.

George S. Pope, in charge of the Government Fuel Yard, showed delivered costs at government departments which tended to weaken some of the claims made by the retailers.

Representative Treadway urged the committee to recommend the setting up of a fuel administration for the District of Columbia as an example to the states. This, or a fuel administrator for the whole country, was opposed by Edgar Wallace, representing the American Federation of Labor, on the ground that government control means that high-cost mines fix the prices.

One of the very significant results of these hearings is the effect they are having on producers generally. They already have revived talk of co-operative selling by the operators. The success which has attended the retail operations of the Consolidation Coal Co., the Peabody interests and others has led other large companies to consider opening their own retail yards.

Talk of Co-operative Selling

It is recognized that only the very large operators can afford to break into the retail business. The small producer of coal, it has been proven repeatedly, cannot afford to undertake his own wholesaling. The bituminous operators seem to feel, however, that the retailer cannot be relied upon to follow up the advantage gained in increased use of soft coal by the domestic consumer. This has led to serious discussion of co-operation looking to the opening of retail yards in the North Atlantic region. The suggestion is made that a distributing corporation be formed to handle prepared sizes only which would buy at the mine and sell at wholesale and retail in the anthracite-using states. There would be no interference with the established procedure in the handling of industrial, railroad and public-utility business.

Senator Howell, of Nebraska, one of the public ownership group in the upper house of Congress, on Monday introduced a resolution authorizing the Government Fuel Yard to sell coal to householders at cost. At the request of members of the committee conducting the informal hearing into district coal prices, Senator Howell withdrew temporarily his request for immediate consideration.

The District of Columbia committee authorized its chairman, Senator Capper, to take such steps as may be necessary to obtain an audit of the books of Washington retailers. The audit is not intended to be a thorough one. The idea simply is, it is explained, to ascertain what coal is costing the retailers and to establish an approximate idea of the cost of handling the business.

Industry Has Coal Stocks For 54 Days

Stocks of anthracite and bituminous coal in the hands of industrial consumers on Jan. 1, according to the National Association of Purchasing Agents, totaled 68,399,000 tons, or sufficient to last 54 days at the December rate of consumption. This compares with 50,458,000 tons on hand at the corresponding date a year ago.

In December, last, industries consumed about 36,925,000 tons of anthracite and bituminous coal, compared with 37,464,000 tons in the preceding month and 41,900,000 tons in the corresponding month of 1924. Thus, while consumption fell off about 1,461,000 tons in December production increased to 55,049,000 tons of soft coal and 232,000 tons of anthracite, against 50,780,000 and 152,000 tons, respectively, in November.

British Coal Industry Awaits Commission Findings

The report of the findings of the commission which has been inquiring into the future of the British coal industry, expected about the end of February, is awaited with deep interest since the operators and miners submitted their proposals, three weeks ago. The operators urged a return to the eight-hour day, district instead of national wage agreements, freedom from political interference and removal of the subsidy at the earliest opportunity. The miners strongly opposed this plan, offering instead an elaborate scheme of nationalization not only of the coal industry but of power production.

According to a forecast by the *Westminster Gazette* of the Coal Commission's report, which the Associated Press released this week, the recommendations will include the grouping of mines somewhat after the manner already done with the railways, and the closing down of unprofitable pits. Such grouping is said to be essential for the satisfactory reorganization of the industry.

Another recommendation, it is believed, will relate to internal migration —the moving of unemployed miners to other districts where they could be employed in more active mines. It is further advised that wages and conditions shall be the immediate concern of the local organizations and that district wage boards shall be retained.

While longer hours and lower wages are not advocated, the commission considers that lower wages may be possible, which in the long run would give the men equal pay with their present earnings.

The commission, it is predicted, will recommend that the Mining Association, representing the owners, and the Miners' Federation should concentrate on national matters such as safety of the mines, Parliamentary business and for liaison between the Mines Department and these two organizations.

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Rock Dust Prevents Heavy Loss of Life In Orient Mine Blast

Five men were instantly killed in an explosion in the New Orient No. 2 mine, owned by the Chicago, Wilmington & Franklin Coal Co., at Orient, near West Frankfort, Ill., at 7:40 a.m. Jan. 29. Officials of the company, investigating the cause of the blast, believe it may have been started by a cigarette found in the hand of one of the dead miners. This mine is on a closed-light basis.

That there were only five fatalities with 1,235 men at work is attributed to the use of rock dust, which limited the effects of the blast to a small area.

The mine, which is the greatest in the world, having hung up a record output of 12,823 tons in one day a few weeks ago, was carefully planned throughout—workings, shafts and surface structures—before the first breaking of ground. Into the plans went the newest safety measures.

At strategic points throughout the workings, rock dust is stored in platforms easily tilted by the slightest rush of air from an explosion. It was that which filled the air with stone particles and confined the effects to the immediate vicinity of the explosion. Rock dust also is scattered on the floors of the entries, keeping coal dust from getting into the air.

The panel system is used in the mine, dimensions permitting rooms to be worked out in the coal with one set of workers protected from the others or accidents by barrier pillars with comparatively small openings.

The workings are all on one level, 500 ft. underground, and the coal averages 9½ ft. in thickness.

Wilburton Blast Blamed On Disobedience to Law

No exact cause of the ignition of gas that started the explosion Jan. 13 killing 95 men in the Wilburton (Okla.) mine of the Eastern Coal & Mining Co. was assigned in the official report filed Jan. 26 by Ed Boyle, state chief mine inspector, and Robert H. Brown, district inspector. The report, however, points out that the explosion could not have occurred had the state mining law governing crosscuts been obeyed. Mr. Boyle, at the time of the blast, condemned the company. In reply it was pointed out that he had refused to permit the use of closed electric cap lamps in Oklahoma.

The official investigation indicated that gas was ignited in the 16th west entry between rooms 9 and 17 and that it had moved from rooms 17 or 18 or the adjoining heading. The report says: "As the fireboss was one of the victims . . . we will never be able to determine the reason this gas was not moved before the men were permitted to go down into the mine."

The report reads: "This investigation further shows that the mining laws were not being complied with in regard to crosscuts which carry the ventilating current through the working places, as the law provides that they shall be made not to exceed 30 ft. apart in each pillar of coal on each side of the working place, which ventilating current should be conducted around the working places 200 cu.ft. per minute. If this law had been complied with the disaster would not have occurred. The law further provides that all dust must be sprinkled or sprayed or removed from the mine. This investigation shows that this was not being complied with."



Frank H. Hemelright

3 Dead in Colorado Blast

An explosion in Mine No. 3 of the Bear Canon Coal Co., at Vallorso, 25 miles northwest of Trinidad, Cal., on Jan. 29, caused the death of three men, but thirty-three miners escaped. All of the survivors, however, were burned and seared, five seriously. A gas pocket is believed to have caused the explosion.

Panic in Gassy Mine When Worker Puffs Cigar

Sixty-five employees of the Yukon mine of the Imperial Coal Co., at Lowesville, near Morgantown, W. Va., fled in a panic from the mine Jan. 28, when George Orovitz, a coal loader, appeared in the working place smoking a cigar. One man was knocked down and trampled in the mad dash of the men for the outside. The mine contains a large amount of gas, officials of the company said.

State police officers placed the man under arrest before any violence occurred. He was fined $50 and costs by a magistrate after he had entered a plea of guilty to smoking in a gaseous mine.

Officials of coal companies in the Lowesville district whose plants contain gas asked Magistrate Moore to apply the maximum penalty upon persons convicted of smoking in gaseous mines in the future. The maximum penalty is 90 days in jail and $500 fine. The magistrate told officials he would carry out their request in future cases.

Hemelright Quits Presidency Of Temple Company

Frank H. Hemelright, for the past nine years president and for forty years an employee of the (now) Temple Anthracite Coal Mining Co., of Scranton, Pa., has resigned his executive position. Upon his return from a three months' vacation in the South Seas he probably will engage in marketing mining securities, stocks and bonds.

Forty-five years ago, as a door tender in the Haddock Coal Co. operation at Luzerne he received 40c. a day. He advanced himself through practically every branch of mining, laborer, miner, mine foreman, outside foreman, superintendent, district superintendent, general manager, vice-president and president.

Mr. Hemelright will continue as a director of the Temple company and as a director of the Glen Alden Coal Co., a post he has held for several years. He is president of the Peckville National bank and is interested in other businesses, enterprises and industries.

Explosion in Alabama Mine Takes 27 Lives

An explosion in the Mossboro Mine of the Premier Coal Co., near Helena, Shelby County, Ala., at about 4 p.m. (shooting time), Jan. 29, entombed about forty-six miners and company employees, twenty-seven of whom were killed by the force of the explosion itself and the afterdamp which followed in its wake. Eleven of the dead were white men and sixteen negroes. Nineteen of the men in the mine at the time of the accident made their way to safety uninjured.

Unofficial reports state that the catastrophe was caused by a "windy shot" which ignited gas and dust in the sixth entry of the mine, where ten of the workers met instant death. The force of the explosion is said to have damaged the inside workings and equipment heavily. The mine is a slope opening on the Black Shale seam. The coal is pick-mined and delivered to the main slope, where it is brought to the surface by an electric hoist.

The property is leased from the Tennessee Coal, Iron & Railroad Co., and has been operated by the Premier Coal Co. for several years. G. W. Postell, well known in industrial circles and a mining man of long experience and recognized ability, is president of the company. Rescue teams from neighboring operations and from mines of the Woodward Iron Co., Alabama By-Products Corp. and from the Bureau of Mines rescue station at Birmingham were rushed to the scene by special train, and under the direction of Charles H. Nesbitt, chief mine inspector, and Bureau of Mines officials were promptly organized and went into the mine and by the early morning of the 30th all of the dead had been removed from the workings.

An official investigation will be instituted to determine the exact cause of the blast.

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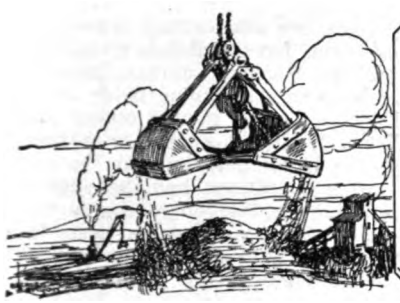
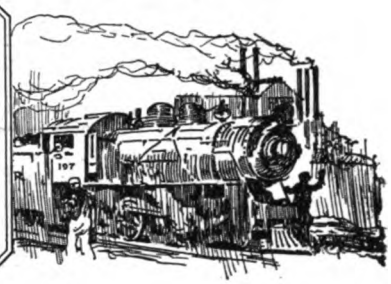


Production And the Market



Coal Market Develops Unusual Features Due to Anthracite Strike; Screenings Sag

The upsets created by the anthracite strike alone differentiate the bituminous coal market at the present time from the usual run of season-end trading. Dutch boulets in Philadelphia, German coal in Brooklyn and Alabama coke in Chicago give some indications of the way in which coal consumers and distributors have accommodated themselves to the situation arising from the prolonged suspension of hard-coal production. Aside from these changes, the domestic market is a weather proposition pure and simple and no different in its reactions to the mercury than in years gone by.

The effect of the anthracite strike, now in its sixth month, is not, however, limited to the extraordinary movements mentioned above. Its impress is to be found as well in the clamor for certain sizes of West Virginia low-volatile and, to a lesser degree, in the good market now enjoyed by some of the high-volatiles prepared for domestic consumption. And these developments have been reflected, in turn, in the movement of mine-run and slack from the same mines and in the expansion of tonnage from operations in the Middle Western fields.

Production Geared Up Too High?

Cautious trade observers are beginning to fear that the producers have overshot the mark in their recent tonnage records. The figures for the week ended Jan. 23, as reported by the Bureau of Mines, show a sharp drop in the rate of output and no pronounced recovery was promised for last week or for early February. The weather demands and the calls for coal to make up the anthracite deficit intensify the situation as they threaten to force the production of the smaller sizes of coal at a faster rate than the industrial consumer can or will absorb. Many steam buyers are now playing a waiting game, ready to pick up distress tonnage if the price is low enough.

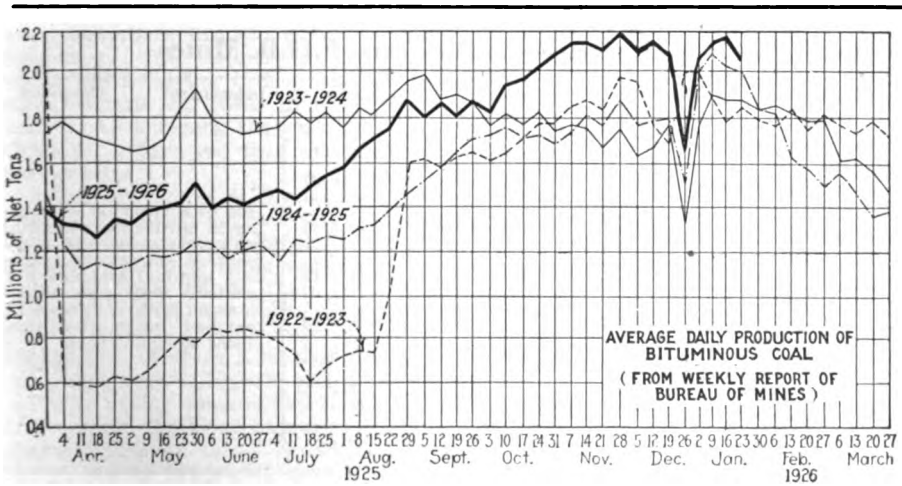
In most sections of the country screenings have given way to the pressure of an increasing accumulation of unsold coal. Gas slack at Pittsburgh is noticeably weaker, high-volatile fine coal prices have declined in the Columbus and Cincinnati markets, some coal selling down to 50c.; Hocking screenings have wobbled; Indiana screenings are off 10 to 25c. and some southern Illinois coal is offered under circular. Quotations on low-volatile, on the other hand, have been somewhat steadier, but not because of increased demand. Mine-run prices, too, show a tendency toward greater firmness and lump was up in some markets, counterbalancing the loss in screenings.

Index Figure Unchanged

Coal Age Index of spot prices of bituminous coal on Feb. 1 stood at 178, the corresponding price being $2.16, the same as on Jan. 25. As previously stated, advances offset price declines in other directions.

Dumpings at Hampton Roads shot up to 440,522 net tons the week ended Jan. 28. The total the preceding week was 407,625 tons. The month-end clean-up to avoid demurrage, more than increased demand, explains the heavier movement over the piers.

For the time being, at least, the high-dollar coke shippers seem impervious to criticism. The tonnage moving at top quotations, however, probably represents only a small percentage of the total coke now going into the domestic trade. Nevertheless, it is enough to give an unfavorable tinge to the whole business.



Estimates of Production

(Net Tons)

	1925	1926
BITUMINOUS		
Jan. 9	12,590,000	13,031,000
Jan. 16 (*a*)	12,044,000	13,069,000
Jan. 23 (*b*)	11,588,000	12,367,000
Daily average	1,931,000	2,061,000
Coal yr. to date	(*c*) 383,446,000	435,389,000
Daily av. to date	1,536,000	1,739,000
ANTHRACITE		
Jan. 9	1,785,000	47,000
Jan. 16 (*a*)	1,803,000	37,000
Jan. 23 (*b*)	1,740,000	47,000
Coal yr. to date	(*c*) 70,226,000	40,620,000
BEEHIVE COKE		
Jan. 16 (*a*)	262,000	311,000
Jan. 23 (*b*)	265,000	344,000
Cal. yr. to date	(*c*) 877,000	1,042,000

(*a*) Revised since last report. (*b*) Subject to revision. (*c*) Adjusted to equalize number of days in the two years.

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Cold Snap Cleans Up "No-Bills"

When a sudden severe cold snap descended on the Middle West last week, operators who had coal on track or in transit were able to sell it readily at full circular prices. Franklin County (Ill.) operators disposed of all their "no-bill" lump and 6x3-in. egg and accumulated a good volume of orders for later shipment.

The base price of $3.50 on lump for Franklin County coal will continue throughout the month, according to the present set-up of the trade, and may hold until well into March. At that time it is planned to announce spring reductions, which will be subject to gradual advances throughout the new coal year.

Anthracite substitutes are still very scarce in the Chicago market. Coke and smokeless egg and nut are particularly tight. Even when an order is accepted, there is no guaranty of early shipment and car numbers are at a premium. Eastern Kentucky and West Virginia high-volatile coals also are enjoying a strong demand, with transit tonnage sought after keenly. When the cold wave was at its crest distributors were besieged with emergency calls from retailers all over the territory begging for immediate shipment.

The steam coal market is still sluggish. Indiana screenings dropped 10 to 25c. last week and some of the Illinois coals weakened. Franklin County held out against lower prices and some of the big Saline County shippers supported the neighboring district. Belleville and central Illinois, on the other hand, let the industrial buyers dictate quotations.

The domestic activity in the Chicago market, however, was only slightly reflected back in the mining fields and in the St. Louis market. Carterville egg moved under pressure and nut coal was distinctly slow. Shaft mines found the struggle to sell steam sizes in competition with the strip pits a hard battle. The latter operations had the edge on spot railroad orders where price was the controlling factor.

Mines in the Duquoin field were on a five-day basis last week, but that rate of operation was maintained only under high sales pressure as neither domestic nor industrial consumers displayed any overwhelming anxiety to flood the district with orders. Railroad demand was light. Broken running time was the rule in the Mt. Olive district. "No bills" discouraged heavier production and there was little buying for locomotive fuel to cheer ambitious salesmen. Conditions in the Standard district were unchanged. The general price range is without profit to the producer; "no bills" plague; industrial and railroad demand drags; 6-in. lump alone moves with signs of life.

The St. Louis local domestic market reacted favorably to the falling mercury. Demand favors the higher grade coals, but the scant supplies available and the prices quoted hold down the movement. There is no Pennsylvania anthracite to be had and little of the Arkansas product. West Virginia

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	Feb. 2 1925	Jan. 18 1926	Jan. 25 1926	Feb. 1 1926†
Smokeless lump	Columbus	$3.85	$4.10	$4.35	$4.25@$4.50
Smokeless mine run	Columbus	1.90	2.75	2.60	**2.70@ 3.00**
Smokeless screenings	Columbus	1.20	2.00	1.85	*1.60@ 1.70*
Smokeless lump	Chicago	3.60	3.85	4.00	**4.25@ 4.50**
Smokeless mine run	Chicago	1.60	2.10	2.10	**2.25@ 2.50**
Smokeless lump	Cincinnati	4.00	4.50	4.25	*4.00@ 4.25*
Smokeless mine run	Cincinnati	2.00	2.50	2.25	**2.50**
Smokeless screenings	Cincinnati	1.10	1.60	1.35	1.25@ 1.50
*Smokeless mine run	Boston	4.25	4.90	4.85	4.70@ 5.00
Clearfield mine run	Boston	1.95	1.95	2.05	1.85@ 2.25
Cambria mine run	Boston	2.30	2.40	2.35	**2.15@ 2.65**
Somerset mine run	Boston	2.10	2.10	2.15	**2.00@ 2.40**
Pool 1 (Navy Standard)	New York	2.75	3.05	3.05	2.85@ 3.25
Pool 1 (Navy Standard)	Philadelphia	2.80	3.15	2.95	2.75@ 3.15
Pool 1 (Navy Standard)	Baltimore	2.25	2.30	2.30	2.25@ 2.35
Pool 9 (Super. Low Vol.)	New York	2.10	2.40	2.55	2.40@ 2.75
Pool 9 (Super. Low Vol.)	Philadelphia	2.20	2.50	2.60	2.50@ 2.75
Pool 9 (Super. Low Vol.)	Baltimore	1.85	2.15	2.15	2.10@ 2.20
Pool 10 (H.Gr.Low Vol.)	New York	1.85	2.15	2.25	2.10@ 2.45
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.85	2.25	2.35	2.25@ 2.50
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.70	1.95	1.95	1.90@ 2.00
Pool 11 (Low Vol.)	New York	1.60	1.85	2.10	2.00@ 2.25
Pool 11 (Low Vol.)	Philadelphia	1.65	2.05	2.10	2.00@ 2.25
Pool 11 (Low Vol.)	Baltimore	1.50	1.70	1.70	1.70@ 1.75
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.50	1.60	1.60	1.50@ 1.70
Pool 54-64 (Gas and St.)	Philadelphia	1.50	1.65	1.60	1.55@ 1.70
Pool 54-64 (Gas and St.)	Baltimore	1.65	1.65	1.65	1.65@ 1.70
Pittsburgh se'd gas	Pittsburgh	2.50	2.65	2.65	2.60@ 2.75
Pittsburgh gas mine run	Pittsburgh	2.25	2.10	2.10	2.00@ 2.25
Pittsburgh mine run (St.)	Pittsburgh	1.95	2.05	2.05	2.00@ 2.10
Pittsburgh slack (Gas)	Pittsburgh	1.45	1.50	1.45	*1.25*
Kanawha lump	Columbus	2.50	2.25	2.25	2.00@ 2.50
Kanawha mine run	Columbus	1.60	1.70	1.70	1.55@ 1.85
Kanawha screenings	Columbus	.65	.90	.85	*.60@ .85*
W. Va. lump	Cincinnati	2.15	2.75	2.60	**2.50@ 3.00**
W. Va. gas mine run	Cincinnati	1.40	1.55	1.45	**1.40@ 1.60**
W. Va. steam mine run	Cincinnati	1.30	1.60	1.30	**1.25@ 1.50**
W. Va. screenings	Cincinnati	.80	1.10	.75	*.60@ 1.00*
Hocking lump	Columbus	2.50	2.35	2.35	**2.25@ 2.65**
Hocking mine run	Columbus	1.60	1.85	1.75	1.65@ 1.85
Hocking screenings	Columbus	1.10	1.20	1.20	*1.10@ 1.20*
Pitts. No. 8 lump	Cleveland	2.30	2.30	2.30	1.85@ 2.75
Pitts. No. 8 mine run	Cleveland	1.85	1.80	1.80	1.80@ 1.85
Pitts. No. 8 screenings	Cleveland	1.30	1.40	1.30	*1.15@ 1.20*

Midwest	Market Quoted	Feb. 2 1925	Jan. 18 1926	Jan. 25 1926	Feb. 1 1926†
Franklin, Ill. lump	Chicago	$3.35	$3.50	$3.50	**$3.50**
Franklin, Ill. mine run	Chicago	2.35	2.50	2.50	**2.35@ 2.65**
Franklin, Ill. screenings	Chicago	1.60	1.85	1.85	*1.60@ 1.75*
Central, Ill. lump	Chicago	2.85	3.10	3.10	**3.00@ 3.25**
Central, Ill. mine run	Chicago	2.20	2.30	2.30	**2.25@ 2.35**
Central, Ill. screenings	Chicago	1.30	1.40	1.40	*1.15@ 1.35*
Ind. 4th Vein lump	Chicago	3.05	3.00	3.00	**2.75@ 3.25**
Ind. 4th Vein mine run	Chicago	2.35	2.30	2.30	**2.25@ 2.35**
Ind. 4th Vein screenings	Chicago	1.45	1.85	1.85	*1.65@ 1.75*
Ind. 5th Vein lump	Chicago	2.60	2.50	2.40	**2.40@ 2.75**
Ind. 5th Vein mine run	Chicago	2.10	1.95	1.95	**1.85@ 2.10**
Ind. 5th Vein screenings	Chicago	1.30	1.50	1.25	1.20@ 1.35
Mt. Olive lump	St. Louis	2.85	2.85	2.85	**2.75@ 3.00**
Mt. Olive mine run	St. Louis	2.35	2.00	2.00	**2.00**
Mt. Olive screenings	St. Louis	1.60	1.75	1.75	**1.75**
Standard lump	St. Louis	2.35	2.40	2.45	2.40@ 2.50
Standard mine run	St. Louis	1.95	1.80	1.80	*1.75@ 1.90*
Standard screenings	St. Louis	1.05	.85	1.05	1.00@ 1.10
West Ky. block	Louisville	2.55	2.05	2.05	*1.85@ 2.15*
West Ky. mine run	Louisville	1.35	1.35	1.35	*1.25@ 1.50*
West Ky. screenings	Louisville	1.00	.90	.90	*.65@ 1.00*
West Ky. block	Chicago	2.35	2.25	2.10	**2.25@ 2.50**
West Ky. mine run	Chicago	1.35	1.50	1.50	1.25@ 1.75
South and Southwest					
Big Seam lump	Birmingham	2.85	2.75	2.75	2.50@ 3.00
Big Seam mine run	Birmingham	1.75	2.10	2.10	2.00@ 2.25
Big Seam (washed)	Birmingham	1.75	2.30	2.30	2.10@ 2.50
S. E. Ky. block	Chicago	2.60	3.10	2.85	2.75@ 3.00
S. E. Ky. mine run	Chicago	1.50	1.85	1.85	1.75@ 2.00
S. E. Ky. block	Louisville	2.60	3.00	2.85	*2.50@ 3.00*
S. E. Ky. mine run	Louisville	1.35	1.55	1.55	1.40@ 1.75
S. E. Ky. screenings	Louisville	.85	1.00	1.00	.90@ 1.10
S. E. Ky. block	Cincinnati	2.60	3.25	3.00	2.75@ 3.25
S. E. Ky. mine run	Cincinnati	1.40	1.60	1.40	**1.25@ 1.75**
S. E. Ky. screenings	Cincinnati	.90	1.05	.80	.50@ 1.10
Kansas lump	Kansas City	4.85	4.85	5.00	**5.00**
Kansas mine run	Kansas City	3.25	3.10	3.10	3.00@ 3.25
Kansas screenings	Kansas City	2.50	2.30	2.30	2.25@ 2.35

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**; declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Feb. 2, 1925 Independent	Feb. 2, 1925 Company	Jan. 25, 1926 Independent	Jan. 25, 1926 Company	Feb. 1, 1926† Independent	Feb. 1, 1926† Company
Broken	New York	$2.34	.....	$8.00@$9.25	.....	.....		
Broken	Philadelphia	2.39	.....	9.15	.....	.....		
Egg	New York	2.34	$8.50@$9.25	8.75@ 9.25	.....	.....		
Egg	Philadelphia	2.39	9.45@ 9.75	8.80@ 9.25	.....	.....		
Egg	Chicago*	5.06	8.17@ 8.40	8.08	$9.50@10.00	$8.03@$8.25		
Stove	New York	2.34	9.50@10.00	9.00@ 9.50	.....	.....		
Stove	Philadelphia	2.39	10.10@10.75	9.15@ 9.50	.....	.....		
Stove	Chicago*	5.06	8.80@ 9.00	8.53@ 8.65	10.00@11.00	8.40@ 8.80		
Chestnut	New York	2.34	9.75@10.50	8.75@ 9.40	.....	.....		
Chestnut	Philadelphia	2.39	10.00@10.75	9.25@ 9.40	.....	.....		
Chestnut	Chicago*	5.06	8.61@ 9.00	8.40@ 8.41	10.00@11.00	8.50@ 8.75		
Pea	New York	2.22	4.75@ 5.50	5.50@ 6.00	.....	.....		
Pea	Philadelphia	2.14	5.75@ 6.00	6.00	.....	.....		
Pea	Chicago*	4.79	5.36@ 5.75	5.36@ 5.95	5.50@ 6.00	5.50@ 6.00		
Buckwheat No. 1	New York	2.22	2.35@ 3.00	3.00@ 3.15	.....	.....		
Buckwheat No. 1	Philadelphia	2.14	2.50@ 3.00	3.00	.....	.....		
Rice	New York	2.22	2.00@ 2.25	2.00@ 2.25	.....	.....		
Rice	Philadelphia	2.14	2.00@ 2.25	2.25	.....	.....		
Barley	New York	2.22	1.40@ 1.65	1.50	.....	.....		
Barley	Philadelphia	2.14	1.50	1.50	.....	.....		
Birdseye	New York	2.22	1.60@ 1.75	1.60	.....	.....		

Due to suspension of mining in hard-coal fields and practical stoppage of shipments, quotations are only nominal and are not printed. *Coal Age* quotations on anthracite will be resumed when the new prices are available.

*Net tons, f.o.b. mines. †Advances over previous week shown in **heavy type**; declines in *italics*.

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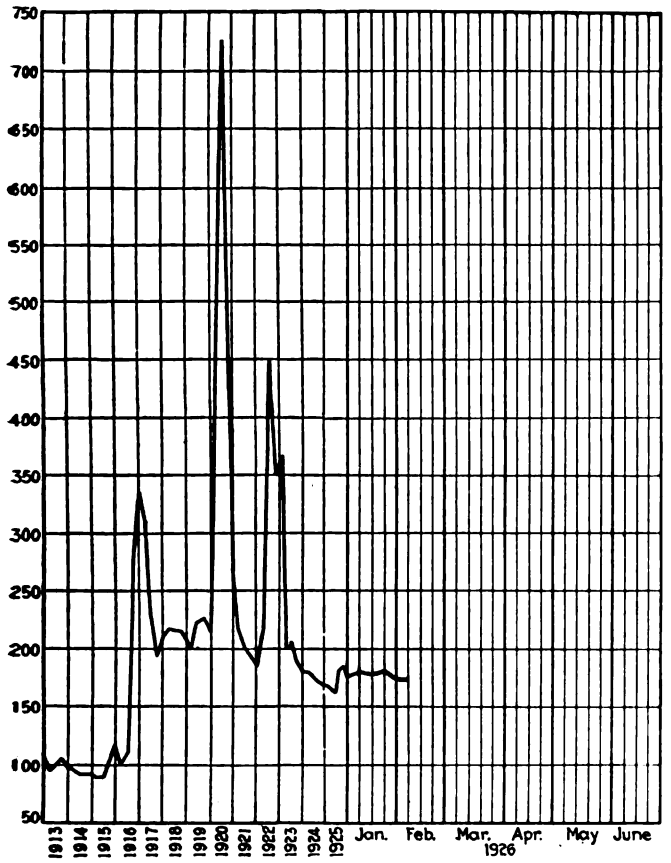

Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926			1925
	Feb. 1	Jan. 25	Jan. 18	Feb. 2
Index	178	178	181	169
Weighted average price...	$2.16	$2.16	$2.19	$2.05

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.

smokeless, too, is scarce. Standard district coal benefits only in a small way. Wagon steam trade has been active and carload business just enough under offerings to keep prices unchanged.

The country demand is fair for the medium grades of coal. Western Kentucky coals are gaining ground west of the Mississippi River and shipments from eastern Kentucky east of that stream. There also has been a fairly active country demand for chestnut-sized coke. Steam trade is quiet.

Buyers Wait for Breaks in Kentucky Prices

Purchasers in the Louisville market have been holding back on orders in anticipation of breaks in prices during February. The majority of the industrial consumers and retail yards buying in that market are said to be carrying stocks which will cover their requirements for a month or more. As a result, they wait for the sellers to appeal to them for orders and then take full advantage of the situation created.

A low thermometer brought a stronger demand for fuel from the householder over the week-end, but retailers bought very sparingly for replenishment of slowing depleting yard stocks. Although some eastern Kentucky block was held above $3 f.o.b. mines, there was little sold for Louisville delivery over $3 and more at quotations ranging down to $2.50. Two-inch lump was offered at $2.25@$2.50; egg, $2@$2.25. Western Kentucky block was held at $1.85@$2; lump and egg, $1.75@$2; nut, $1.35@$1.50.

Public utility demand has been backward since the middle of January. Railroad buying, all things considered, may be characterized as fair. Notwithstanding the absence of a heavy run of industrial orders, the volume is seasonable. Only operations very fortunately situated from a sales standpoint are doing better than three or four days a week; many are working less. Transportation conditions are excellent. Eastern Kentucky mine-run is quoted at $1.40@$1.75; screenings, 90c.@$1.10. Mine-run from the western part of the state is held at $1.25@$1.50; screenings bring 65c.@$1.

Dock Trade Takes on New Life

Movement of coal from the Duluth-Superior docks to points in Minnesota, northern Wisconsin and North Dakota has been on a larger scale the past ten days because of colder weather. Hand-to-mouth buying by retailers and large industrial consumers left them with such small reserve stocks that the drop in temperatures forced them into the market with a rush and docks have been working close to capacity since Jan. 25.

January car loadings probably will exceed the December total of 25,735 cars. The outlook for the rest of the winter is regarded as satisfactory. Because railroad service continues unimpaired, the late January rush was handled without putting improvident buyers to inconvenience or distress.

Steady improvement marks the industrial situation in the Northwest. Coal consumption is mounting, but the shipments, with few exceptions, are upon contracts entered into last fall. Local demand also has been good. Steel Corporation operations on the Minnesota ranges are using more coal; independent shippers, however, show an inclination to go slow until the future of iron prices has been determined, but considerable stripping and development work is being carried on.

Only two docks at the Head of the Lakes have any anthracite left and the supply is limited to small quantities of egg, nut and buckwheat. If these docks would accept orders offered, it is said that they would be cleaned up in two or three days. The disappearance of anthracite reserves has increased the movement of West Virginia low-volatile coal and briquets. Notwithstanding that fact, there is so much Pocahontas held in storage that prices on lump, egg and nut have been cut 50c. Mine-run, on the other hand, is up a quarter. Screenings are quoted at $4.25.

It is estimated that the stocks of all bituminous coals on the docks Feb. 1 approximated 4,550,000 tons.

The fuel situation in Milwaukee and communities drawing their supplies from local docks is becoming more tense with the advent of real winter weather. There is some all-rail movement of Pocahontas, but shipments are held down. Demand for coke is strong and prices are firm. Range size was advanced $1 the past week. Retail prices are $16 on range, $15 on nut and $13 on pea coke.

Little Change in Southwest

Conditions in the Southwest show no material change. The market has settled down to a weather proposition, fluctuating with the rise and fall of the thermometer. Fill-in orders from the householder are reflected in an improved buying of Arkansas semi-anthracite.

The past week saw a slight improvement in demand for domestic coal from Colorado mines, which are operating on an 85 per cent basis. The weather was responsible for the improvement. There is still a surplus of "no bills" on track, however, which demand has not been able to absorb. Transportation and labor conditions are satisfactory. No changes in prices are in contemplation at the present time.

The domestic coal trade in Utah continues to improve, thanks to the prevalence of wintry weather, but as dealers are depending largely on yard stocks, not much of the increase has been passed on to the operators. Dealers expect to have their stocks cleaned up about March 1. Demand from the Pacific Coast, which had been rather good, is slowing up, due to milder temperature. Some mines are working full time, others four days a week, but a number are producing only two, and a few even one day a week. The average for the state as a whole, however, exceeds half time. The slack situation is a little better and the shortage is light. Prices continue steady, car supply is ample and the labor situation is good.

Cincinnati Fears Overproduction

That overproduction may swamp the market is the fear which besets the Cincinnati trade. In spite of the cold wave which swept the country last week, prices still sag. Mine-run and slack are the weakest members of the price list.

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One large southeastern Kentucky operator has openly quoted 50c. on screenings and buyers had no difficulty in filling their wants at 60@70c. Extra choice grades moved slowly at prices up to $1.10.

There was plenty of West Virginia mine-run seeking a market last week at $1.25. The same figure ruled on some of the Kentucky coals. From that figure quotations ranged up to $1.40@$1.50 for choice steam and $1.75 for special gas and byproduct coals. High-volatile egg for western delivery also suffered; some quotations dipped to $1.75.

February circular prices on low-volatile coal are: Lump, $4.25; egg, stove and nut, $5 for westbound movement and $5.50@$6 for eastern deliveries; mine-run, $2.50. Spot prices late last week were on a level with circular quotations, although some New River coal and some Pocahontas from smaller operators could be had at a 25-cent reduction.

The situation on smokeless slack is the fly in an otherwise delightful ointment. Sales at $1.25 are common and orders at $1.50 cause rejoicing. The byproduct ovens are bearing the market, and retaliation is threatened by some coal operators who say they will fire their own coke ovens if prices work lower.

Retail prices are unchanged.

Railroad movement through the Cincinnati gateway last week showed an interchange of 12,702 cars of coal—52.1 per cent of the total interchange. This was an increase of 376 cars over the preceding week but 217 cars less than for the corresponding week last year. Compared with the preceding week, L. & N. interchange increased 496 cars and Norfolk & Western, 18 cars. Chesapeake & Ohio coal interchange dropped 119 cars and the Southern Ry., 19 cars.

Ohio Responds Feebly to Weather Stimulus

Aside from a slight gain in domestic movement, central Ohio did not respond to the weather stimulus of the past week. Retail buying was light because the average dealer is still comfortably supplied with coal and the householder has purchased only when necessity impelled. Most of the latter buying in the Columbus market has been in small lots so that retail facilities have been kept busy. Retail prices are firm at levels maintained for some time past.

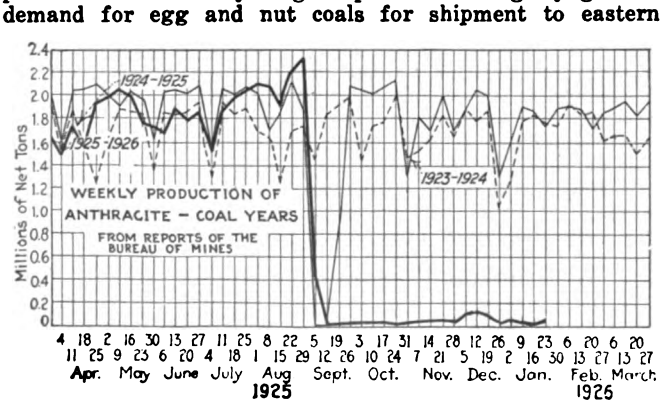
Steam business continues dull and irregular, and little hope is held out of any substantial betterment in the near future. Public utilities, the railroads and the steel plants take the greater part of the steam tonnage moving. Many of the general industrial establishments are working on part time or with reduced forces. Prices are weak. Screenings are a drug on the market and some sales have been made as low as 50c. Attempts to make up the losses on fine coal by boosting prices on prepared sizes have met with scant success.

Southern Ohio production hangs around 25 per cent of capacity. Railroad buying saves the Hocking district. Most of the commercial business gravitates to the Pomeroy Bend field.

Retail demand has picked up in Cleveland territory with the advent of colder weather. Operators, too, are more optimistic despite a decline in the price of No. 8 screenings. Eastern Ohio mines produced approximately 276,000 tons during the week ended Jan. 23, or about 40 per cent of capacity. Compared with the corresponding week a year ago, production was off about 11,000 tons.

Pittsburgh Market Loses Ground

The spot market on Pittsburgh coals suffered badly the past week. The only bright spot was a slightly greater demand for egg and nut coals for shipment to eastern anthracite-consuming states. This demand forced quotations up to $2.75@$3.25 for the better coals, as against $2.50 the preceding week. Production of those sizes, however, is limited. Some small operators have endeavored to grab a share of this business by breaking down lump into egg by hand.



Slack prices have tumbled again. Steam slack is in plentiful supply at $1 and there is no scarcity of gas slack at $1.25. The usual explanation that the decline was caused by increased shipments of lump does not hold good this time. Rather does it seem to be a case where slack consumers are so well stocked up that they can afford to stay out of the market.

Improvement both in production and prices continues in the central Pennsylvania field and few "no bills" are in evidence. In the week ended Jan. 23 loadings totaled 21,103 cars and in January to the 23d 65,570 cars were loaded as compared with 66,103 to the same date in December. All grades of coal are affected by the upward tendency in prices. Run of mine quotations are as follows: Pool 18, $1.85@$1.90; pool 11, $2@$2.10; pool 10, $2.25@$2.35; pool 9, $2.40@$2.55; pool 71, $2.60@$2.75; pool 1, $2.80@$3. Lump is $4.75@$5; egg, $5.25@$5.50; nut, $5@$5.25; slack, $2.10.

Practically no change from the recent attitude of indifference of industrial consumers in the Buffalo market is observable except, perhaps in degree, slack showing increasing dullness—and that in spite of extra efforts to move it. More contracts are said to have been closed than at this time last year. Fairmont lump is quoted at $1.60@$1.75; mine-run, $1.40@$1.50; slack, $1.25@$1.40; Youghiogheny gas lump, $2.25@$2.50; Pittsburgh No. 8 steam lump, $2@$2.25; slack, $1.25@$1.40; short-rate Allegheny Valley mine-run, $1.75@$2.

New England Turns to Substitute Fuels

New England retail coal merchants have about decided that they will be compelled to finish out the season with substitute fuels— but the preference is not for bituminous coal. Welsh anthracite, ovoids, dry steam and coke have the call over the product of West Virginia and Pennsylvania. In spite of the unfavorable experiences with foreign fuels at the beginning of the anthracite strike, a strong spot demand has since developed and there is now renewed inquiry for late February shipment.

The only indication of strength in the smokeless market is a reasonably steady request for screened sizes. Yet even here operators are obliged, in many cases, to use egg, stove and nut to move the lump. Prices on prepared coal range $5.50@$6.50. Unless the demand stiffens, however, it is expected that these levels will be reduced as desirable central Pennsylvania coal can be laid down in New England at a lower price.

Hampton Roads conditions are unchanged. There is still coal at the piers far in excess of current demand. Spot prices wobble between $4.70 and $5 per gross ton, f.o.b. vessel. Pool 1 coal on cars at Boston and Providence is offered at $6.50 for inland delivery.

Bituminous Active in New York Market

The New York bituminous market continues fairly active. Mine-run is moving readily. Demand for prepared sizes has broadened, and prices have been marked up. Bar-screened egg and nut were quoted at $2.50@$2.75 late last week; shaker-screened egg commanded $2.75@$3 and nut and stove $3.25@$3.75. High-volatile West Virginia and Pennsylvania coals were quoted at about $3.50. Prepared sizes of Pocahontas and New River were held at $7@$7.50. There was an active demand for those coals on Long Island.

Mine-run from the Broad Top field was held at $3@$3.75; screened coals, $6.50@$7.50. Other low-volatile Pennsylvania coals were 75c. less, with occasional offerings under $5.75. High-volatile slack was weak at $1.25. The scarcity of free coke redounded to the benefit of the shippers of prepared coals.

Philadelphia was another market at which the demand for prepared sizes of bituminous was strong. Calls from former users of anthracite steam sizes strengthened the price list on mine-run and slack. There is little free tonnage of low-volatile Pennsylvania coal available and West Virginia smokeless shipments are increasing in volume. Kentucky also is making a bid for a share of the business normally held by anthracite.

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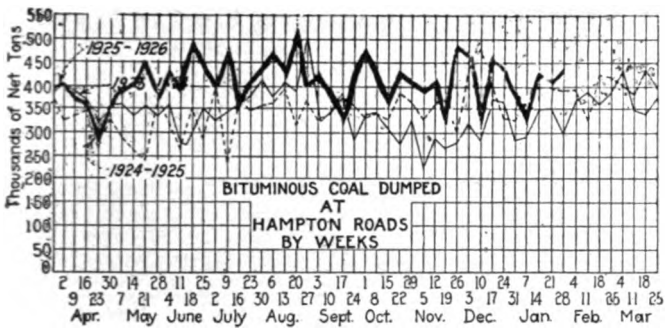

The only weakness is in high-volatile slack, which is suffering from the swing to screening to take care of the attractive market for prepared sizes. To make this situation worse, the cement mills have reduced consumption while the seasonal overhauling of plants is going on.

An additional fillip has been given to the market by consumer interest in contracts for the new coal year. For the most part, larger producers are convinced that the present boom in the spot market will be short-lived. Therefore, they are not overlooking any opportunities to close worthwhile contracts.

Developments in the Baltimore bituminous trade the last week in January were devoid of novelty. The tonnage running has been ample to meet all demands. There has been some increase in the number of short-term contracts placed, but little interest shown in signing up for 1926-27.

Slight Improvement at Birmingham

There has been a slight change for the better in inquiries and in the buying of medium and lower grades of steam coal in the Birmingham market the past week. Mines have added enough spot business to contract commitments to take up current output without material delay. The better grades of washed coal are eagerly sought after for industrial consumption and coking. There also has been some increase in the calls for bunker fuel.

The domestic market is well sold up on the higher grade offerings and there will be little spot tonnage available for several weeks. Some of this demand has spread over into the medium grades, but mines producing those coals must still push for orders. Cahaba lump is quoted at $4.25@$5.50; Black Creek, $5@$5.50; Montevallo, $5.75@$6.25.

Coke is moving over a wide area. Michigan and Chicago territory have been drawing upon the Alabama ovens and some shipments have been made as far north as Canada. Egg and nut are held at $6@$6.50. Foundry grades are active at $6.50@$7 and demand absorbs all the gas-house tonnage offered at $7.

Coke also is the first choice of domestic consumers in the New York market, but, as related in a preceding paragraph, the scarcity of spot lots has been throwing more orders to sized bituminuous coal. Run of oven output was quoted at $9.50@$10, f.o.b. ovens, last week; egg, $11.75@$12.25; stove $12.50@$13. Toward the end of the week there were a few boats offered at $18@$20 alongside.

Several vessels carrying foreign coal were expected late in the week, but the heavy storms at sea delayed their arrival. One cargo of 7,000 tons was reported lost.

Washery anthracite nut was quoted at $14@$15, f.o.b. washery.

A cold wave seriously taxed the ability of Philadelphia retailers to take care of the domestic trade, but no suffering ensued. The high prices asked for coke is militating against the popularity of that fuel as a substitute for anthracite and has helped the sale of low-volatile bituminous. The price differential in favor of mine-run is persuading many consumers to try that size, with satisfactory results. There also is a growing consumption of boulets, which are retailing at $15@$18. The supply of domestic fuel has been augmented by shipments of Holland boulets.

Prepared sizes of bituminous coal have the call in the Baltimore domestic market despite the fact that they retail at $2.50@$3.50 more than mine-run. A movement is under way to start the delivery of soft coal in ton-lots in paper bags.

Though Buffalo consumers accept the dearth of anthracite with a reasonable degree of resignation, the actions of the coke producers are not doing much to promote good humor. Coke sells all the way from $9.50 to $18 at the curb, and higher prices are not unlikely, as some dealers are unable to obtain supplies for a week at a time.

Rise in Connellsville Prices Unchecked

The unchecked advance in spot prices on Connellsville coke gives the market an appearance of strength which underlying factors do not warrant. Run of oven coke last week was sold at $9@$10; yard-crushed coke at $12@$13, with occasional sales higher. Demand itself is more insistent than heavy. Spot or prompt shipment coke alone will be considered by the eastern buyers who have created the present market.

The blast furnaces are out of the picture. Contracts for the quarter average about $4 and there is no shortage of pig iron production to induce the furnaces to bid up the market.

The Connellsville *Courier* reports coke output in the Connellsville and Lower Connellsville regions for the week ended Jan. 23 at 110,600 tons from the furnace ovens and 124,270 tons from the merchant ovens. Furnace oven production declined 1,500 tons; merchant output increased 3,170 tons.

Car Loadings, Surplusages and Shortages

	Cars Loaded	
	All Cars	Coal Cars
Week ended Jan. 16, 1926	936,655	192,820
Preceding week	907,119	193,294
Week ended Jan. 17, 1925	932,150	208,013

	Surplus Cars		Car Shortages	
	All Cars	Coal Cars	All Cars	Coal Cars
Jan. 15, 1926	309,956	117,032	.....	.....
Jan. 7, 1926	310,155	115,502	.....	.....
Jan. 14, 1925	255,967	92,829	.....	.....

Coal Produced in Indiana in 1924

(Exclusive of product of wagon mines)

County	Net Tons: Loaded at Mines for Shipment	Net Tons: Sold to Local Trade and Used By Employees	Net Tons: Used at Mines for Steam and Heat	Net Tons: Total Quantity	Value: Total	Value: Average per Ton	Number of Employees a: Underground: Miners b	Number of Employees a: Underground: All Others	Number of Employees a: Surface	Number of Employees a: Total	Average Number of Days Worked a	Average Tons per Man per Day
Clay	646,317	74,863	9,437	730,617	$1,378,000	$1.89	381	105	258	744	157	6.23
Daviess	80,784	13,668	1,970	96,422	192,000	1.99	105	44	23	172	133	4.22
Dubois and Perry	.....	10,241	.....	10,241	35,000	3.42	9	3	2	14	180	4.05
Fountain and Warren	.....	2,083	.....	2,083	7,000	3.36	10	.....	.....	10	72	2.89
Gibson	808,333	17,754	20,275	846,362	1,692,000	2.00	799	301	95	1,195	130	5.46
Greene	1,807,093	48,638	17,964	1,873,695	3,713,000	1.98	1,321	402	392	2,115	123	7.22
Knox	2,249,015	81,872	33,128	2,364,015	5,001,000	2.12	2,275	759	268	3,302	116	6.17
Owen	103,190	1,781	2,700	107,671	224,000	2.08	13	2	87	102	139	7.59
Parke	70,519	10,015	4,000	84,534	232,000	2.74	91	35	11	137	157	3.94
Pike	1,958,808	13,729	27,710	2,000,247	4,563,000	2.28	740	362	555	1,657	170	7.11
Spencer	7,079	2,854	.....	9,933	17,000	1.71	14	4	3	21	119	3.96
Sullivan	4,803,464	50,550	65,183	4,919,197	10,626,000	2.16	3,347	1,468	622	5,437	157	5.77
Vanderburg	99,307	178,491	9,605	287,403	630,000	2.19	327	89	29	445	152	4.24
Vermilion	2,111,562	39,164	57,567	2,208,293	4,875,000	2.21	2,097	651	246	2,994	151	4.89
Vigo	4,784,799	152,138	142,755	5,079,692	11,694,000	2.30	5,527	1,768	625	7,920	119	5.37
Warrick	808,146	27,720	23,942	859,808	1,574,000	1.83	661	217	415	1,293	123	5.42
Total	20,338,416	725,561	416,236	21,480,213	$46,453,000	2.16	17,717	6,210	3,631	27,558	136	5.75

a Note that figures of men employed and days worked do not include mines that operated in 1923 but were idle the entire year 1924; they do include many mines operated for a short time only in 1924. The number of active mines of commercial size in Indiana was 301 in 1923 and 248 in 1924.

b Includes also loaders and shotfirers.

Statistics compiled by U. S. Bureau of Mines.

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Foreign Market And Export News

Steady Improvement Brightens Outlook in British Coal Market

In the British coal market a steady improvement in business is noted. Stability has been re-established on a freer arrival of shipping, and with few exceptions collieries are well placed for prompt orders. Export inquiries are encouraging, and though big business is lacking, there is quiet confidence in the immediate outlook. Steady revival continues in inland demand, particularly on the part of the metal trades. Excepting dry-coal collieries, which are experiencing a slack time, the pits are working better, and there has been a steady reduction in unemployment.

A strong tone now dominates the coal market in Newcastle. Inquiry for all classes of fuel is good, not only for this month but for delivery throughout the year, and prospects would be quite good were it not for the uncertainty of the outlook when the government subvention ends and a new agreement comes to be made with the miners. For this reason there is still difficulty in negotiating contracts for delivery after the end of March. Meantime current trade is brisk and most classes of coal are so heavily booked as to be scarce for immediate shipment, with the result that prices are firm and on the upgrade.

Output by British collieries during the week ended Jan. 16, according to a special cable to *Coal Age*, totaled 5,460,000 gross tons, compared with 5,060,000 tons in the preceding week.

Steady Demand for All Grades In French Market

French collieries report a generally steady demand for both industrial and domestic coals. Transportation difficulties continue, empty cars being in insufficient supply at times and movement by water being seriously impeded by floods. Freight rates are firm at 30 fr., Bethune-Paris.

The new prices for Nord and Pas de Calais coals, issued on Jan. 12, show an increase of 5 to 6 fr. on industrial and domestic grades, except in the case of a few specialties, which are raised 10 fr. Coke also has been advanced 5 fr. Patent fuel has been increased 14 to 15 fr., the greater advance being due to the continued upward tendency in the price of binder material. The additions are quite moderate considering supplemental fiscal charges and the rising course of general expenses.

Further advances are certain if the miners are successful in their quest for higher wages. Quotations on Belgian coals sold in France also are expected to be increased as a result of the raises in the Nord and Pas de Calais. Three to 6 fr. has been tacked on the charge for coal imported from the Sarre, a result of higher wages and heavier fiscal charges.

The O. R. C. A. received from the Ruhr 100,189 tons of coke from Jan. 1 to 11. The price of indemnity coke has not been changed, but an advance of 7 to 8 fr. per ton is expected.

Belgian Market at Standstill As Strike Threat Fades

Since the passing of the strike threat the Belgian market has been at a standstill. Consumption of industrial coal is moderate, but an improvement in demand is expected, due to the resumption of work in the Charleroi metallurgical district. The domestic coal situation is still satisfactory in spite of milder weather.

Imports of British, Dutch and French coals show an appreciable falling off and increased prices in the Nord and Pas de Calais will tend to moderate French competition.

Shipments have been impeded or completely stopped by floods, some collieries in the Charleroi district having been obliged to cease production.

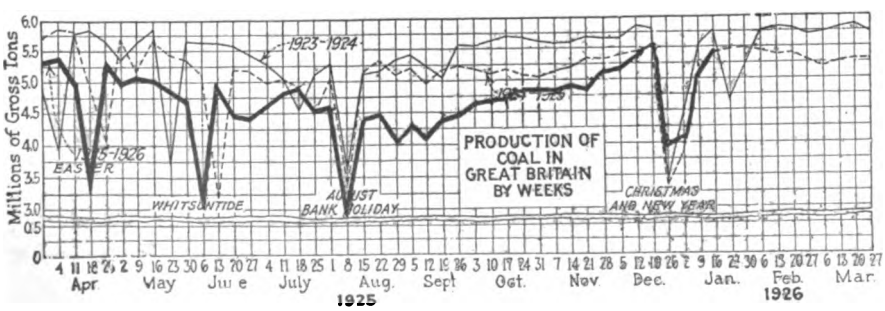
Mine prices for January are practically unchanged from the December circular and the same is true of indemnity coal prices.

Ruhr indemnity fuel deliveries to Belgium in 1925 totaled 2,902,908 tons, as against 4,381,786 tons in 1924.

U. S. Fuel Imports in December

(In Gross Tons)

	1924	1925
Anthracite	17,156	186,480
Bituminous	33,313	60,444
From:		
United Kingdom	5,975	19,309
Canada	18,253	39,002
Japan	.....	5
Australia	9,085	.....
Other countries	.....	2,128



Destination of U. S. Fuel Exports In December

(In Gross Tons)

	1924	1925
France	12,313	580
Italy	97,370	17,916
Other Europe	3,009	.....
Canada	727,142	1,135,507
Panama	19,276	22,857
Mexico	7,027	14,085
Br. W. Indies	14,928	10,764
Cuba	71,858	67,514
Fr. W. Indies	19,374	13,902
Other W. Indies	12,559	23,484
Argentina	15,665	18,063
Brazil	49,005	27,190
Chile	3,778	.....
Uruguay	.....	6,019
Egypt	11,156	.....
French Africa	9,897	8,053
Other countries	16,129	18,759

Export Clearances, Week Ended Jan. 30, 1926

FROM HAMPTON ROADS

	Tons
For Cuba:	
Br. Str. Berwindmoor, for Havana	9,822
For French West Indies:	
Br. Str. Trafalgar, for Fort de France	6,742
For Italy:	
Ital. Str. San Giuseppe, for Bagnoli	7,231
Ital. Str. Oceania, for Genoa	5,612
Ital. Str. Aster, for Porto Ferrajo	9,600
For Corsica:	
Ital. Str. Enrichetta, for Porto Vecchio	7,064
For Bahamas:	
Amer. Schr. W. T. Bell, for Nassau	282
For Canal Zone:	
Amer. Str. Steelore, for Cristobal	8,979
For Argentina:	
Grk. Str. Anastasia, for Puerto La Plata	6,661
For Virgin Islands:	
Br. Str. Onega, for St. Thomas	4,295
For Brazil:	
Dan. Str. Ellen Jensen, for Rio de Janeiro	4,436
For Dutch Guiana:	
Swed. Str. Bifrost, for Paramaribo	2,458

Hampton Roads Coal Dumpings*

(In Gross Tons)

	Jan. 21	Jan. 28
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week	163,256	181,852
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	94,822	70,730
C.&O. Piers, Newport News:		
Tons dumped for week	105,873	140,760

*Data on cars on hand, tonnage on hand and tonnage waiting witheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

	Jan. 23	Jan. 30†
PIERS		
Pool 1, New York	$6.00@$6.35	$6.00@$6.53
Pool 9, New York	5.50@ 5.75	5.50@ 5.75
Pool 10, New York	5.25@ 5.50	5.20@ 5.40
Pool 11, New York	4.85@ 5.25	4.85@ 5.25
Pool 9, Philadelphia	5.30@ 5.40	5.30@ 5.40
Pool 10, Philadelphia	5.05@ 5.25	5.05@ 5.25
Pool 11, Philadelphia	4.80@ 5.00	4.80@ 5.00
Pool 1, Hamp. Roads	4.65@ 4.75	4.90@ 5.00
Pool 2, Hamp. Roads	4.20@ 4.30	4.65@ 4.75
Pools 5-6-7, Hamp. Rds.	4.00@ 4.15	4.25@ 4.35
BUNKERS		
Pool 1, New York	$6.25@$6.60	$6.25@$6.60
Pool 9, New York	5.75@ 6.00	5.75@ 6.00
Pool 10, New York	5.50@ 5.75	5.45@ 5.65
Pool 11, New York	5.10@ 5.50	5.10@ 5.50
Pool 9, Philadelphia	5.55@ 5.70	5.55@ 5.70
Pool 10, Philadelphia	5.25@ 5.50	5.25@ 5.50
Pool 11, Philadelphia	5.10@ 5.25	5.10@ 5.25
Pool 1, Hamp. Roads	4.75	5.00
Pool 2, Hamp. Roads	4.30	4.75
Pools 5-6-7, Hamp. Rds.	4.15	4.35

Current Quotations, British Coal, f.o.b. Port, Gross Tons

Quotations by Cable to *Coal Age*

Cardiff:	Jan. 23	Jan. 30†
Admiralty, large	22s.9d.@23s.3d.	23s.@23s.6d.
Steam smalls	14s.	14s.6d.
Newcastle:		
Best steams	16s.9d.@18s.	16s.9d.@18s.
Best gas	16s.@18s.	17s.
Best bunkers	16s.6d.	16s.6d.

† Advances over previous week shown in **heavy type**; declines in *italics*.

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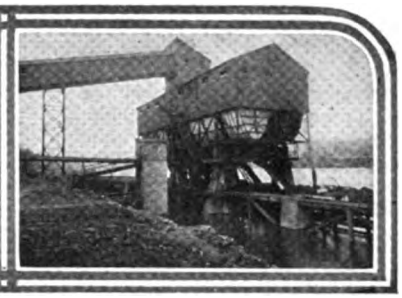
News Items From Field and Trade



ALABAMA

At the annual meeting of the Birmingham Coal & Iron Co., of which I. E. Boyette is president, announcement was made of plans for extensive developments during the year. Coal production is to be increased so that the output of mines in the Oneonta section, Blout County, on the Louisville & Nashville R.R., will be around 1,000 tons daily. Additions to the board of directors include Joseph A. Disso, New Orleans; George E. Elrich, Baton Rouge; Christian Captiville and E. A. Martines, New Orleans; Judge John R. Kelly, Hattiesburg, Miss., and A. A. Fendley of Oneonta. The company owns considerable lands and development will be started at once.

J. E. Ross, Jasper coal operator, is opening a new coal mine on lands which he owns near Jasper, Ala.

The Pratt Fuel Corp., controlled by the Walter Moore interests, of Birmingham, has purchased from the Alabama By-Products Corporation, of which Morris Bush, of Birmingham, is president, 13,000 acres of coal lands near Dora, in Walker County, for $1,500,000. The property contains six coal-mining operations, besides 300 houses for employees, equipment for mining and livestock. Acquisition of this property gives the Pratt corporation approximately 40,000 acres of land underlaid with Big Seam and Black Creek coal, and nineteen miles of frontage on the Black Warrior River. Annual output of the Pratt corporation is 1,500,000 tons, which can be increased if necessary from 500,000 to 750,000 annually, according to Walter Moore.

ARKANSAS

A hospital association for coal miners was the object of a conference of 80 miners who met in Fort Smith recently. The association is intended to succeed the Union Hospital Association, formed by miners of District No. 21, but which went into the hands of a receiver several weeks ago. Miners from McAlester, Henryetta and other Oklahoma and Arkansas fields attended the meeting.

CALIFORNIA

With the installation of a 600-hp. substation, development work at the Siskiyou Coal Mines Co., near Ager, has been speeded up. R. D. Clark, president, said that within 90 days he had hopes of a large proven tonnage, drilling in the last four months having been very satisfactory. "The power will be used," said he, "in unwatering the old tunnel and clearing the débris from the old works. It is possible that new work also will be undertaken."

COLORADO

A man and a boy were killed, another miner seriously injured and a fourth trapped in the shaft as the result of an explosion of undetermined origin which wrecked the Harvey Gap coal mine, sixteen miles north of Rifle, on Jan. 23. Investigation has been started into the explosion in the mine, which is operated by the Colorado Fuel & Iron Co.

An unusual record for the shipment of coal by the Colorado Fuel & Iron Co. was made in 1925, when 40,416 cars of coal were shipped through Pueblo. The coal was mined at the company's mines in southern Colorado. It was practically all handled by the Denver & Rio Grande Western R.R. and established a new record for coal shipment over that road from any part of the state. The year's record was boosted in the last four months of the year, when there was an unusual demand for coal from points east of Colorado, affected to some extent by the anthracite strike.

ILLINOIS

The Illinois Miners' Examining Board has scheduled examinations this month as follows: Belleville, Feb. 8; Harrisburg, 9th; Herrin, 10th; West Frankfort, 11th; Duquoin, 12th; Centralia, 13th; Staunton, 15th; Springfield, 16th; Taylorville, 17th; Danville, 18th; LaSalle, 19th and Peoria, 20th.

The Nason mine of the Illinois Coal Corporation, at Nason, Jefferson County, is reported to have failed to meet its semi-monthly payrolls on Jan. 28. This is the second occurrence of this kind in recent months and the company is supposed to have gone into the hands of a receiver soon after its first failure to pay off. The mine is classed as one of the largest and best equipped in the southern Illinois field. The company also controls the Jefferson & Southwestern R.R., running from Mt. Vernon to Nason.

The Chicago & Eastern Illinois R.R. has taken over the switching operations of the two Orient mines of the Chicago, Wilmington & Franklin Coal Co. at Orient, near West Frankfort. The work has been handled in the past by the Chicago, Burlington & Quincy lines. The C. & E. I. added five additional train crews to handle the work, which was considered sufficient. The new Orient mine, which recently again exceeded its own world's record, is served by four roads: the Illinois Central; Chicago, Burlington & Quincy; Chicago & Eastern Illinois and the Missouri Pacific line.

Indications are that the prospective merger of practically all mines in the Fifth and Ninth districts with the exception of one company is likely to be put over. A number of prominent financial houses are back of the present move and auditors are working on the statement to be furnished them.

INDIANA

The Indiana Coke & Gas Co., Terre Haute, plans the addition of a new battery of coke ovens and auxiliary equipment to cost about $400,000. A byproduct plant also will be erected for the production of sulphate of ammonia, estimated to cost about $100,000 with machinery.

John Bull mine, between Chandler and Boonville, has reopened following the signing of a contract between union officials and Lon Shaw, lessee of the mine. T. D. Scales, of Boonville, owns the pit, which employs about 100 men. Various local unions of District 11 voted an assessment of $1 per month per member at a meeting at Princeton on Jan. 13. This money will be used for emergency relief for men out on strike in the southern Indiana field.

Fires which destroyed the home of a mine foreman of the Bosse Coal Co. mine near Boonville and damaged a washhouse at Yankeetown mine were declared of accidental origin following an investigation conducted by the Indiana state fire marshal's office. Investigation of the cause of the fires, which occurred while an organizing movement was being conducted in the southern Indiana field by the United Mine Workers, was asked by the mine union officials. Operators of the mines co-operated in the investigation.

KANSAS

Neil A. Phillips, trustee, paid $5,000 late in January for coal deposits under the 160-acre farm of E. H. David, one mile west of Valeda, in the Coffeyville field. Mr. Phillips, who is said to be acting for the Missouri-Kansas-Texas R.R., now controls more than 3,000 acres of coal rights lying to the east of Coffeyville, extending over the Labette County line into Montgomery County. Core drillers have been at work for

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several months and are reported to have found a 9-ft. bed of coal at a depth of 800 ft. The coal is said to be covered with thick rock that provides a strong roof. It is predicted that the "Katy" will be ready before long to take over the acreage and begin sinking mines.

A strike was called during the week ending Jan. 23 at the Domestic Fuel Co. mine No. 3, near Croweburg. The mine is being operated by the McGrath Coal Co. William Brady, district board member of District 14, stated that the strike was the result of a dispute over wages. He said the operators had signified their intention to operate open-shop, and declared several non-union men had been employed in pursuance of this decision.

Two miners were killed and another was seriously injured, Jan. 26, by a rock fall in Cockerill mine No. 9, near Franklin, operated by the Ryan-Ready Coal Co., of Franklin. The accident occurred in a parting entry in a new section of the mine that was being opened up. The men were digging out a skip for a double track when the fall occurred. Robert Bertino and Pete Medos were killed and Amel Prommier was injured.

An engine has been received by the Lighting Creek Coal Co. at its mine near Cherokee. The company was organized recently in Cherokee and is opening a shaft on land leased a year ago by the company. The shaft is expected to be in operation before next fall.

Application for a charter to operate in Kansas has been made by the Brown Coal Co., of Pittsburg. The application was signed by Louis M. Brown, Homer Brown, I. N. Brown, Miss Mabel Brown and Mrs. L. A. Kooney. The Browns propose to continue operation as a corporation of a mine they have been operating near Pittsburg under a partnership agreement.

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KENTUCKY

In 1925 the Elkhorn Piney Coal Mining Co. established a new record in producing 1,119,331 tons of coal at the Weeksbury, Powellton and Stanaford properties. According to Lew Roach, manager, the company hopes to produce 2,000,000 tons this year. A new steel tipple having a capacity of 2,000 tons daily is being erected at Stanaford to handle the output of the No. 3 mine which is now being rapidly developed. The company also contemplates the expenditure of $100,000 for miners' houses at the new development.

The residence of James Rogers, of the Rogers Coal Co., Bevier, was destroyed by fire about the middle of January, with a loss of about $20,000.

The Detroit Coal Co., of Columbus, Ohio, a subsidiary of the Essex Coal Co., has started loading at its new operation on the Little Coal River branch of the Chesapeake & Ohio Ry. in Boone County. The company has 3,200 acres of coal land in the Dorothy seam and modern equipment has been installed. The equipment consists of cutting machines and conveyors, shaker screens, loading booms and picking tables. The initial output is 150 tons daily which will be increased rapidly as only two main entries and two butt entries have been started. The product is sold through the Essex Coal Co., of Columbus.

C. J. Neekamp, secretary of the Northeast Kentucky Coal Association, is urging the construction of railroad terminals on the Ohio River at Ashland, where coal might be transhipped by barge on an all-water route to ports on the Great Lakes or the Atlantic seaboard. He proposes that the old Ohio canal, which starts at Portsmouth, be reopened and improved so as to make Port Clinton, on Lake Erie, its northern terminus.

From Pikeville it is reported that the Chesapeake & Ohio R.R. is building 28 miles of road up Levisa Fork and that the Norfolk & Western is coming in by another route, both lines working toward the coal properties of the Kentland Coal Co., and going through much fine coal acreage with the extensions.

A new $43,000 school has been erected at Elkhorn City, on an eight-acre site donated by the Consolidation Coal Co., of Jenkins. The Pike County Board of Education accepted the building recently.

The Kentucky River Mining Institute recently was organized at Hazard by over 100 mining men from all parts of Perry and Letcher counties. The announced objects of the new organization are the more efficient production of coal and the promotion of safety in the mines. Meetings are to be held monthly at Hazard for the discussion of such mine problems as haulage, drainage, upkeep of mines and machinery. The following officers were elected: George Fitz, of Hazard, president; D. T. Mitchell, vice-president for Perry County; Henry Pfening, Jr., Seco, vice-president for Letcher County, and Mr. Samuels, of Sergent, secretary.

MINNESOTA

The Zenith Furnace Co., at Duluth, sustained a fire loss on Jan. 17 estimated at $75,000 through the destruction of its coal-crushing plant and a section of its coke ovens. The fire was attributed to spontaneous combustion originating in a pile of screenings. The company's trade in domestic coke has been dislocated for the time being. Contracts for rebuilding of the damaged section of the plant were let on the day following the fire, and it is hoped that it will be operating at full capacity again within a short time.

Coal dock operators at Duluth-Superior were interested in a recent statement by an official of the Minnesota Power & Light Co. to the effect that with the completion of the program now under way the limit has been practically reached in water-power developments over northern Minnesota. The presence of extensive peat deposits over the territory he regards as a deterrent factor in economically operating additional power dams. The power company is known to have in contemplation the building of a large auxiliary steam power plant at Duluth to take care of any contingency that may arise through insufficient water to fill its dams. A plant of the nature contemplated would entail the consumption of a substantial tonnage of coal.

The Ford Motor Co. advertised in the Twin Cities last week that consumers could obtain surplus coal in all desired sizes from the Ford mines in eastern Kentucky in a continuous supply at a fair price. The explanation is made that the coal is shipped to Duluth as a return cargo for the Ford boats which are used to transport lumber and ore from northern Minnesota and Michigan to the Ford factories at Detroit.

MISSOURI

James T. O'Hara, of Bowie County, Texas, is leasing land north of Kirksville with the purpose of developing a coal field. He already has obtained 1,000 acres on option and will acquire more before starting operations. Tests have revealed a 4-ft. seam of coal at a depth of 150 ft. with a sound roof over it. The plans include a start on the shaft on March 15 and the operation of the mine by Aug. 1. The mine will have ample railroad facilities for shipping coal to the market. O'Hara is reported to have all the necessary financial backing to put the deal through.

NEW MEXICO

Warren Bracewell, state inspector of coal mines, in his annual report to the Governor, suggests appointment of a commission of mining men from various sections of the state who shall act with the Bureau of Mines to draft a new mining code that will insure greater safety to the workers. The death toll from mining operations in New Mexico the past year was one man for every 124,412 tons of coal mined, says the report. A total of 2,616,855 tons of coal was mined during the year ended Oct. 31 in the eight coal counties of the state. This is a decrease of 160,800 tons from 1924. Of the total tonnage, 1,714,059 were pick mined and the balance, 902,796 tons were cut by machine. The Phelps Dodge Corporation at Dawson during the past year produced 77,842 tons of coke, valued at $622,736. The daily average employment of men in New Mexico mines during the year was 3,115 in the mines and 718 outside the mines, says the report. New Mexico mines, according to the report, have generally adopted provisions for safety of workers, as follows: use of permissible explosives, rock dusting and dust barriers, sprinkling, elimination of coal dust and use of closed lights.

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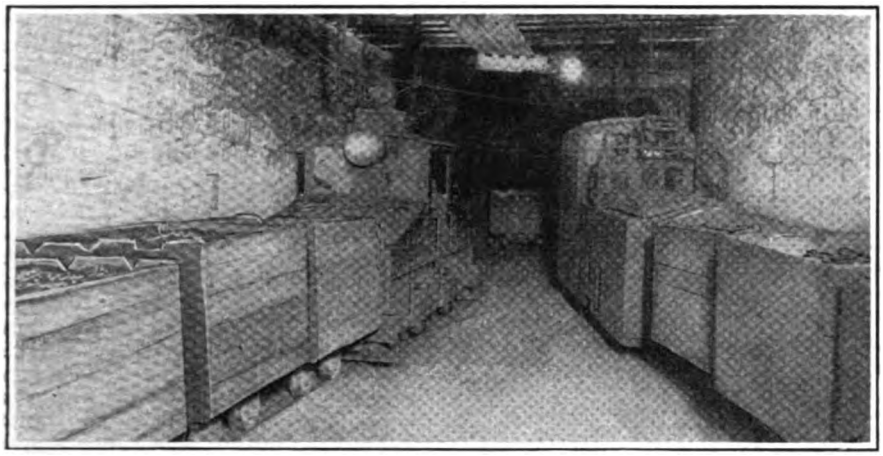

Underground Haulage Equipment at Lota, Chile

Long haulages make electric traction necessary at this mine. M. R. Michado declared in 1913 that the mine had four square miles of available sea-covered territory and that the works extended 2½ miles beneath the water.

NEW YORK

The Agnew-Smith Fuel Co., special distributor of Maryland anthracite at Buffalo, has given up turning it over to retailers throughout the city and opened an office in its own name on William Street near the live-stock yards, with R. H. Allen in charge.

NORTH DAKOTA

Production of lignite by North Dakota mines exceeded 1,000,000 tons for the second consecutive year in 1925. Records compiled by the state Railroad Board show that the total shipped in 1925 was 1,028,218 tons as compared with 1,001,691 tons in 1924. Intrastate shipments totaled 915,718 tons and interstate shipments were 112,500 tons.

OHIO

Bids opened Jan. 27 by H. C. Cain, secretary of the Columbus Board of Purchase, for coal were as follows: 12,500 tons of Ohio nut, pea and slack for the municipal light plant, W. S. Harman Coal Co., Columbus, Ohio, $1.24; Jay Miller Coal Co., Columbus, $1.25. The same companies submitted the same bids on 7,000 tons for the Scioto River water works pumping station and 2,500 tons for the garbage disposal plant. For 500 tons of West Virginia nut, pea and slack for the coal pulverizer at the garbage disposal plant the Jay Miller Coal Co. bid $1.05 and the W. S. Harman Coal Co., $1.10.

Guy R. French, vice-president, and for the past sixteen years connected with the Producers Coal Co., of Cincinnati, miners and shippers in Logan County and southern West Virginia, has disposed of his interest in the organization and resigned as of Feb. 1.

The taking over of five mining properties by the Kentucky Fuel Co. of Cincinnati has caused a change in the ownership of this selling company. John Hoffman and Louis H. Koring have split. Hoffman taking over the business with new partners, Major E. S. Helburn, identified with the Log Mountain Coal Co. and road commissioner for Kentucky; J. D. Evans, operator, of Middlesboro, Ky., and W. C. Welborn, mine owner, of Evansville, Ind. Koring is organizing a new selling corporation to be called the East Kentucky Coal Co. and operated under an Ohio charter. The mining companies to be taken in will be Clay County Coal Co.'s No. 1 and No. 2, the Willis Harlan Coal Co., the Turner Jellico Coal Co., all in working condition in Clay County, Kentucky, and the Coaldale Products Co. of Ohio.

Business of the Man o' War Fuels Co., located in the Dixie Terminal Bldg., Cincinnati, will be conducted through the branch office of the Indian Run Coal Co., Charleston, W. Va., recently opened in Cincinnati in the First National Bank Bldg., James C. Layne has been appointed its manager; Ed. Holyoke, formerly of the Wyoming Coal Sales Co. and the Cory-Mann-George Co. is office man, and Joseph L. Rebert goes on the road.

PENNSYLVANIA

Representative Philip Sterling, Philadelphia, introduced in the House at Harrisburg on Jan. 26 the state administration bill embodying the Delaware River compact. This has been accepted by the Legislature of New York and is before the New Jersey Legislature. The Pennsylvania Legislature rejected it in 1925. The compact provides for the regularization of the flow of the Delaware and the conservation of the water. Mining companies and representatives of various industries from the eastern part of Pennsylvania opposed the compact at a recent hearing at Harrisburg. The compact was introduced after Mayor J. Freeland Kendrick of Philadelphia had written to Governor Pinchot favoring a compact that would assure Pennsylvania the absolute right to develop a considerable part of the watershed of the Delaware River drainage basin without any interference from the neighboring states.

Frank S. Knox, Jr., of Columbus, Ohio, who has been connected with the Pittsburgh Coal Co. for a score of years, has been promoted to the position of assistant general manager of mines with headquarters in Pittsburgh. He will be directly under Arthur Neale, general manager of mines and head of the operating department. Mr. Knox has been manager in charge of the company's mines in Ohio and has been instrumental in operating a number of mines in the Pomeroy Bend field under the 1917 wage scale.

The Coleraine Colliery Co. has awarded a contract to the Penn Electrical Engineering Co. for the electrification of its new breaker and mines at Coleraine, near Hazleton. The equipment will consist of breaker motors, substation apparatus, compressors and mine pumps. The mine pumps will be equipped with automatic control to eliminate pump runners.

W. M. Wilshire and C. C. McGregor, receivers of the Carnegie Coal Co., asked the U. S. court at Pittsburgh that the properties and assets of the company be appraised. The court appointed John M. Rayburn and James Donaldson to appraise the assets.

W. J. Rainey Co., Inc., has ordered the Paul plant in the Connellsville district to ship only furnace coke for an indefinite period. No foundry coke will be produced. The mine ships five cars of coke and two cars of coal daily.

Equity proceedings instituted by the Maryland Coal Co. against the Stineman Coal & Coke Co. to force the latter company to maintain a barrier pillar of at least 200 ft. between the two contiguous operations of the companies in the South Fork region were indefinitely continued on Jan. 25 by agreement of both parties. The action had been on in the Cambria County Court before Judge John H. McCann for a week. A vast amount of evidence is being taken and the hearings are not likely to be resumed before April 1.

Output of the Pittsburgh Coal Co. in the 1917 wage scale mines in western Pennsylvania reached a new high record in the week ended Jan. 23, when a total of 29,463 tons was loaded at seven mines. This brought the total for the first three weeks of January to 83,190 tons. On Saturday, Jan. 23, the company distributed a two-weeks' pay amounting to $91,178.85, also a new record. This was distributed among 244 men at Library, who received $16,-864.93; 158 men at Warden mine, $10,-461.53; 310 men at Midland, $20,690.94; 47 men at Mansfield, $3,545.87; 74 men at Dickson, $4,082.42; 257 men at Banning No. 2, $19,026.71, and 240 men at Banning No. 1, $16,506.45.

Strong opposition to the seven giant power bills sponsored by Governor Pinchot in the special legislative session was raised at a public hearing held in the Senate chamber at Harrisburg Jan. 26. These measures replace the twenty-two defeated during the regular 1925 session. Advocates of the bills said the pooling of electric energy, regulation of its distribution and prices, the submission of securities of companies for examination and other features would stabilize the electric in-

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dustry. Opponents characterized the bills as impracticable and said they would do nothing that is not already being done by the electrical industry in Pennsylvania.

TENNESSEE

The Marion Coal Mining Co., Tennesee Power Bldg., Chattanooga, has leased 3,000 acres of coal land between Whiteside and Shellmound, and will develop it. H. L. Cory is president of the company.

UTAH

G. Vern Sears, well known Salt Lake City coal salesman and connected with the Western Fuel Co. for the past four years, has gone to the Chesterfield Coal Co., a mining company with headquarters in Salt Lake City and a mine at Sego, in Grand County.

Coke made by the Columbia Steel Co. is being distributed in Salt Lake City by the Wasatch Coal Co., retail agency of the Carbon Fuel Co., and it is stated that 50,000 tons or more will be available annually. Agencies are being opened up also in other parts of the state.

John H. Wootton, prominent in mutual coal company circles and a former member of the Utah State Senate, is lying seriously ill at Salt Lake City Hospital, following an automobile accident. Mr. Wootton is 60 years of age. He is an attorney by profession.

A prominent Salt Lake City oil refiner is quoted as saying that the local coal industry will lose out to oil, now that oil has been struck in Utah, unless the coal men get busy and produce a smokeless coal in commercial quantities.

WASHINGTON

The Bellingham Coal Mines output in 1925 was 297,000 tons, valued at more than $1,000,000. The company employs more than 200 men.

WEST VIRGINIA

Mine No. 1 of the Gilbert-Davis Coal Co., in Scott's Run, operating under union conditions, recently loaded what is believed to be the largest tonnage ever dumped over one tipple in West Virginia in a single day of eight hours. This record was made Jan. 23, when 5,250 tons of coal was loaded. The Gilbert-Davis mine is the largest union operated mine in West Virginia, and it is working every day.

A short-circuit in the air course in Chesapeake mine of the Fairmont-Chicago Coal Co. on Jan. 27 caused a pocket of gas to be ignited from the flame of an open lamp. Two miners were slightly burned. The local gas explosion was light and little damage was done to the interior of the mine.

The Clarksburg District Mining Institute elected the following officers at the annual meeting held Jan. 23 in the Traction Building, in Clarksburg: President, Charles F. Bashore; Vice-President, Harry W. Brown; Secretary and Treasurer, R. P. McOlvin. Mr. Bashore, who was a member of the first-aid team that penetrated Jamison No. 8 mine after the explosion, spoke on lessons that may be drawn from the explosion.

The Bear Pen Coal Co. was sold at trustee's sale at Summersville, in Nicholas County, on Jan. 18 and was bid in by one of the creditors of the company. Several hundred acres of coal land were involved in the sale.

The third Young Men's Christian Association to be established by the Island Creek Coal Co. will be ready for use in March, at Mud Fork. The others conducted by the company are at Monaville and at Whitman. General Manager A. R. Beisel is much interested in the Y. M. C. A. work.

Mr. and Mrs. Harry E. Sands, of Pittsburgh recently transferred to Fred O. Blue, of Charleston, five-thirty-firsts of an undivided interest in 1,797.93 acres of coal and mining rights in the Elk district of Harrison County and the same fractional interest in 826.88 acres on Elk Creek, in Barbour County. Mr. and Mrs. Sands also have conveyed to Arthur S. Dayton, of Charleston, a similar interest in these lands.

Thirty 1,000-ton steel barges recently have been put into service by the West Virginia Coal & Coke Co., according to an announcement made by Brooks S. Hutchinson of Fairmont, vice-president of the company. The barges will ply on the Ohio River chiefly between Huntington and Cincinnati and also on the Kanawha River. The company has ordered a steamboat which will be delivered in either March or April.

From the Oakwood mine of the New River Co. prepared coal has been put up in 25-lb. paper bags and two carloads were shipped to Boston during the first week of the month. There is said to be a good demand for the small bags of coal in the cities where it is retailed for cooking stoves. Other shipments of coal by the same method are soon to be made. Ordinarily the company ships its prepared coal in bulk.

The Mill Creek Coal & Coke Co. has acquired the property of the Mill Creek & Elkhorn Coal & Coke Co. and will operate. A new tipple will be rebuilt to accommodate the entire output of the mines.

WISCONSIN

A. P. King, of Cleveland, vice-president of the United Coal & Dock Co., was elected president of the organization to succeed Adam Gross, retired, at the annual meeting at Milwaukee, Jan. 20. Alex Uhrig, former president of the Milwaukee Western Fuel Co., was chosen chairman of the board of directors; John I. Mayer was re-elected vice-president and J. W. Gross, secretary was chosen secretary-treasurer. The United company is affiliated with the North American Coal Corp., Cleveland, successor to the Cleveland & Western Coal Co. It handles about 500,000 tons of coal annually and its docks have a storage capacity of 200,000 tons.

CANADA

The Canadian National Rys. have arranged to ship 25,000 additional tons of Alberta coal to Ontario at the special freight rate of $7 a ton, Charles McCrea, Minister of Mines for Ontario, was informed Jan. 25 by a representative of Sir Henry Thornton, president of the National lines. It is expected that some of the 25,000 tons will be moving to Ontario within a week. If the hard-coal strike is not settled soon and the 25,000 tons proves insufficient, it is understood that consideration will be given by the C.N.R. to additional shipments.

Mining in the Minto Coal Co.'s mines in New Brunswick was resumed on Jan. 18, when the 325 miners who had been on strike returned to work under an agreement, pending an investigation of working conditions by a government commission. The miners return under the same conditions as obtained before the strike.

Output of coke in Canada during December totaled 152,173 tons, being slightly below the November output of 156,182 tons. The total production for the year 1925 was 1,471,116 tons as compared with 1,370,599 tons in 1924. Imports of coke in December were 131,276 tons and exports of Canadian coke 4,401 tons. During December 91,863 tons of Canadian coal and 139,496 tons of imported coal were used in coke making.

It is officially stated that the Canadian National Rys. has given a contract to the British Empire Steel Corp. for 600,000 tons of coal for use this year, including 120,000 tons of banked coal.

Traffic

Complains of Tennessee Rates

The Roach Creek Coal Co., of Roach Creek, Tenn., complains of unjust and unreasonable rates on coal between Roach Creek and points in the Glen Mary and Coal Creek groups by reason of the failure and refusal of carriers to perform or to pay for the cost of performing that part of the service between Roach Creek and Roach Creek Junction. The coal company asks for the establishment of just and reasonable rates and the performance of the service or the making of an allowance for it. Reparation to the extent of $4.05 per car shipped since June 12, 1925, also is demanded.

Obituary

Silas Reece, aged 76 years, a pioneer in the Clearfield bituminous coal region and well known as a coal prospector, was burned to death when his home in Decatur Township, Pa., caught fire on Jan. 23. He knew all about the coal for many miles around and his knowledge and advice were much in demand among coal operators. He was a teacher in his early life, later following the coal business as member of an operating firm.

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Coming Meetings

American Institute of Electrical Engineers. Annual convention, Feb. 8-12, 1926, at Engineering Societies Bldg., New York City. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

Pittsburgh Vein Operators' Association. Annual meeting, Feb. 15, Cleveland, Ohio. Secretary, D. F. Hurd, Marion Bldg., Cleveland, Ohio.

American Institute of Mining and Metallurgical Engineers. Annual meeting, Feb. 15-17, 1926, at Engineering Societies' Building, New York City. Secretary, Dr. H. Foster Bain, 29 West 39th St., New York.

The Rocky Mountain Mining Institute. Winter meeting, Feb. 23-25, 1926, at Albany Hotel, Denver, Colo. Secretary, Benedict Shubart, Boston Building, Denver, Colo.

Canadian Institute of Mining and Metallurgy. Twenty-eighth annual and general meeting, March 3-5, at the Windsor Hotel, Montreal, Quebec, Canada. Secretary, G. C. Mackenzie, 603 Drummond Bldg., Montreal, Que., Canada.

New England Coal Dealers' Association. Annual meeting at the State Armory, Worcester, Mass, April 7 and 8. Secretary, E. I. Clark, 141 Milk St., Boston, Mass.

The American Mining Congress. Annual Exposition of Coal Mining Equipment, May 24-28, at Cincinnati, Ohio, in conjunction with the annual meeting of practical operating officials. Assistant secretary, E. R. Coombes, Washington, D. C.

International Geological Congress. The fourteenth congress will be held in Madrid, Spain, commencing May 24, 1926. From May 5 to 22 excursions of interest to the visiting delegates will be arranged. Information concerning the congress can be obtained from the secretary of the organizing committee, Enrique Dupuy de Lome, Plaza de los Mostenses, 2, Madrid, Spain.

New Companies

The Wilson Nolan Coal Co., with a capital of $15,000, has been incorporated at Russellville, Ark. The incorporators are Albert L. Wilson and J. L. Nolan.

The Superfuel Coal Co. was incorporated in Paris, Ark., the first week of January, with a capital of $15,000, by F. J. Mashaw, W. W. Bailey and others.

The Barbour Coal Co. was incorpoated in Denver, Colo., with a capital stock of $1,300,000, the first part of January, by Harry Carlson, Clarence B. Frink and others.

The High Grade Coal Co., Shawnee, Ohio, has been incorporated with a capital of $10,000 to mine and sell coal. Incorporators are Richard Phillips, Sheldon Kinsel, Fred J. Phillips, G. C. Davis and W. P. Nutter.

The Niagara Coke Co. has been incorporated at Niagara Falls, N. Y., with Paul Schoellkopf, leading capitalist, in the list of incorporators. A site has been selected for a plant and work will begin in the near future.

Recent Patents

Roof Support for Mines; 1,559,560. Walter H. Doughty, Martins Ferry, Ohio. Nov. 3, 1925. Filed Feb. 11, 1924; serial No. 691,866.

Coal Cutter; 1,559,742. Kenneth Davis, St. Benedict, Pa., assignor to Rembrandt Peale, New York City. Nov. 3, 1925. Filed Sept. 11, 1917; serial No. 190,731.

Method of Feeding Dry Pulverized Coal; 1,559,810. Walter E. Trent, Washington, D. C., assignor to Trent Process Corp., Wilmington, Del. Nov. 3, 1925. Filed Oct. 22, 1919; serial No. 332,548.

Treatment of Finely Divided Coal; 1,560,116. Walter W. Stenning and Walter H. Beasley, London, England, assignors to Minerals Separation North American Corp., New York City. Nov. 3, 1925. Filed Feb. 15, 1922; serial No. 536,810.

Skip-Hoist Equipment; 1,560,230. William E. Hale, Fort Washington, Pa., assignor to R. H. Beaumont Co., Philadelphia, Pa. Nov. 3, 1925. Filed Jan. 23, 1924; serial No. 687,907.

New Equipment

Heavy Duty Truck Facilitates Rapid Delivery

Good roads are so common about the mines today that much of the material formerly handled by means of teams and wagons is now shipped by truck. In order to meet changing conditions in this respect the White Co., of Cleveland, Ohio, recently has brought out the heavy duty dump truck shown in the accompanying illustration and known as its Model 52-D.

This new model has an auxiliary transmission affording the equivalent of five separate speeds giving extra low gear pulling power for hill climbing or for getting out of holes or mire; a new dumping mechanism and dump; tapered body; also an improved patented oil system, and a double reduction gear drive. Other improvements embodied in this new model include a large tubular type radiator, spring-cradles on the frame, a wide, heavy, pressed steel bumper, heavier steering gear, an air temperature rgulator that saves fuel and adds to engine efficiency in all seasons, heavy springs, reinforced frame of alloy steel and brakes with drums of a special metal that insures quick, certain stopping and long brake life.

The auxiliary transmission gives great flexibility of power. It enables the driver to gear down to the hardest pull when this is needed and allows the main transmission of work at a higher top speed on the level road. Power is transmitted in a straigh line from starting crank to the rear axle when operating under load. This assures maximum life for all drive units.

The mechanism which operates the dumping hoist is placed in the same case with the auxiliary transmission. The tapered dump body is raised on sturdy arms and links by means of a positive gear drive to an angle exceeding 50 deg. This is sufficient to dump any load completely, yet the body is under positive control at all times and may be held at any desired angle. It is lowered by the same mechanism that raises it, but can be brought back to horizontal position on the truck while this machine is in motion.

The actual dumping point is so far behind the rear axle that the load slides neatly over the edge of a soft fill without danger of miring the truck, or piles up in the clear on flat ground. A double-acting tail gate facilitates dumping and the low body sides make loading from the ground unusually easy. The dumping mechanism is set down within the frame in a dirt-proof and weather-proof housing, the gears being operated in oil. The wheel base on the new model is 156 in. Solid tires are used, the forward tires being 36 x 6 in., and the rear ones 40 x 12 in.

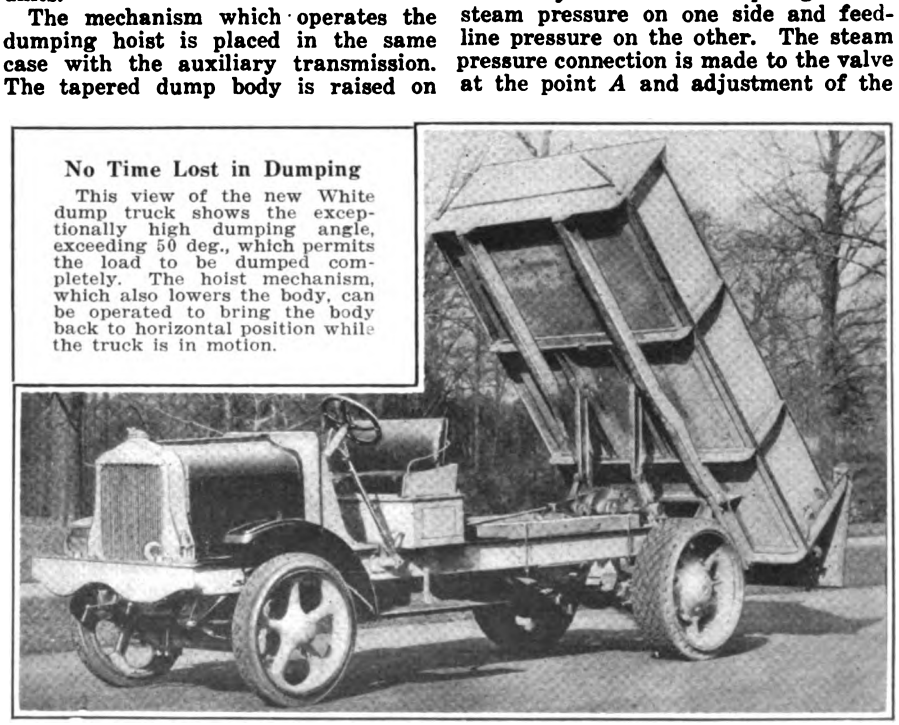
Regulator Valve Eliminates Pressure Variations

In order to eliminate the variations in the pressure on the feed line encountered where several boilers are supplied with feed-water from one pump, the excess pressure tending to vary with the rate of feeding, the S. C. Regulator Co., of Fostoria, Ohio, has perfected a new valve. This control valve is designed especially for installation in the line just ahead of each feed-water regulating valve. Its general construction is explained by the accompanying illustration.

The opening through the valve is controlled by means of a diaphragm with steam pressure on one side and feed-line pressure on the other. The steam pressure connection is made to the valve at the point *A* and adjustment of the

No Time Lost in Dumping

This view of the new White dump truck shows the exceptionally high dumping angle, exceeding 50 deg., which permits the load to be dumped completely. The hoist mechanism, which also lowers the body, can be operated to bring the body back to horizontal position while the truck is in motion.



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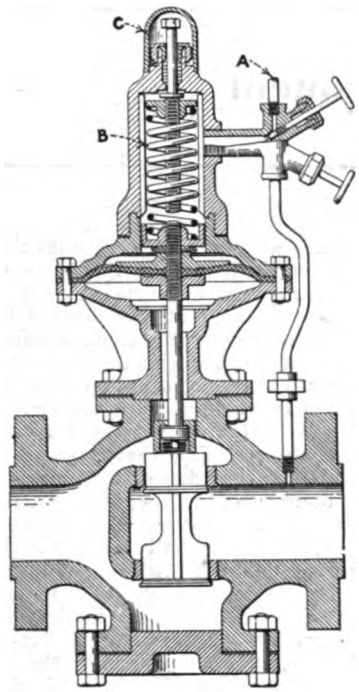


This Valve Controls Pressure On Boiler Feed Lines

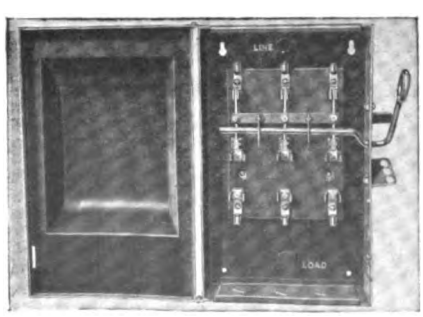
excess pressure desired is obtained by varying the tension on the spring *B*.

In addition to being used to control the excess pressure ahead of the individual feed-water regulating valve, this new device can be employed in the discharge of electrically driven boiler-feed pumps to maintain a constant excess pressure on the feed line.

Industrial Safety Switch Has Quick-Break Mechanism

A new quick-break safety inclosed switch recently has been brought out by the Westinghouse Electric & Manufacturing Co. This switch, known as the Type WK-62, is externally operated, totally inclosed, and has a simply constructed, quick-break mechanism. It is for industrial and other applications where a disconnect switch is desired.

The stops that limit the travel of the switch arm and the blades are placed on the outside of the box. This simplifies the construction and affords ample room for wiring. Clean-cut and easily removed knockouts are provided in the back, sides and the top and bottom ends for any desired arrangement of the conduit. A diamond-point jaw and an extended type blade are used in the switch so that any burning occurring when the switch is opened does not foul the current carrying area of the blades. This new switch is supplied in capacities from 30 to 200 amp. and is rated at 250 volts d.c. and 250-500 volts a.c. in both the fusible and non-fusible types.



New Quick-Break Switch

Construction of this switch is simplified by placing the stops limiting the travel of the arm and blades outside the switch box. This also affords ample room within the case for the wiring.

Simple Chemical Extinguisher Quickly Kills Fire

In order to quickly cope with fires of any origin, but which are normally difficult to suppress, the Bastian-Blessing Co., 240 E. Ontario St., Chicago, Ill., recently has placed upon the market the fire extinguisher shown in the accompanying illustration. This machine is extremely simple both in construction and operation. It consists of two elements, a cone, filled with chemical salts which, upon heating, evolve carbon dioxide and water, and a cylinder of liquified carbon dioxide gas. The cone and cylinder are connected by means of a suitable valve so arranged that when the valve is opened a stream of the powder is blown onto the fire.



Extinguisher in Operation

To use this devise it is merely necessary to turn it to the position here shown and open the valve. A stream of powder is thus projected onto the fire that quickly quenches it.

To operate this extinguisher it is merely necessary to turn it upside down and release or open the valve. By this means a stream of the powder and carbonic acid gas may be projected 20 ft. or more from the nozzle. Inasmuch as fire depends upon oxygen, and since the carbon dioxide evolved from this powder will blanket any fire, it will extinguish it almost immediately. The powder is not injurious to the most delicate machinery or fabric, with the result that it may be used successfully for extinguishing electrical fires as well as others. After the fire is out the powder may be brushed off and the machine restarted. The extinguisher may be used repeatedly or until either the powder or the carbon dioxide are entirely exhausted when either container may be refilled. The device is claimed to be extremely rapid and effective in action.

Industrial Notes

A. H. Tischer recently joined the engineering force of the **Foote Bros. Gear & Machine Co.**, of Chicago, as designing engineer. He has been engaged in the design of a new line of herringbone speed reducers.

The Griscom-Russell Co. announces the removal of its general offices to the new Murray Hill Building, 285 Madison Avenue, New York City.

The Power Equipment Co., 315 Third Ave. North, Minneapolis, is now representing Foote Bros. Gear & Machine Co., of Chicago, on industrial gears, spur, worm and herringbone speed reducers.

The A. M. Byers Co. has brought out a new four-reel film entitled "The Little Red Ball." It embodies a diagrammatic and scenic presentation of the manufacture of wrought iron pipe from ore to finished product. Hand puddling of wrought iron, including diagrammatic views of the interior of a puddling furnace, the drawing of the "little red ball," squeezing, rolling of muck bar, cutting, piling, reheating and rolling are shown. The methods of forming and welding flat strips of "skelp" into pipe are especially well explained by animated drawings. Engineering, trade and business clubs and organizations generally may secure free showings of this film by communicating with the A. M. Byers Co., Pittsburgh, Pa.

The Kuhlman Electric Co., of Bay City, Mich., has awarded a contract to the Henry G. Webber Construction Co. for an addition to the Kuhlman factory. This addition will measure approximately 75 x 250 ft. In this new building the Kuhlman company is preparing to build the larger sizes of transformers.

Dr. R. B. Moore, formerly chief chemist of the U. S. Bureau of Mines and now general manager of the Dorr Co., who was largely responsible for the development of helium production during the war, received the Perkin Medal for 1925 at the Chemists' Club, New York City, on Jan. 15. The medal is given by the American Society for Chemical Industry, and the selection is made by a committee from that organization, the American Chemical Society, the American Institute of Chemical Engineers and the American section of the Société de Chimie Industrielle.

The Foxboro Co., Inc., of Foxboro, Mass., makers of indicating, recording and controlling instruments, has moved its Pittsburgh office from the Park Bldg. to what will now be known as the Foxboro Bldg., at the corner of Sixth Avenue and Grant Street. H. S. Gray continues in charge of the company's Pittsburgh branch.

Trade Literature

Electric Heat in Industry. General Electric Co., Schenectady, N. Y. GEA-261. Pp. 32; 8 x 10½ in.; illustrated. Deals with the advantages of electric heat for various industrial applications.

The C. F. Pease Co., Chicago, Ill., has issued Catalog G containing **Everything for Blue Printing and Everything for the Drafting Room.** The book is indexed for handy reference, contains 362 pp. and is well illustrated.

The General Electric Co., Schenectady, N. Y., has issued Catalog 6001B covering its entire line of manufactures. Reference to the different subjects is easily found as the book is thumb-indexed for ready reference. It contains 1104 pp., measures 8 x 10½ in. and is well illustrated.

Curtis Steam Turbine Generators. General Electric Co., Schenectady, N. Y. GEA-54. Supersedes Bulletin 42,206. Pp. 44; 8 x 10½ in.; illustrated. A collection of photos showing these generators installed in different plants throughout the country.

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Refrigeration Cools Buildings and Widens Coal Market—Page 221

AUG 3 1927

COAL AGE

The World's Accepted Authority on Coal Mining

McGraw-Hill Publishing Co., Inc. **February 11, 1926** 20 Cents per Copy

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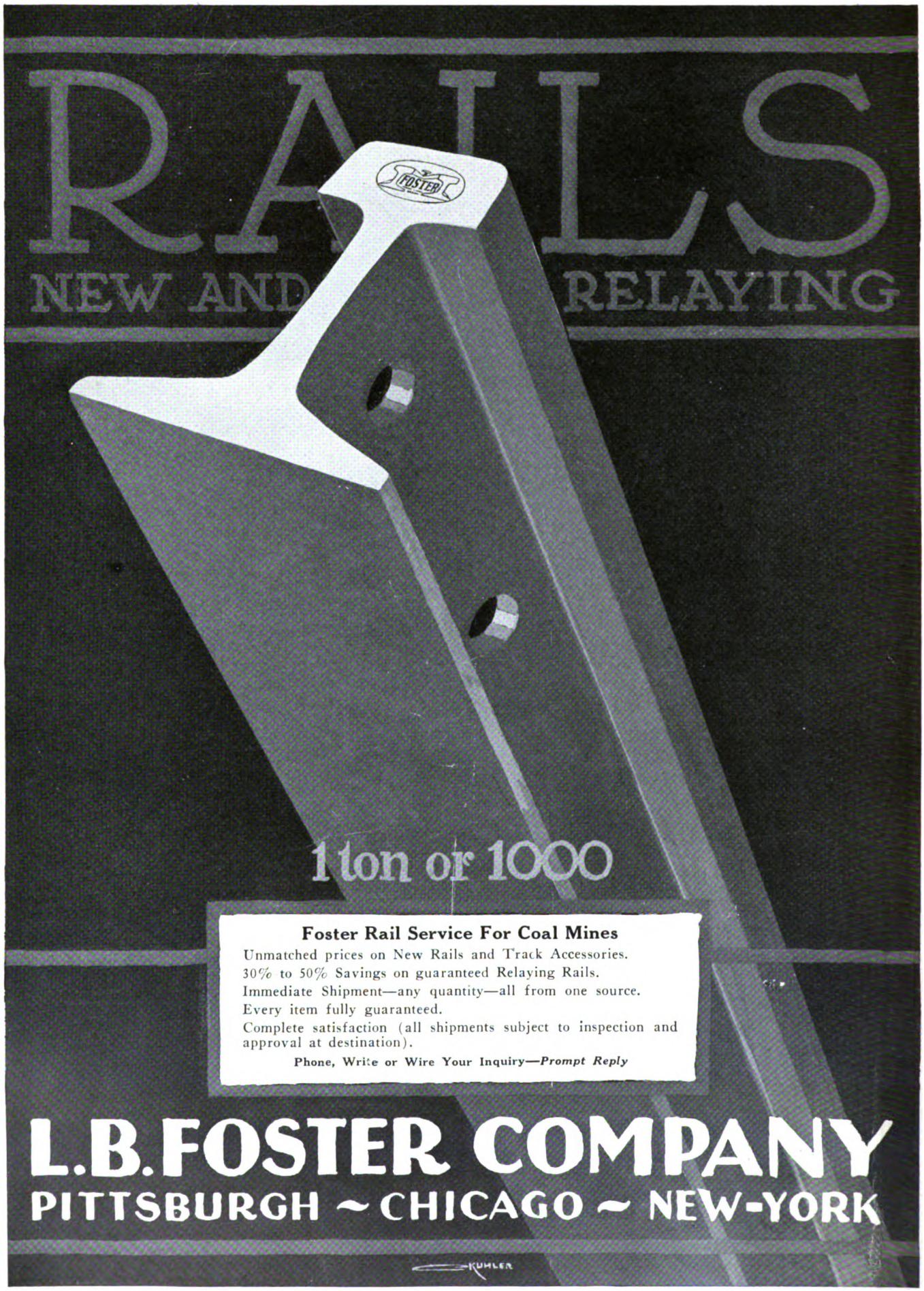

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

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Refrigerated Air Is Cooling Buildings and Increasing Use of Coal 221
BY R. DAWSON HALL.

This Bookkeeping Method Simplifies Accounts 224
BY JOHN C. MCNEIL, C.P.A.

Conveyors Work Well in Thin-Seam Mines 225
BY J. J. RUTLEDGE.

Union Pacific Coal Co.'s Code of Standards—VII 230

Federal Non-Intervention in Strike Proves Popular Policy 237
BY PAUL WOOTON.

Figures Reveal Heavy Losses of Many Anthracite Producers 238

Hard-Coal Wage Dispute Becomes Propaganda Battle 234
Publicity on Costs, Profits and Living Conditions Is Best Safeguard Against Strike, Says Hammond 234
Clairton Byproduct Plant to Add 300 Ovens 235
Blast at Pittsburgh Mines; To Open Euclid Plant 235
Colonel Wentz, Well Known Operator, Dead at 52 235
Changes Made in Coal Work of U. S. Bureau of Mines 235
Explosion Following Fire Kills 19 in Horning Mine 236
Coal Men of All Ohio Fields Organize to Save Industry 236
November Coal Output in Canada Exceeds Average 238
More Coal and Oil Consumed by Utilities in December 238
C. & O. Asks Permit to Buy Island Creek Ry. 239
Kentucky Legislature Kills Coal Tax Bill 239
American Methods Used by I.W.W. Exiles to Increase Russian Output 240
Orient Blast Due to Match Used to Light Lamp 240
Ventilation Code Rejected by A.E.S.C. Ballot 240

Editorials 219
Problems in Underground Management 232
Weekly Review and the Market 241
Foreign Market and Export News 246
News Items from Field and Trade 247
Traffic 250
New Equipment 251

Belts Rush Room Coal To the Entry

BELT CONVEYORS in rooms, operated as independent systems from face to car loading point at room neck, are winning their way in comparatively thin coal. The Pennsylvania Coal & Coke Corp. operating 35 mines has worked out a plan for their use, perfected two types of conveyors to make the plan workable and is now producing coal from three belt-equipped mines. The scheme has been in operation for a year and a half. The story of this newest cost-cutting, labor-saving idea appears in next week's issue of *Coal Age*.

The ingenious engineers of the company are proving that it is possible to apply "new fangled notions" in underground loading to old-fashioned mining layouts. It wasn't necessary to scrap the established room-and-pillar system with the inevitable travail and disorganization that usually follow an attempt to change a mining plan. Instead, 30-ft. rooms 275 ft. deep were continued. A 20-ft. self-contained belt conveyor unit was developed to be laid parallel to the face —it is a marvel of lightness—discharging into the main belt running along the rib to the entry.

The detail of how these belts are constructed and how the main one operates over wooden idlers suspended between posts along its course will interest every wide-awake coal mining man next week. This may be the scheme that answers the demand of a good many hard-headed engineers for a swift loading method that can be applied to room-and-pillar mining.

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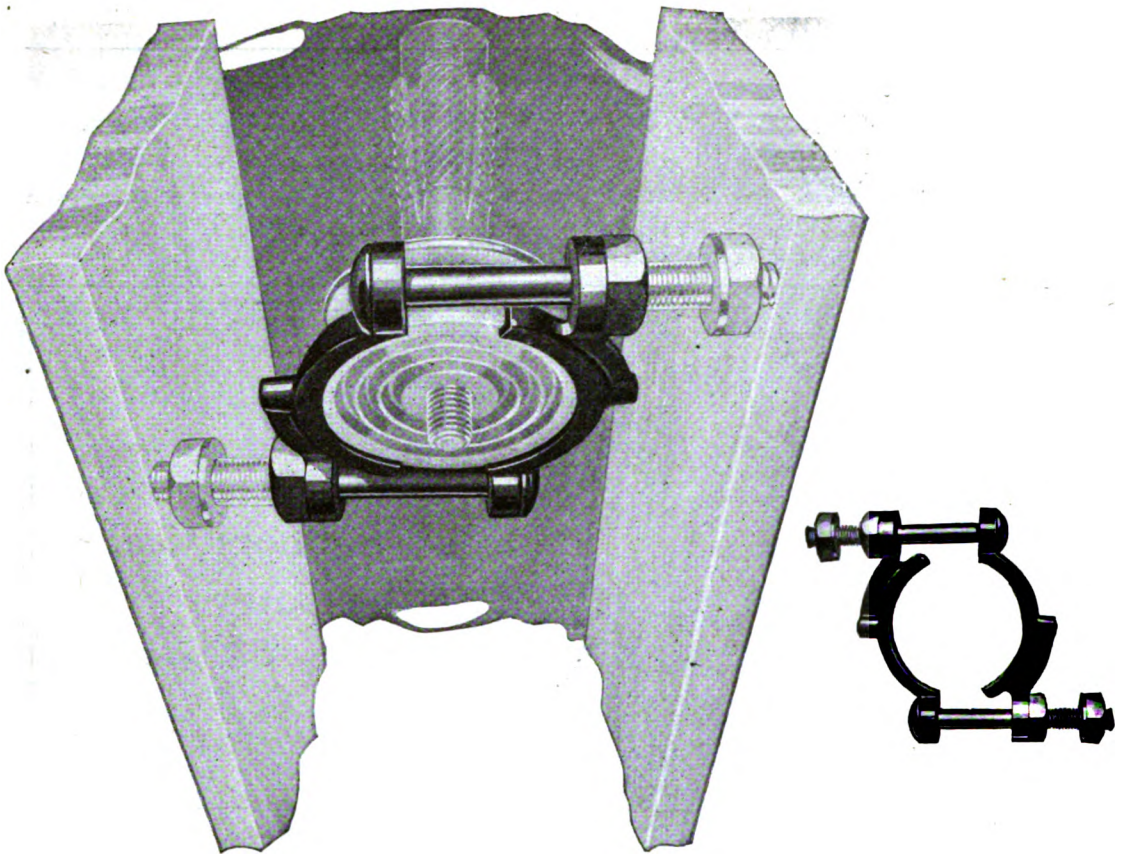

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COAL AGE

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

R. DAWSON HALL, *Engineering Editor*

Volume 29 | NEW YORK, FEBRUARY 11, 1926 | Number 6

Gunning for Golden Geese

IN THE NEXT FEW WEEKS the situation created by the prolonged anthracite strike probably will enter its most critical phase. Then, if ever, the chances that the coal-consuming public may feel a real pinch of fuel shortage will be greatest. For the most part, the fortunate householders who laid in liberal stocks of hard coal last spring will be coming into the market for a few tons of fuel to carry them through the closing weeks of the coal-burning season. Their demands will be added to the requirements of the less provident who have been struggling since last September or October to learn a new fuel technique. Should there be a breakdown of transportation service on top of this, we would have all the elements at hand for a dangerous coal panic.

What is needed above all else is the exercise of a spirit of self-restraint—individually and as an industry. There is too much at stake to risk losing all for the sake of an immediate extra profit. Coal producers and distributors who have a sense of public obligation will forego capitalizing upon public necessity. Those in the industry who feel that the treatment which they have received at the hands of the coal buyer has not been such that they should show the consumer any special consideration, nevertheless, if they are well advised, will move cautiously in the matter of increasing prices under the shelter of the inexorable law of supply and demand. They will surrender the chance to pile up extra earnings where in many cases extra earnings are sorely needed.

Such a policy, it is recognized, is contrary to the general rule of business. It means placing a bridle upon human nature. It means asking the coal industry to act in a manner which many of its severest critics would not follow had they a like opportunity to tap a golden stream of profits. Indeed, much of the criticism against high prices is the wail of frustrated desires. But much of the complaint, on the other hand, comes from people who can ill afford to pay exorbitant prices for the comfort of warmth in their homes. These latter are the innocent victims of an industrial struggle which was not of their making—but they are not inarticulate.

Enlightened selfishness, if nothing higher, therefore, should act as a brake on greed. The bituminous producer who doubles his price, the coke oven that asks $12 to $15 for fuel it willingly sold at $4 a few months ago, the retail merchant who tries to make the consumers take all the risk of his investment in substitute fuels may not kill the golden goose, but the bird will surely fly to more inviting nests. No coal man who is politically minded should undermine a national policy of non-interference by creating a widespread public demand for government intervention and regulation. No coal man who wants to guide the industry into sound merchandising channels should be a party to wrecking the business on the uncharted reefs of profiteering. If not for the public, then for the good of the industry, the coal trade must demonstrate anew its ability to meet a crisis with fairness, with skill, with adequate management and with moderation.

Keeping Down Coal Dust

MOST DANGEROUS of all explosive dusts are those that are fine. They are, too, the source of such diseases as are due to the breathing of dust. Any method, however thorough and energetic, that merely wets down the coarse dust, which promptly falls to the floor of the room, does not give the assurance of safety that conditions demand. If fusain and rosin dusts are peculiar hazards because of their fineness, we do ill to combat them by waiting till they have fallen because before they fall they may explode or when they fall may settle in some completed room or return airway beyond the reach of sprays.

Dr. R. R. Sayer's monograph on "Silicosis Among Miners," Technical Paper 372, of the U. S. Bureau of Mines, refers to the use of a spray when a shot is actually being fired. The dust is thus caught in the air and brought down to the ground. Some of the nitrous fumes are probably similarly eliminated. This practice seems well worth consideration by the coal industry. In many cases the metal-mining industry is using compressed air with water in its sprays. Unfortunately, compressed air is rarely available at the coal mine face. However, between the cloud-like discharge from an atomizer and the drenching stream from a nozzle, there is a middle course which might do much to lower the dust count in the mine air. But unless the water is clean and under a good pressure the delivery of a fine spray is out of the question. Of course, even though the room is sprayed, the coal itself should be drenched with a hose.

The Battery Locomotive

IT IS NO SECRET that many battery-equipped gathering locomotives are being converted to the cable-reel type, as the batteries wear to the point of renewal. Indications are that this move is taking place principally at the smaller mines.

Several reasons for the trend have been advanced. One, that regardless of the question of ultimate economy, battery renewals are being side-stepped because of the lump-sum nature of the upkeep cost. Another, that the advent of rubber-sheathed cable has decreased the delays and repair cost of reel locomotives, taking away any advantage in lower operating cost that the battery locomotive may have had.

Other reasons are that there were undoubtedly many misapplications of battery locomotives during the flush years in the coal industry, and that, with the stringent

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economies of the last few years, many batteries have suffered for want of care.

Probably no other equipment is so adversely affected by the lack of a "stitch in time" as is a battery. It does not require an electrical engineer or a skilled electrician to keep a battery in condition, but it does require that there be someone of authority in the mine organization who fully realizes that the secret of low-cost battery maintenance lies in cleanliness and in immediate attention to the little defects as they may arise.

Batteries have proved to be reliable in mine-locomotive service. But few things can happen to a battery which will cause long delay during a shift. A broken jar cover, a broken connector, or a bad cell are minor difficulties. It requires but a few minutes to repair temporarily a connector or to "short out" a bad cell.

Perhaps the very features of reliability and the possibility of quick, temporary repairing have reacted to the disadvantage of batteries. If in practice the temporary repair is recognized as being only a means of finishing the shift, and not a way of finishing the week or month, there can be an assurance that one of the most important things in battery maintenance is being accomplished.

Schools, Past and Present

IT IS BOARDED UP now—the danger of a piece of the roof falling was too great and the safety engineer deemed it wise to shut off the entrance with a strong, business-like barricade. But only a few years ago that natural cave or opening in the side of the mountain served as a schoolhouse. It was cool and comfortable in there even on the hottest days, and here the children —and some of them could hardly be classed as infants either—gathered to learn the three R's.

They were a hardy lot, those children of the mountains. Like the regions they inhabited they were rough and rugged and the cave school was in entire keeping with the character of the young folks who attended it and with that of the master who presided. The community was poor and this little school room under the rock was the best that the "hollow" could afford. And so the cave school represented the only institution of learning available to the boys and girls of that rugged country.

But a change came. A big Northern company bought the coal rights for miles around, built a railroad up the hollow and opened some magnificent mines. The little valley became a beehive of industry. Where had been what was once termed a "farm," the thriving community of Lynch, containing several thousand people sprang up almost over night. And true to the traditional traits of the American pioneer a school house was one of the first buildings to be erected.

Those who planned this modern mining town among the Kentucky mountains possessed admirable foresight. Time, however—and only a short time at that, a span of years that can be more than counted on the fingers—has proved that they were not foresighted enough. Within two years the beautiful stone school building that was first erected proved inadequate to the demands made upon it and a larger, thoroughly modern high school was built beside it to relieve the pressure. This too has proved inadequate and already additional accommodations are needed. They will soon be provided.

Today, instead of the three R's as taught in the cave school less than a dozen years ago, the children of the mountains and the children of the hollow, the offspring of the miner and the offspring of the "sager" alike can obtain the advantages of a fair education by merely putting forth a reasonable effort. The curriculum of the high school now embraces all branches usually taught in such schools including higher mathematics and the classics.

Nor is instruction confined to such subjects or to strict "book learning." The school has its band of about 20 pieces, an orchestra of approximately 30 instruments and a good-sized glee club. It also has its gymnasium and its athletic contests. Both the girls' and boys' basketball teams are second to none within the state. Once a week as a rule during the winter, usually on Wednesday evenings, these teams meet rival organizations from other communities or visit other schools for a like purpose. On such occasions the teamwork exhibited is frequently excellent and—what is vastly more important—the sportsmanship displayed is clean, fair and admirable.

In its way also, the high school serves to educate the entire community. It is its civic center and the hub of its civic pride. It is the place where everyone in the hollow meets on a common footing, and where genuine democracy is inculcated. Thus during the course of, say, a hotly contested basketball game, when the teams are evenly matched and the tide of advantage ebbs and flows from side to side with dizzying and bewildering rapidity, when disaster is skillfully averted or a particularly difficult goal is "shot," it is not uncommon to see the wife of a miner and the wife of a high company official occupying adjacent seats in the "bleachers" spring to their feet simultaneously, and wave their fur coats frantically as they shriek encouragement or commendation to son or daughter of the home team on the floor below. Nor to the inexperienced eye is there any marked difference in the quality or intrinsic value of the garments waved or in the size or luster of the jewels adorning the hands that wave them.

There are those in our complex present-day civilization who habitually prate about the heartless avarice of soulless corporations and bemoan the practical servitude and dependence of the industrial worker. To such calamity howlers a contrast between the present high school in this obscure hollow and its cave school of a decade ago might prove enlightening. Certain it is that the coming of the railroad and the opening of the mines, in short the dawn of industrial development, marked the beginning of real prosperity and progress to all those who dwelt within its mountain confines.

The Need for Research in Coal Uses

DEFINITE STUDIES are being, and have been for years, undertaken to promote the conservation of coal by economies in combustion. As O. P. Hood, of the fuels division of the American Society of Mechanical Engineers, says: "The boiler room has become a laboratory for steam generation." With all the study to make boiler practice economical of coal, with the American Railway Fuel Association extending the work to locomotive boilers, what studies are the coal industry making to find new uses and opportunities for its product?

The manufacturers of any product who take it for granted that business will grow like a snowball with a definite increment for every unit of travel are liable to be sorely disenchanted. Coal is learning that an unstimulated business is prone to be a declining one.

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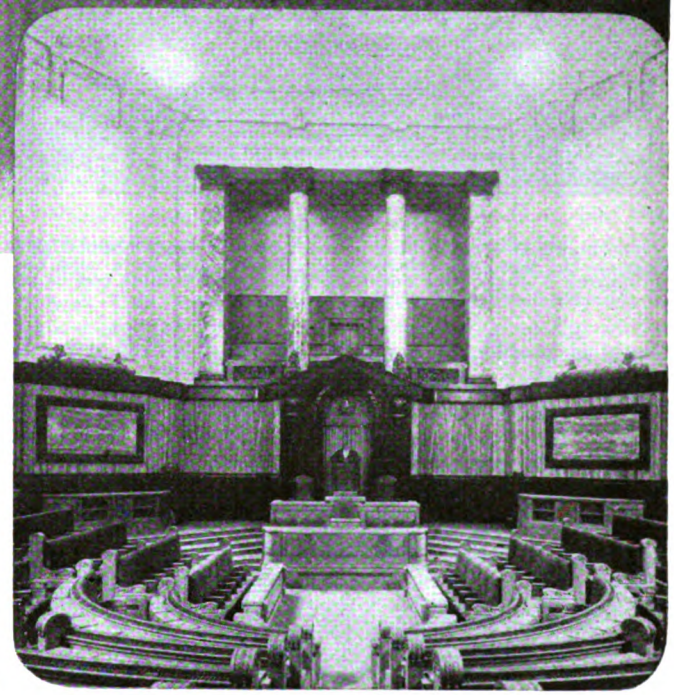

Refrigerated Air Is Cooling Buildings And Increasing Use Of Coal

By R. Dawson Hall
Engineering Editor

REFRIGERATED AIR is used not only in motion-picture theaters, as recorded in the article on "Cooling with Coal" in the issue of Jan. 14, but in many other places, cafés, restaurants, dance halls, amusement "palaces" and even in a hospital, all contributing their bit toward wider consumption of coal and a levelling upward of the summer sag in coal business. There are other places where it is used, but that I leave to a later issue.

It is quite likely that museums and picture galleries will adopt it. Museums are said to be proving the tombs for a number of world-famous pictures. In the *New York Evening Post* a correspondent from Paris writes: "Canvases by Raphael, da Vinci, Carolus Duran, Henner, Renoir, Monet, Degas, Sargent, Boldini and others, but ten years ago commending the admiration of every connoisseur, are almost unrecognizable. The reason is afforded by Albert Flament who says that 'in winter most Paris state art galleries register a temperature of 24 deg. F. and in summer the same state art galleries register 104 deg.'" Differences such as these are unknown in American art galleries because they are steam heated, nevertheless the range of temperature is doubtless larger than it should be between summer days and winter nights.

The headpiece shows the London County Council Hall and the main chamber which is cooled in summer by conditioned air from a plant in the basement.

American refrigerating and air-cleaning methods have already been applied to the atmosphere of London, England. A plant has been installed by the Carrier Engineering Corporation, of Newark, N. J., in a magnificent building known as the new London County Council Hall. The legislative and municipal bodies of England, as is well-known sit in long benches, not in separate seats and with desks. Such carven seats, or should we say "pews," are provided in the building mentioned. In front of the occupants of the pew is a ledge projecting from the stall in front. It is termed a desk—apparently by courtesy. Under the ledge is a box with a control lever which if thrown one way throws conditioned air toward the occupant and thrown the other way directs the air upward through the grille above the desk. At the end of the seat is a grille by which air is removed from the room and there are others beneath the seat. Each seat is independently controlled so that the occupant can have air to his liking.

Here, perhaps, something should be said as to the system of refrigeration at this plant which also is used in many buildings in this country, notably Madison Square Garden, reference to which will be made later.

This system uses the liquid refrigerant dichloro-ethylene, known commercially as dieline (di-e-line). The

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How It Operates

The occupant of each seat in the London County Council Hall controls the flow of conditioned air through the ducts near him by moving a small lever under the desk. Thermostats can be set to maintain continued control.

liquid is heavier than water and has a boiling point at atmospheric pressure of about 120 deg. F. It is thus a stable liquid at all normal air temperatures and pressures. Its vapor has approximately three times the weight of air and though it is flammable it burns only with relative difficulty. When spread it will burn forming a heavy vapor which blankets the surface of the liquid, thus shutting out air and extinguishing the flame.

This vapor, like carbon tetrachloride, extinguishes fire not by any active property of its own except by being non-flammable and shutting out air. There is, therefore, said to be no gas hazard, particularly as the vapor instead of being under pressure within the system is under vacuum. There is practically no loss of the liquid refrigerant. It passes through a continuous cycle of evaporation and condensation within vacuum-tight walls. Small quantities of the refrigerant may be drawn from the machine during the purging process preparatory to starting but this mainly is recovered in passing through rectifiers.

The water or brine in the refrigeration system is produced by the evaporation of the dieline under a vacuum, produced by a centrifugal compressor which is a simple multi-stage fan similar in construction to the usual type of rotary compressor or steam turbine. This compressor produces the vacuum necessary for the evaporative cooling that takes place in the evaporator.

The third part of the equipment is a simple condenser with which the vapor is discharged from the compressor at a pressure considerably below that of the atmosphere, but sufficiently high to be condensed by a counterflow of cooling water taken either from the city mains or recirculated through a cooling tower. The condensed refrigerant is then, of course, returned to the evaporator to begin the cycle anew.

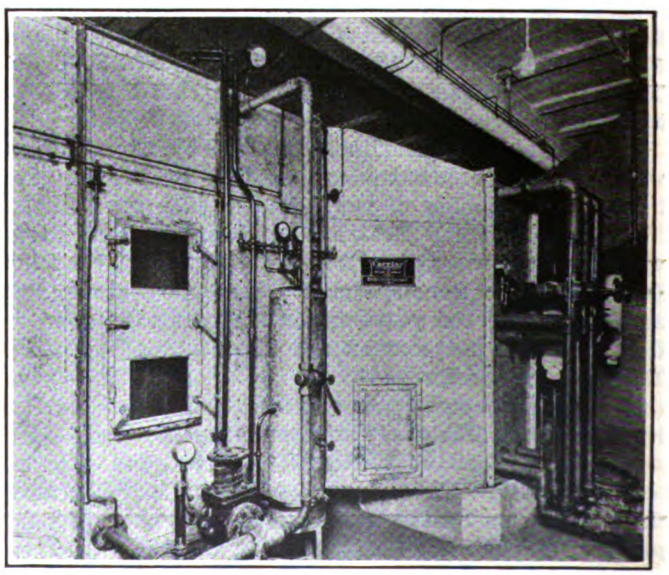
The innovations in the system are: That the entire cycle of evaporation, compression and condensation takes place at pressures considerably below those of the atmosphere, thus eliminating any possibility of outward leaks under operating conditions; that there are no valves or cylinders and the only contact parts are the main shaft bearings, and that the compressor has a direct motor or turbine drive operating under constant speed under all load conditions except such as constitute so extreme a range as to make this impracticable. It is claimed that this machine occupies about 25 per cent of the space required by other systems of the same capacity.

A growing use of refrigeration is found in the grills, dining rooms, cafes and like rooms of hotels. Mention was made in the article of Jan. 14, "Cooling with Coal," to the refrigeration cooling of the Pompeian, Gold and French Rooms in the Congress Hotel, Chicago, and to similar cooling at the Ritz-Carlton Hotel in New York. These are historic installations. Chicago has not been slow to develop such cooling, and already the Sherman, Windermere, Sovereign, Wellington Arms, Southmoor, Belmont, New Bismark, New Palmer (225 tons of refrigeration), Blackstone (100 tons) and Morrison all have cooled rooms.

CHICAGO IS MOST ACTIVE

Chicago leads in this activity as in theater, restaurant and dance-hall refrigeration. In fact that city is the leader in the "keep-cool-with-refrigeration" idea. Two of the most active companies for the installation of such equipment are there and three leading engineers for comfort refrigeration are there also, Dr. E. Leonard Hill and C. W. and George L. Rapp, the two last being architects. The following restaurants in Chicago have refrigeration-cooled air: North American, Twentieth Century, Alamo, Winter Garden and Planters. The Astor Hotel Grill in New York has cooling by refrigeration as also, as stated, the Ritz-Carlton. So also has the Italian Tea Garden at the Ambassador Hotel, but so far New York has been apparently unawake to what can be done to relieve the sweltering discomfort of the summer.

Ohio has no less than three hotels cooled by refrigeration machinery: the Miami, at Dayton; the Winton, in Cleveland, and the Deschler (75 tons) in Columbus. The Book-Cadillac at Detroit, Mich., also is thus cooled. The South also is moving along. A pioneer was the



It Cools London County Council Hall

This is a general view of the humidifier and air washer showing the reservoir and pipes for compressed air which is used in control of the system.

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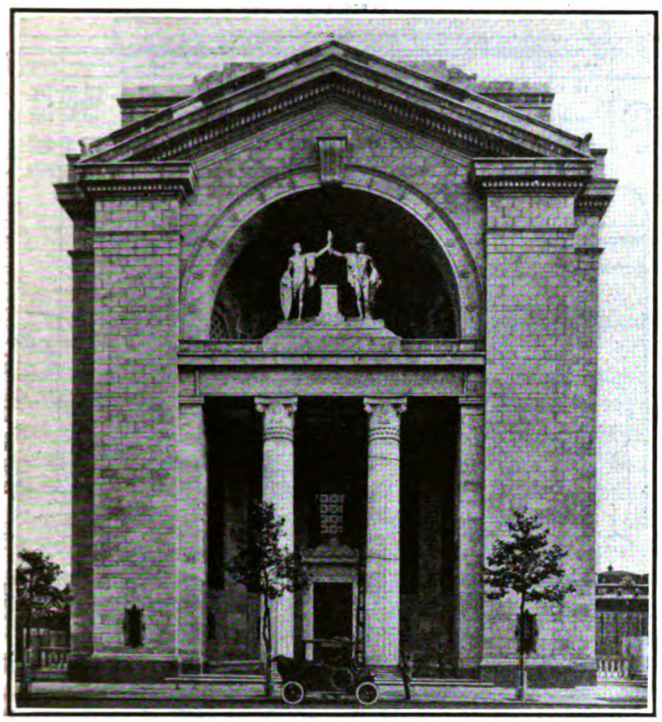


Summer Heat Cannot Enter Here

Bush House, London, whose noble facade is illustrated, is cooled in the hot months by iced water pumped through the heating pipe system. During a test in the offices, the room temperature was brought down from 84 to 72 deg.

Rice Hotel in Houston, Tex., and now the Muehlebach in Kansas City and the Mayflower in Washington, D. C., have joined the list.

Other places of public entertainment are being or have been equipped. At Madison Square Garden in New York City where at times when a prize fight is being staged, 23,000 persons can be seated, the hall is cooled with dichloro-ethylene refrigeration. Here are 3 units each of 267 hp. capacity or a total of 801 hp. Each unit has a 280-hp. turbine running condensing. The recirculating pump for each unit is of 40 hp. In addition to the big hall a skating rink is kept at 67 to 70 deg. with ice on the floor.

Cool Air for Dance Halls

Two dance halls have been built and provided with refrigerated air, one for Andrew Karzas in Chicago and one at Hammond, Ind. In the latter not only the dance hall but a billiard room and bowling alley are or will be cooled. The Karzas ball room has 225 tons of refrigeration, the horsepower of the two compressor motors installed is 300 and that of the recirculating pumps, 20.

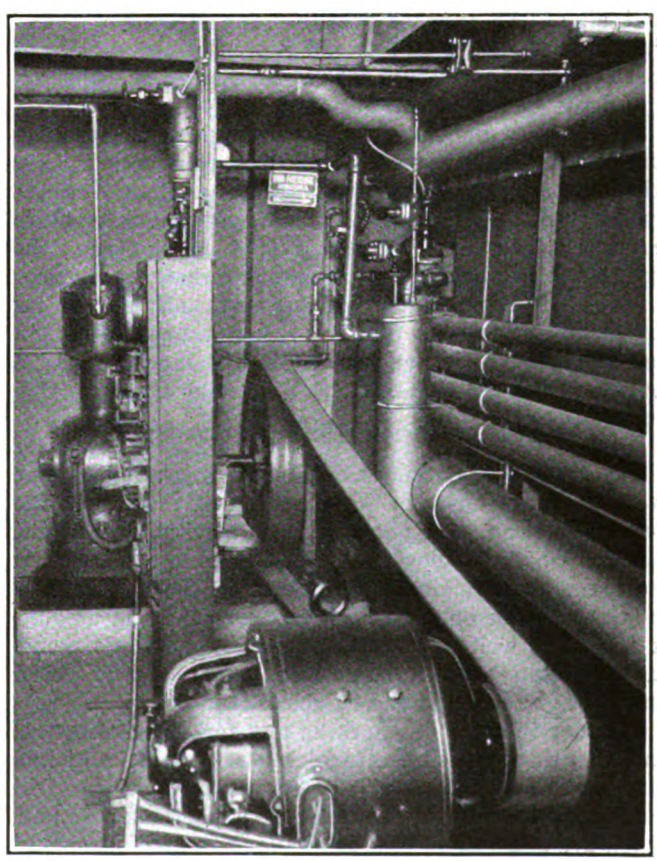
An interesting innovation is the refrigeration of the air supplied to J. L. Hudson's department store in Detroit. The store has three units of 200 tons each or 600 tons of refrigeration. The well-known pipe store of Alfred Dunhill of London, Inc., on Fifth Ave., New York City, keeps the temperature of the air in its cigar storeroom, which is ventilated separate from the store, at 66 to 70 deg. F. the year round, achieving this by a 2-ton installation of ammonia-refrigerating machines having thermostatic control. The air is cleaned and humidified and delivered to the storeroom at a humidity of 60 per cent. At temperatures around 68 deg. the larvae which assail fine tobaccos do not develop and air-conditioning consequently pays big dividends.

The following note from *The Engineer*, of London, England, issue of June 19, 1925, shows what is being attempted at Bush House, an American activity in London. This has not yet had a try out through a long hot summer to determine the comfort it affords:

"A novel form of reducing the high indoor temperatures, to which we have been subjected for the past fortnight, has just been tried in London, and has, we understand, proved very satisfactory. In the structure of Bush House, Aldwych, an elaborate system of piping was incorporated for heating purposes in cold weather, and it is now doing duty for cooling the rooms by the simple expedient of pumping cold water through the pipes.

"The success of the idea is however, due to the peculiar arrangement of the piping. Instead of using ordinary radiators, for heating the building, grids of ½-in. pipes are arranged in the walls just beneath the surface. Experiments were first made by circulating water from the city mains through the pipe grids, but it was not sufficiently cold to have any appreciable result. When, however, water from the artesian well belonging to the house was used, a considerable reduction in the temperature of the rooms was produced, as the well water is naturally cool.

"Finally some ice was put in the water tank, and the room temperature was brought down from 84 deg. to 72 deg. It would, of course, have been impracticable to seek this result with ordinary radiators, as their limited surface area would have necessitated the water being very cold to get the required transfer of heat, and freezing of moisture on the outside of the system would have caused inconvenience."



This Plant Cools Cigars

Two tons of refrigerating capacity is devoted here in the basement of the Alfred Dunhill store in New York, to maintenance of a stock room in which high-grade tobacco must not deteriorate during storage.

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This Bookkeeping Method Simplifies Accounts

By John C. McNeil, C. P. A.
Louisville, Ky.

THERE IS at least one good method by which coal companies operating several mines can detail the operating expenses at each mine, obtain the total of all expenses at each mine and a daily proof of all expenses charged to all mines in one operation, and control the expenses at all mines through one general ledger account.

This is accomplished through the use of bookkeeping machines. All invoices when received for entry in the accounts payable should be charged through the accounts payable accounting system to the general ledger account, cost of mining. After all invoices have been posted in the general accounts, those affecting the cost of mining are removed from the other invoices for posting to the cost accounts.

Three forms illustrate this system. They are: (1) the Sub Account, (2) the General Account and (3) the Invoice Register covering all invoices posted.

The invoice register is placed in the machine and through an arrangement, a permanently attached sheet of carbon passes over this sheet to and including the balance account and all entries made on the other two sheets are made on this automatically.

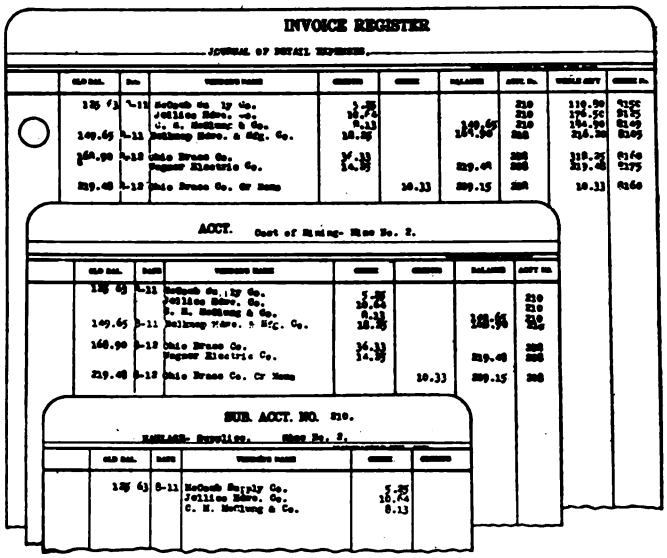
The expense classifications should divide the detail expenses—both labor and materials—into 100 accounts for each mine (although it is not necessary to use all of the numbers) and number the mine general accounts in even hundreds. Thus, Account No. 100 would represent all of the expense accounts for Mine No. 1 and the accounts 101 to 199 would represent the details of these expenses. Account 200 would represent Mine No. 2 and the details for this account.

As invoices go through the various mine superintendents, it is, of course, understood that each invoice will be chargeable to one mine only and that a single invoice will not, except upon rare occasions, contain charges against two mines. This being true, the invoices should be assorted as among mines, the invoices for No. 1 being put in one arrangement and the invoices for No. 2 in another. The Mine Account, which is the general account, is next placed in the machine and a carbon runs over this form to the credit account.

Preparing the Detail Account

The particular detail account that is covered by one or more items shown in the expense distribution on the invoice is taken and placed in the machine. The old balance, which is shown in the Old Balance column on the main account sheet, is written in the similar Old Balance column on the detail account, and the amount of the debit written, together with the vendor's name, on the detail account, and the number of the detail account is written on the ledger account.

In order to assist in checking and for other reference purposes the total of the invoice is also written on the Invoice Register in the whole amount column. All charges from invoices in favor of a particular vendor which are chargeable to a particular sub-account should be written on the Sub Account and after these are entered, the balance shown in the cross computing mechanism of the machine is written in the Balance column on the ledger.



These Forms Simplify the Job

They are the principal ones used in the method explained in this article by which easy control can be kept at one office over the accounts of a group of mines.

This procedure is run through the entire posting of the accounts and when all the invoices have been posted, the vertical totalizers of the machine will show a total of all old balances picked up, a total of debits posted, and a total of credits posted, as well as a total of the new balances. As a proof of accuracy of the posting it is understood, of course, that the total of old balances picked up plus the total of debits posted less the total of credits posted will be in agreement with the total of new balances. Credit postings in these accounts will represent credit memoranda and other deductions from expenses previously posted.

After the day's work has been posted, the total debits shown on the Invoice Register will be in exact agreement with the total charges to Costs of Mining obtained from the accounts payable distribution.

No Month-End Jam

By handling the distribution of detail expenses in this manner it is not necessary to carry an account with each mine in the general ledger, it also does away with pen-kept cost ledgers for each mine and facilitates the preparation of the various analytical statements which help the management in controlling expenses. As the three records are made in one operation and are proven daily with liabilities put on the books, there is no peak load at the end of the month.

By this system one operator in a day can handle an average of over a thousand postings including proving and balancing the accounts. Few coal companies exist that have 25,000 entries to their cost accounts each month and those that do have this volume of work are not detailing with a single operator their cost accounts and proving them with their actual payments or accounts payable credits. For the average coal company with two or three mines, about an hour per day would be required by an operator using this system.

IN CO-OPERATION with the Public Health Service, the U. S. Bureau of Mines is conducting a health survey at coal mines in different states, with the view of determining possible ill effects of breathing air carrying fine particles of coal dust, and the healthfulness of the conditions to which the miner in the average coal mine is exposed.

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Conveyors Work Well in Thin-Seam Mines

Survey in Many Mining Fields Reveals Some Progress at Spring Valley, Ill., Henryetta, Okla., and Straven, Ala.—Lump Proportion Raised

By J. J. Rutledge
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SOME DISTINCT advances in methods of mining thin seam coal in various parts of the country have been achieved, especially by the use of conveyors underground. This fact was apparent after a study had been made, in company with a number of prominent coal mine officials, during a recent tour of operations in Illinois, Oklahoma, Arkansas and Alabama. The outstanding conveyor installations observed were those at the Spring Valley Coal Co. in the northern Illinois longwall field; the Crowe Coal Co., at Henryetta, Okla.; the Peerless Cahaba Coal Co. and the Montevallo-Straven Coal Co. at Straven, Ala; the Paris Purity Coal Co. at Paris, Ark., and the Montevallo Mining Co. at Aldrich, Ala. Developments at the first three will be covered in this article. The others have been described previously.

Several of the experiments involve the use of radically new methods of working and equipment, and reflect credit on the mine management and the engineering force. It is believed that this paper records a distinct advance in the methods of mining thin coal seams efficiently and economically. The methods described are being carried out in strongly organized coal fields as well as in fields where there is no organization; in thin seams lying horizontal and in steeply pitching seams; in mines where no inflammable gas is found and in closed-light mines.

Mine No. 1 of the Spring Valley Coal Co. at Spring Valley, Ill., in which the "I. G. P." hutch conveyor was used for a period is a longwall operation and is characteristic of the northern Illinois longwall coal field. L. H. Smith is general manager of the company and I. G. Pospyhala the engineer.

The seam averages 3½ ft. in thickness and lies practically horizontal under about 400 ft. of cover which is composed of shales and thin sandstones. No strong heavy strata are in the cover. The coal has no persistent bands of parting. The immediate roof is of soft, gray shale. These mines have been worked longwall advancing, Scotch system, for many years. Where the new method of mining was tried the cover is 450 ft. thick. Formerly all mining in this field was by hand, but during recent years machine mining has been introduced. The "back-breaks" in machine mining seem to be nearly vertical while in hand mining the line of break leans back on the gob. The greatest trouble with the new system seemed to be that the breaks were vertical rather than inclined backward on the gob, probably due to more rapid advance and uneven distribution of roof pressure. This results in premature breaks which close the face at times.

The method of working was panel longwall advancing with faces of a total length of 400 ft., 200 ft. on each side of the roadway. The cutting was done in the lowest portion of the coal seam by a longwall mining machine. Pack walls, 20 ft. wide, were built on each side of the haulageway. The panel longwall faces produced 240 net tons of coal daily with the following labor: 12 loaders, 3 machine men and 4 men shooting the coal, building cogs and timbering, 1 man operating hoist, and 1 man switching mine cars.

Two rows of cogs or cribs were used along the face. A room hoist moved the conveyor. This hoist was placed over the roadway, the bottom of the roadway being cut to a depth of 4 ft. to permit loading from conveyor into the mine cars. The conveyor ran on a face track of 19-in. gage. Props were placed on both sides of the face track. A "strap," or split-bar, was set over the conveyor, the outer end of which is supported by a prop and the other end hitched into the coal face. Four men did the timbering and built the cogs. It required 14 hr. for 3 men to cut 400 ft. of panel longwall face, or 42 man-hours.

The conveyor is made in 6-ft. sections. The track is in 8-ft. sections and is of 16-lb. steel though 12-lb. can be used. The gage of the track is 19 in. The splice bars are bolted to one end of each rail by a single bolt. The other rail, on the adjoining section,

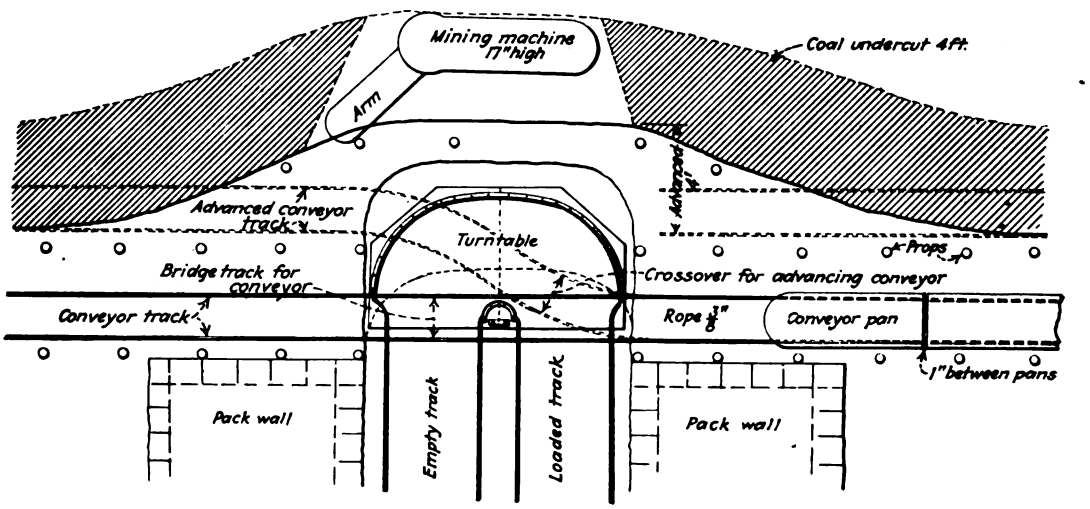

FIG. 1

How Hutches Operate

Plan of track and machine layout at the loading point showing how the undercutting machine proceeds ahead of the conveyor and load track, cutting one-half of the 400-ft. face while the other half is loading out.

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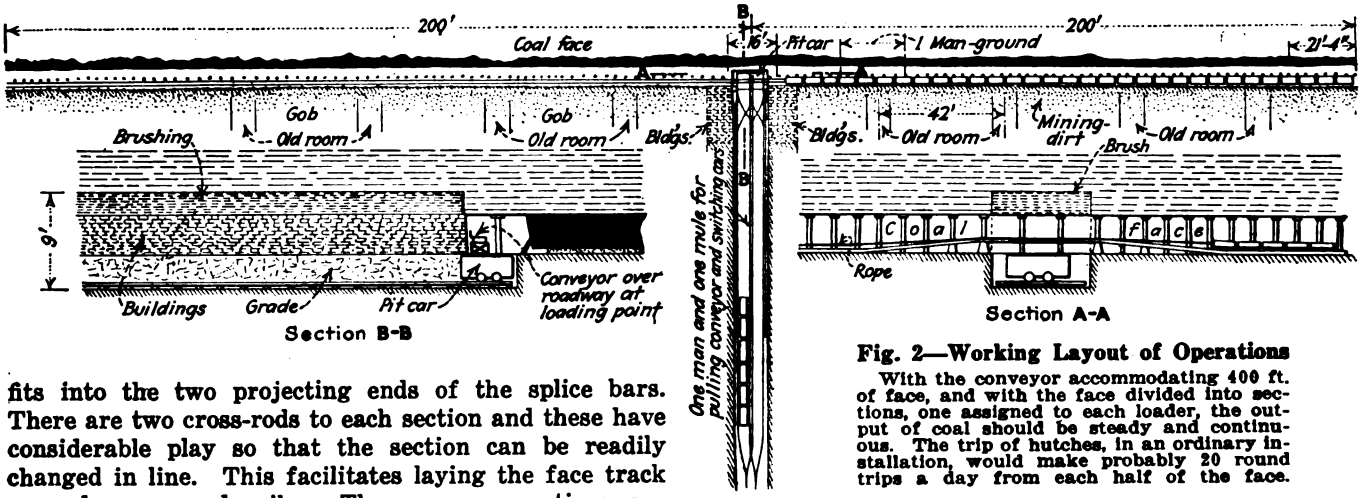


Fig. 2—Working Layout of Operations

With the conveyor accommodating 400 ft. of face, and with the face divided into sections, one assigned to each loader, the output of coal should be steady and continuous. The trip of hutches, in an ordinary installation, would make probably 20 round trips a day from each half of the face.

fits into the two projecting ends of the splice bars. There are two cross-rods to each section and these have considerable play so that the section can be readily changed in line. This facilitates laying the face track around props and cribs. The conveyor sections are supported on roller-bearing wheels, 3 in. in diameter. A washer is between the wheel and the angle-iron. The conveyor section is 6¾ in. above the floor of the mine.

It is the practice to drill holes into the coal face, after it has been undercut, at distances of from 10 to 12 ft. and to explode small charges of permissible explosives in these holes. These small charges do not shatter the coal, which is of extremely hard character, but merely afford points of attack for the miner, who makes a shearing to a depth of 1½ ft. at the points where the shots are fired and then loads out the coal thus loosened. This shearing requires considerable time and delays the work of loading out the face.

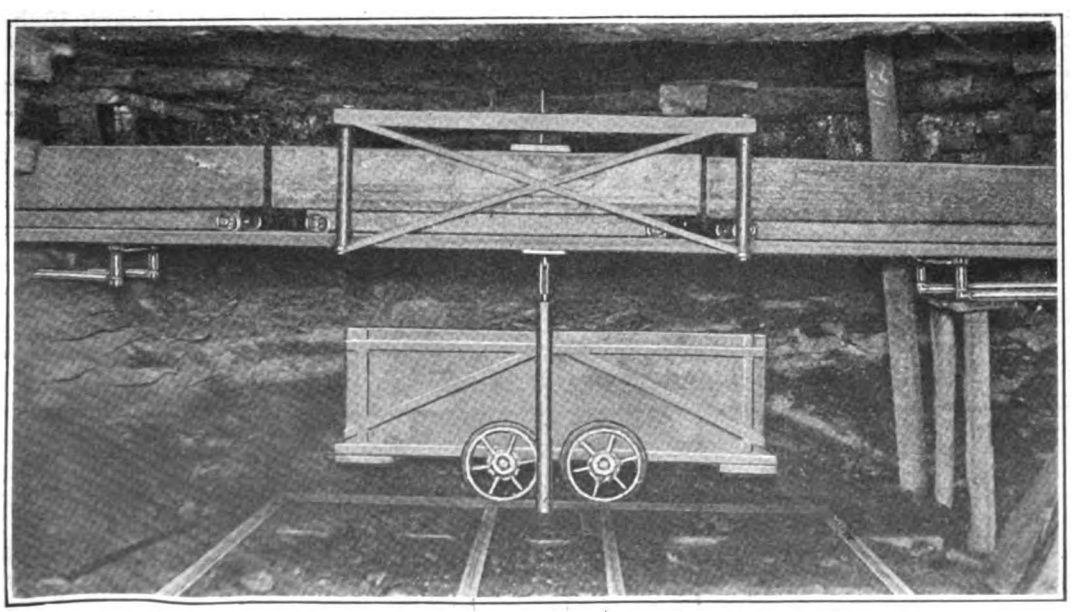
The panel longwall face had been practically closed by a premature break several days previous to the visit of the party to the mine, and, therefore, only a portion of the conveyor was in operation at the time of the visit. The lost portion of the face, which included the mining machine, was being recovered and apparently the damage to the machinery was not great. Several days work should have reopened the face.

The practice followed at the mine in loading out the coal face after it had been undercut and blasted could be greatly improved by so arranging drill holes that the entire coal face would be broken up, though the coal would not be shattered. By choosing a proper permissible explosive and judiciously alternating the drill holes in the face, the coal could be so loosened as to be easily loaded. As it is the loader must shear into the face for a distance of several feet, at the places where the coal face has been blasted, so as to give a loose end from which the coal can be readily loaded. This shearing requires several hours and while the miner is doing the shearing he is loading no coal and, therefore, his portion of the conveyor is empty and idle.

The face should be so broken up by blasting that it can be readily loaded into the conveyor without the necessity of the shearing. There is a decided prejudice against blasting coal in this longwall region, where such practice has never been customary, the weight bringing down the coal with little or no use of explosive, after the face had been undercut. Since the method is radically different from the old practice, it will necessitate material changes in methods of working.

By means of the room hoist located above the road-head, the pans or hutches which are attached to ⅝-in. wire ropes passing over the drum on the hoist are alternately drawn along the face track, first along the panel longwall face on one side of the road head, and then along the other. After the loaders have filled the pans, they are drawn in a trip to the road head, where the plow scrapes the coal from the hutches and causes it to drop into the mine cars below.

The empty trip of hutches is useful in transporting timber, rock, supplies, etc. along the working face.



Heart of the System

Here the hutch conveyor delivers its coal into a car waiting on a turntable below a plow which scrapes the load from the trip of hutches or flat sheets on wheels. The conveyor parallels the face and advances with it. The depressed double track is extended correspondingly so that the turntable is always kept under the plow. The mine cars approach on one track, reaching the turntable where they are loaded, and revolved so as to be hauled away on the other track.

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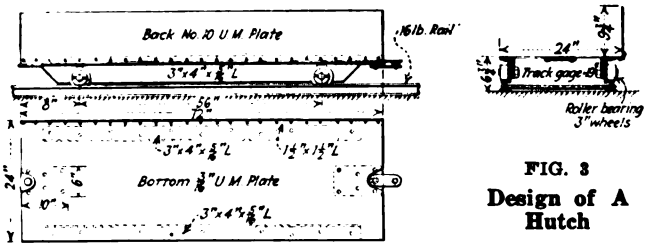


FIG. 3
Design of A Hutch

It can be passed from one side of the road head to the other by a movable elevated track, passing in front of the hoist. The track is flexible and can be bent around props or cribs which cannot be moved on account of the roof weight.

In the event of one face being troubled by the roof working the hutches can be pulled to the other side, out of danger.

An interesting conveyor for thin coal has been developed by the Crowe Coal Co. at one of its Henryetta (Okla.) mines. The mine officials are E. F. Woodson, general superintendent; J. S. Cameron, mining engineer, and Justus Croyles, mine foreman. They have perfected a type of machine similar to that used in Arkansas by the Paris Purity Coal Co. and which was described in the March 5, 1925, issue of *Coal Age*.

The coal mined is the Henryetta seam, averaging 3-ft. thick with several small binders. The usual method of working has been pillar-and-room, entry and air course. Rooms are turned at 60-ft. centers and are driven at a width of 42 ft. with a room roadway on each side of the room. Room pillars are from 15 to 18 ft. thick. Few pillars have been pulled and the recovery is estimated to be 60 per cent under ordinary room-and-pillar method of mining, using machines, without extraction of pillars.

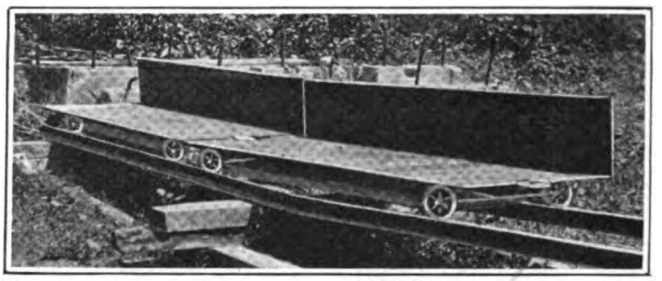
A panel longwall system has been adopted for the use of the conveyor so that recovery could be increased. The conveyor, using two parallel chains with angle scrapers between, was manufactured by the United Iron Works, Kansas City, Mo. The cost together with an extra tail piece and a 15-hp. a.c. motor and drum control, was $3,800.

One man can move the conveyor in 4 hr. It is built in 10-ft. sections weighing 354 lb. per section without chain. It has a total length of 300 ft. including the tail and motor sections. An "oil field jack" is used for moving it and has proved fairly efficient in this work.

Previous to beginning the longwall experiment, four rooms were driven up to the usual limit and the room pillars pulled. Then taking the inby rib of the last room as the face, the experiment of panel longwall mining advancing was begun. When visited the mine was working a face 225 ft. long. The coal was undercut by a short-wall mining machine, having a 6-ft. cutter-bar.

Cover is 275 ft. thick and is composed of sandy shales and thin beds of sandstones with no thick or strong strata. The present work has advanced the new face 100 ft. or a total of 225 ft. counting the four 45-ft. rooms on 60-ft. centers. Mr. Woodson said he estimated that he had recovered a total of 6,000 net tons of coal from the area 225x225 ft.

Props are 8x8-in. oak and set in rows of four about 4 in. apart and in a line at right angles to the face. There is a row of such props every 4 ft. It is the practice to draw the fourth prop, or the one nearest the gob first, using an 8-lb. hammer.



Two of the Hutches Outdoors

This pair of 6-ft. steel sheets with their 9½-in. back plates illustrate the type of units which, coupled into 16- or 32-hutch trips, comprise a continuous, flexible conveyor to shuttle back and forth along a coal face, serving hand loaders.

In previous pillar-and-room mining, using machines for undercutting the coal, the yield was of the following proportions: Lump, 40 per cent; nut, 20 per cent; slack, 40 per cent. It is expected that the yield under the panel long-wall method will be: Lump, 80 per cent; nut, 12 per cent; slack, 8 per cent.

The coal that we saw loaded by the conveyor was in exceedingly large lumps. The roof weight had been well controlled and only a few lines of fracture in the roof slate were noted crossing the face. Only one crib was observed which had been built recently to maintain the morale of the working force. Props had been used almost exclusively. A narrow place had been driven in the solid coal in advance of the panel longwall face, to afford a way of escape for the men in the event of the face suddenly closing.

A roof break observed was leaning back on the gob at about 60 per cent with the horizontal. The nearest row of props to the face was 12 ft. away and no props were between the conveyor and the face, which was being loaded out at the time of the visit to the mine. A second excellent break had been realized and the angle of break leaned back on the gob at about an angle of 45 per cent with the horizontal. There was a break in the roof, or what seemed to be an impending roof fracture running over the roadway and parallel thereto, where it had been brushed to permit the loading of coal into the mine cars from the conveyor, but this looked more like a weathering of the roof than a crack or line of fracture due to roof pressure.

The Peerless Cahaba Coal Co. in its Peerless mine at Straven, Ala., presented probably the best example of roof control over a conveyor that we saw. A. Sicard is president of the company and F. E. Dunlap general superintendent.

This mine is located on the Southern Ry., in the lower portion of the Cahaba coal field, at a point where the seams pitch heavily. The method of mining previously followed was pillar-and-room, with the rooms driven directly up the pitch. The coal is in the Helena seam, the output of which usually is of excellent quality

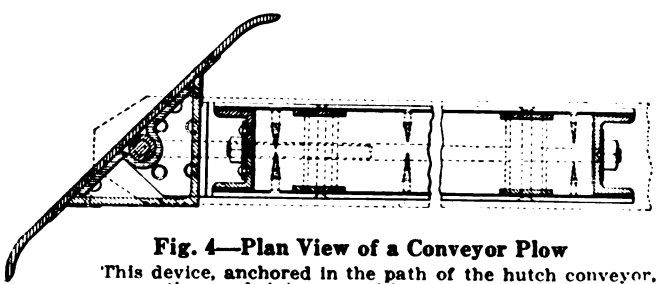


Fig. 4—Plan View of a Conveyor Plow

This device, anchored in the path of the hutch conveyor, scrapes the coal into a waiting car on the turntable directly below.

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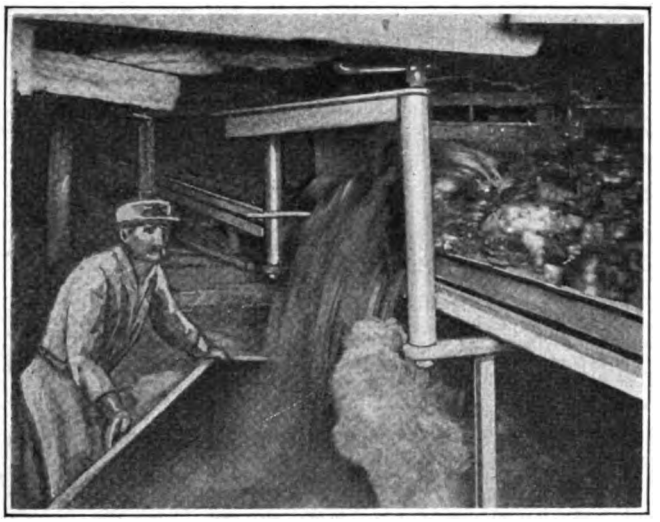

Unloading a Hutch Conveyor

The plow is held rigidly in position over the depressed mine track. The load of coal from each trip is scraped into the mine car. The conveyor is drawn by a car hoist in the haulageway.

and is sold for domestic use. At this point it is about 5 ft. thick of the following section:

Hard shale, dark colored	
Draw rock	3 in.
Clean coal	2 ft. 2 in.
Middle man	3 in.
Clean coal	1 ft. 8 in.
Middle man	5 in.
Hard bottom coal, clean	10 in.
Bottom, hard shale	

At the outcrop the dip begins at about 35 deg. but down in the present workings—over 1,800 ft.—it pitches about 15 deg. The coal is hard in character and is difficult to mine but when undercut makes excellent lump.

The problem confronting the company was to perfect a safe method of working which would yield the tonnage desired at the minimum cost of production, with the maximum proportion of domestic lump. The usual plan in this field, where the overburden is from 500 to 700-ft. thick, is to leave about 50 per cent of the coal in pillars. Therefore, it was decided to mine out the first 50 per cent in solid blocks, such blocks constituting working faces, with one face on each entry. The remaining 50 per cent would be left as solid blocks which could be mined on the retreat, all the other work being done on the advance. Solid coal is between the second and third entries as well as the fourth and fifth entries. The "walls" or "panels" are thus bounded by the sixth and fifth headings, fourth and third headings, and second and first headings, giving six walls or panels which are referred to as "sixths," "fourths," and "seconds" because the coal passes down hill from the walls to these headings. The solid pillars of coal are left between the "seconds" and the "thirds" and "fourths" and "fifths" headings. The coal in these pillars will be brought back retreating through the "thirds" and "fifths" haulageways.

The main top overburden in this mine is massive sandstone with interstratified shale and sand, varying from nothing to 6 ft. between this sandstone and the coal seam.

In all of the walls the top stands perfectly for longwall work. The practice of shooting out the props has been discontinued but three rows of extra heavy breaker props are still set at 60-ft. intervals to break the roof and to permit the roof pressure to cushion down behind the row of breaker props and to break at will. This practice, it has been found, keeps the breaking of the roof farther back from the working face and this results in less delay in the work at the coal face. The breaks in the roof are made on an average of every 60 ft.

The present method of working is true panel longwall. A 200-ft. face is driven away from the slope on the strike line of the seam. The active area may be likened to a room 200 ft. wide, driven directly away from and at right angles to the slope and in the line of strike toward the boundary of the lease which is a mile on either side of the slope. Below this panel longwall face, or room as it may be called, is the haulage entry, separated from the wall by a chain pillar. Below this haulageway is an unbroken pillar of coal 200 ft. thick, which it is planned to pierce at intervals of from 1,500 to 2,000 ft. with a passageway, 10 ft. wide, to shorten the travel of the air currents. This passageway will also shorten power transmission lines and afford escapeways.

Above each panel face is yet another entry, separated from the first face by a chain pillar which provides a direct return for the air current and also is useful in lowering timbers and supplies along the longwall face. This entry will be used to retreat with the 200-ft. solid block of coal left above it.

This company has developed and is advancing six of these faces. The two top faces are the steepest and

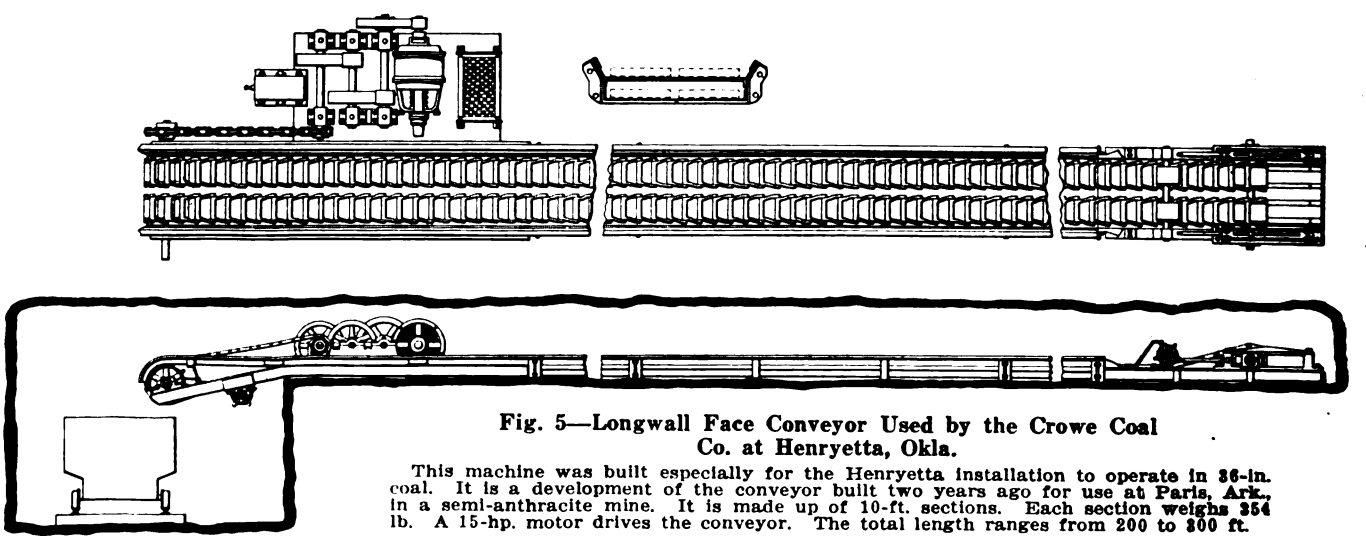

Fig. 5—Longwall Face Conveyor Used by the Crowe Coal Co. at Henryetta, Okla.

This machine was built especially for the Henryetta installation to operate in 36-in. coal. It is a development of the conveyor built two years ago for use at Paris, Ark., in a semi-anthracite mine. It is made up of 10-ft. sections. Each section weighs 354 lb. A 15-hp. motor drives the conveyor. The total length ranges from 200 to 300 ft.

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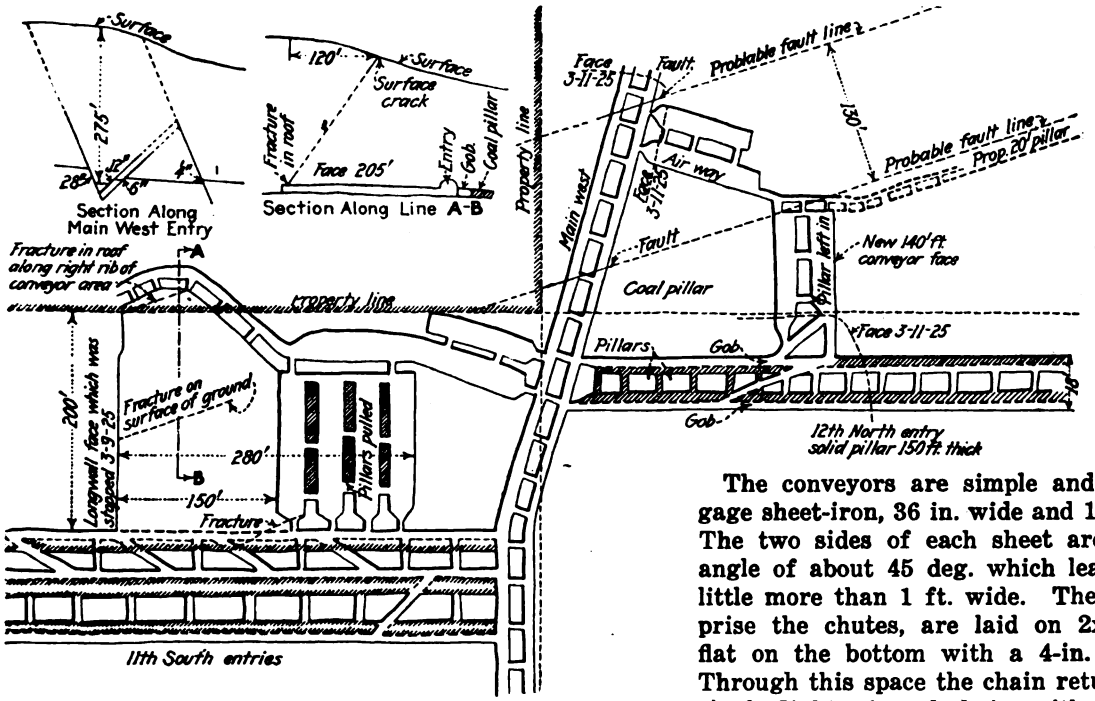

FIG. 6

Conveyor Did Well Here

This layout in one of the Henryetta mines of the Crowe Coal Co. shows how the conveyor enabled the company to shift over from room-and-pillar to longwall mining. In consequence, the proportion of lump rose from 40 to 80 per cent. Recovery in the district averages 60 per cent. This mine will far exceed that average.

have been advanced 1,200 or 1,300 ft. without trouble. The other panel longwall faces have been driven about 800, 700, 500 and 400 ft., respectively. The work is progressing steadily.

In order to protect the entries and make ventilation positive, three of the steepest faces, which pitch 25, 30 and 40 deg., are driven with the chain pillar above and below the panel faces. As these three faces are so steep no conveyors are needed and the coal slides by gravity down the sheet iron chutes which are kept full of coal to prevent breakage. When the pitch becomes as great as 40 deg. the coal slides freely on the hard, smooth bottom. At the bottom of each face the chute is deflected as the face advances to permit the coal to pass through the last open upset to the haulageway below.

On the other three walls where the pitch is only 15 to 20 deg., the bottom chain pillars are taken out to permit the operation of longwall conveyors along the panel faces directly down the pitch of the coal seam to the mine cars. In all entries, 2 to 3 ft. of bottom is taken up in the haulageways in order to bring the tops of the mine cars down to about the level of the bottom of the seam. This allows an easy discharge of the coal from the conveyor to the cars. One hundred 3-ton automatic drop-bottom mine cars are used.

MACHINES CUT UP THE PITCH

In the three lowest faces the cutting machines, which work in the lowest portion of the seam, make an arc cut starting at the bottom on the entry, and in all cases, cut directly up the pitch. By making these rounded cuts, the entry is kept ahead of the panel faces a sufficient distance to maintain space for an empty mine car supply for the conveyor. All the coal is cut without moving the machines in the haulageways from one entry to another—a process which is always hazardous on steep pitching seams. The company has had no difficulty in cutting up the steepest face where the dip was about 40 deg. In one place the machine was observed to be successfully cutting up a pitch of 55 deg. Usually the 200-ft. faces can be cut in from 3 to 6 hr.

The conveyors are simple and home-made. No. 11 gage sheet-iron, 36 in. wide and 10 ft. long is employed. The two sides of each sheet are bent upward on an angle of about 45 deg. which leaves the flat bottom a little more than 1 ft. wide. These sheets, which comprise the chutes, are laid on 2x4-in. timbers, placed flat on the bottom with a 4-in. space between them. Through this space the chain returns. No. 78 Reliance single-flight, riveted chain, without any special flights, is used. As the pitch is almost great enough for the coal to slide by gravity, only a small motor is necessary to supply power to move the chain. A 5-hp. motor, connected to a 5-hp. speed reducer, with a reduction of 28 to 1 for a 1,200-r.p.m. motor and 50 to 1 reduction with an 1,800-r.p.m. motor serves the purpose.

This provides a light, flexible drive which does not require any more attention than the motor proper. The conveyor drive sprocket is on the speed reducer shaft; the bottom conveyor pan fits down tightly over the top of the frame of the speed reducer. It has not been found necessary to anchor this conveyor at any point except at the bottom.

It was some time after the first break in the roof was made before the company learned how frequently the breaks should be made. After trying light and heavy swings of the roof, it has been found advisable to make the roof breaks every 60 to 75 ft. In general, the roof condition is good if advancement is rapid and uniform. A few rooms were driven upward from the two first entries, under the belief that they were too steep for panel longwall work. But in these few rooms, which were 30 ft. wide, it was difficult to hold the roof up until the rooms were driven their full distance.

Notwithstanding this experience, it was found possible to advance a panel longwall face until a 200-ft. square area was mined out with about the same relative quantity of timber. As a consequence these rise rooms have been discontinued and are now included within the two top longwall panels. It is planned to advance the combined area of the 350-ft. panel longwall face to the boundary of the lease, leaving a 400-ft. solid pillar between the top of the body of coal and the outcrop of the seam. The advantages of this method over the old rise room and pillar method are: First, there is a concentration of working places; second, the haulage is simplified; third, the cutting is continuous; fourth, the ventilation is positive and travels the minimum distance.

The Peerless Cahaba Co. reports that the greatest advantage of the present method is the larger size and better quality of coal produced.

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Union Pacific Coal Co.'s Code of Standards—VII*

Track Standards, Ties (Continued)

8. In no case shall ties extend less than 8 in. beyond the outside flange of rail.

Note—The ideal mine tie length is 1.8 times the distance between rail centers.

9. All ties should have two parallel faces, the minimum width of which should be not less than 4 in. and in no case should slope and main haulage-road ties be less than 6 in. thick. Room ties should be not less than 5 in. thick.

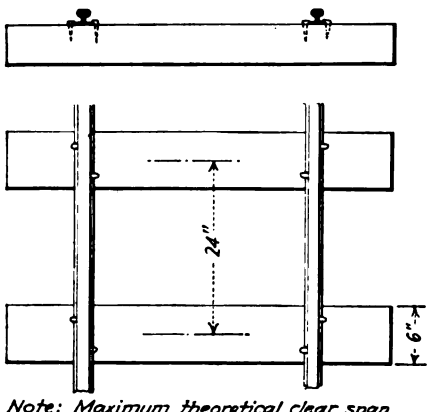
Rails and Spikes

1. All tracks must be laid with broken joints; that is, the joints in one line of rails should be as nearly opposite the centers of the rails in the opposite line as practicable.

2. No rail less than 10 ft. in length will be permitted on any main haulage road.

3. The practice of placing spikes where miners can help themselves must be discontinued. Spikes should be issued by the foreman and assistants as needed.

4. Spikes should be staggered; that is, those on the outside of the rail should be to one side of the tie and



Note: Maximum theoretical clear span allowable with 40-lb. steel and a 10-ton locomotive is 42"

Fig. 31—Haulageway Construction Cuts Costs

Spikes are staggered so as to obviate the possibility of splitting the ties and causing the rails to become loose.

those on the inside of the rail to the opposite side of the tie. (See Fig. 31.)

5. Each foreman and assistant foreman is to provide himself with and carry a clinometer rule.

6. On straight runs of track the gage shall be held at right angles to the track and the rail held tight against the gage and spiked. Any allowance given for clearance shall be made on the gage length.

7. Superelevation of rails on curves will be given by the engineer at the property, as the gage of track, velocity of trip, and radius of curvature are determining factors entering into the calculation of each individual case.

8. For increase of track gage on curves allow not more than ½ in., which is about the maximum for various wheel bases, wheel treads, curve radii, etc.

9. Each trackman's gage for each property shall be of a standard length, viz., even gage, leaving nothing to the guess or allowance of the workman.

10. Spikes in abandoned, worthless ties must be reclaimed by burning.

11. A record of all derailments shall be kept by the mine foreman giving date, cause and location. Drivers and motormen must give their reports of such happenings to the mine foreman daily.

12. Rails shall be of three weights only, viz., 20-, 40- and 60-lb., of A. S. C. E. section.

Sixty-pound rails will be used on main slopes, 40-lb. on panel slopes and motor haulageways, and 20-lb. rails in rooms.

13. The size of spikes for the various weights of rail shall be as follows:

20-lb. rail, 4 x ⅝ in. (1,000 per 200-lb. keg). (These only should be given to miners.) 40-lb. rail, 5 x ¾ in. (450 per 200-lb. keg). 60-lb. rail, 5½ x ⅞ in. (375 per 200-lb. keg).

Curves and Turnouts

1. Lines for all turnouts off main slopes and partings, together with frog and switch locations, will be given by the chief engineer or his assistants, and no such turnout shall be placed without his preliminary layout.

2. All curves on rope haulageways shall be placed in accordance with Figs. 32, 33 and 34, and the engineer must give the lines and plans for this work.

3. The mine foreman must see that all work conforms to plans and lines as given.

4. All curves and turnouts are to be laid with proper reference to clearance at points where switching is done.

Note—Do not spoil a good track layout by making the track conform to the rib. Make the rib conform to the track.

Fishplates, Angle Bars and Rail Braces

1. All rails of any weight shall be laid with joint fastenings.

2. Twenty- and 40-lb. steel shall be fishplated; 60-lb. steel shall be joined by splice (angle) bars.

3. All joint fastenings must be applied with their full complement of bolts, nuts and cut washers screwed up and kept tight.

4. Rail braces should be applied to all curves where the gage is maintained with difficulty.

5. Where rail braces are used they should be applied to both rails.

Frogs and Switches

1. A No. 2 cast frog conforming to Fig. 35 shall be used on all new room switches of 20-lb. rail.

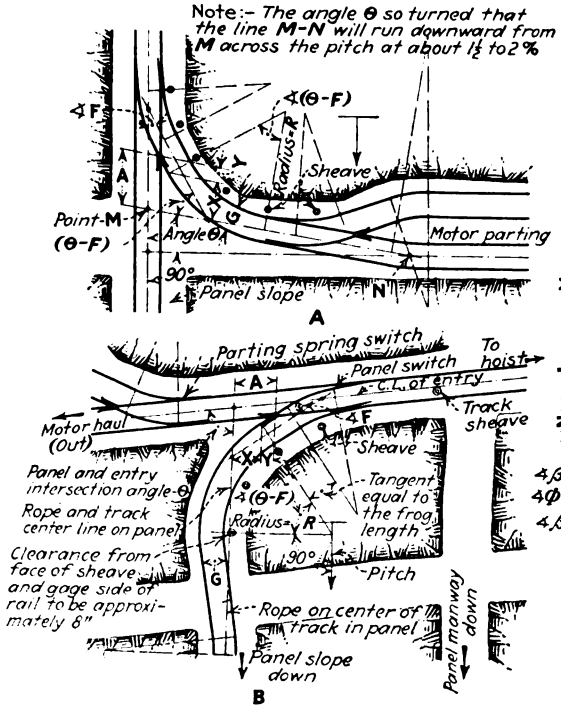
2. Frogs Nos. 3, 4 and 6 are to be built up and must conform to Figs. 36-40.

3. No. 6 frogs will be of 60-lb. steel only and will be used only in turnouts off the main slope.

4. Turnouts of standard material shall conform to the standard turnout drawings.

5. Turnouts within the mine must be placed to conform to the ribs of the curve and not to the nearest rail joint.

6. In the future, when the laying of a turnout with material that is not standard is contemplated, the engineer of the property will take the frog and switch dimensions from the material on the ground and compute the turnout data.



Figs. 32, 33 and 34 Curves and Turnouts

Lines for turnouts and partings are given by the chief engineer before construction work is started. Curves on rope haulageways are laid in accordance with the accompanying illustrations. Proper dimensions are to be substituted for letters here shown.

*This is the concluding article of a series giving the Code of Standards put into effect by the Union Pacific Coal Co., at its operations in Wyoming. The preceding articles appeared in the issues of Dec. 17, 24, 31, Jan. 7, 14 and 28.

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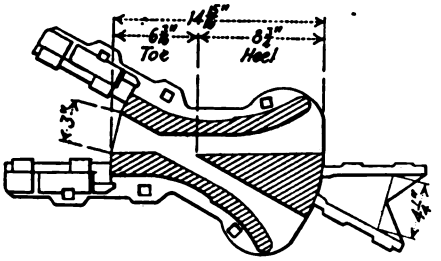

Fig. 35—Standardizing Frogs

This is a sketch of the type of cast-iron frog to be used on all new room switches using 20-lb. rails.

7. Do not fail to provide the proper clearance around switch throws.

Mine Rescue Apparatus and Training

1. The mine rescue apparatus for the Rock Springs field will be concentrated at Rock Springs.

2. No crew will be allowed to enter the rescue building and take, use or handle any apparatus unless the person having charge of this apparatus is at hand.

3. No rescue crew will be allowed to enter any mine to do actual rescue work unless a reserve crew is on hand with machines and equipment to lend assistance if necessary.

4. All apparatus is to be thoroughly inspected not less than twice each month, and each machine or piece of apparatus is to be tested, examined and a tag attached thereto giving date of examination and stating the condition of that particular machine or piece of equipment.

Note—Any recent repairs made, such as new breathing bag, tubes, etc., must be noted on the attached tag in order that the person wearing the apparatus may be on the alert for loose gaskets or connections in the new parts when the machines are first worn.

5. There shall be kept on hand at all times not less than 800 cu.ft. of reserve oxygen (7 containers).

6. A monthly report of apparatus will be made by the person caring for this equipment: one copy to be sent to the general superintendent and one to the safety engineer.

Note—This report must cover recent repairs, supplies on hand, condition of machines (each machine to be designated by a number) and the like.

7. The safety engineer must keep a file of all men employed by the company, that have received first aid or mine rescue training.

8. A record of the men and the training they have received at the local mine rescue station is to be kept by the person in charge thereof.

9. A record of all new men to receive training, or those entering the employ of the company that have had previous training, must be filed with the safety engineer.

10. No man shall be trained in mine rescue work without a physician's certificate showing that he has a sound heart and normal blood pressure.

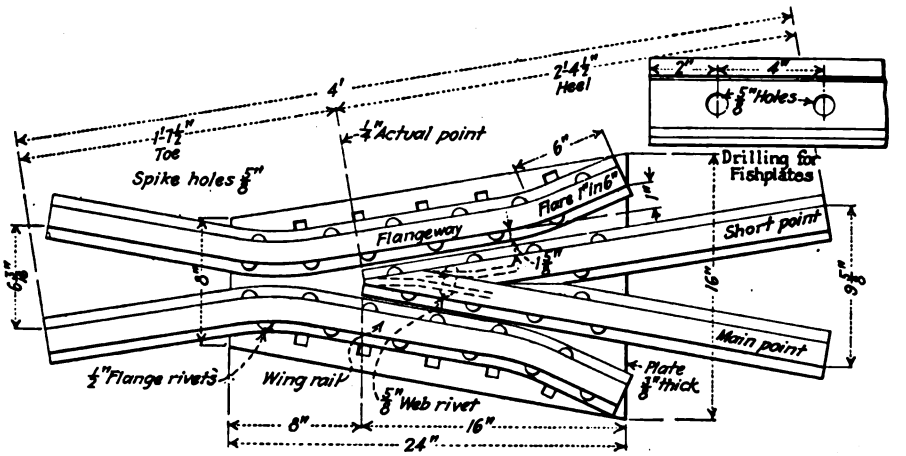

Fig. 36—No. 3 Stiff Frog for 20-lb. Rails

RAIL—2⅞-in. 20-lb. A.S.C.E. Section, first quality. Drilled 2 in. x 4 in. — ⅞ in. holes. PLATE—Rolled steel, ⅜-in. thick, size 8 in. x 16 in. x 24 in. Spike holes ⅞-in. square. WEB RIVET—⅞-in. diameter, to bind main and short points. FLANGE RIVETS—⅞-in. diameter, 34 total, to be spaced about as shown. To be countersunk on bottom, flush with plate. FLANGEWAY—1⅛ in.

Figs. 37-40—Built-Up Frogs Must Be Made According to Dimensions

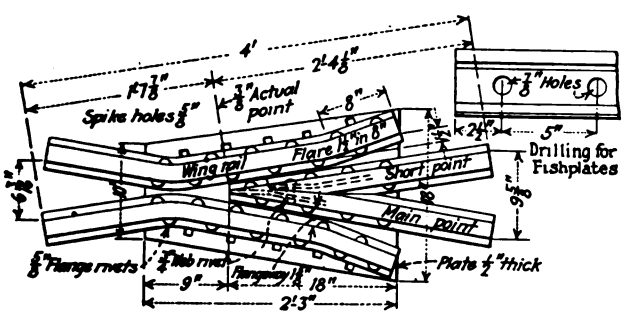

FIG. 37—No. 3 STIFF FROG FOR 40-LB. RAILS
RAIL—3½-in. 40-lb. A.S.C.E. section, first quality. Drilled 2½ in. x 5 in. — ¾-in. holes. FLANGE RIVETS—⅞-in. diameter, 34 total, to be spaced about as shown. To be countersunk on bottom, flush with plate.

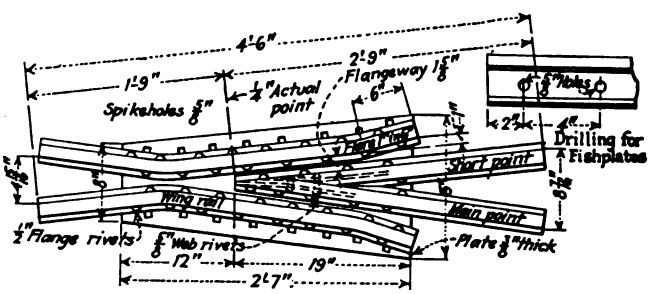

FIG. 38—No. 4 STIFF FROG FOR 20-LB. RAILS
RAIL—2⅞-in. 20-lb. A.S.C.E. section, first quality. Drilled 2 in. x 4 in. — ⅞-in. holes. FLANGE RIVETS—⅞-in. diameter. 43 total, to be spaced about as shown. To be countersunk on bottom, flush with plate.

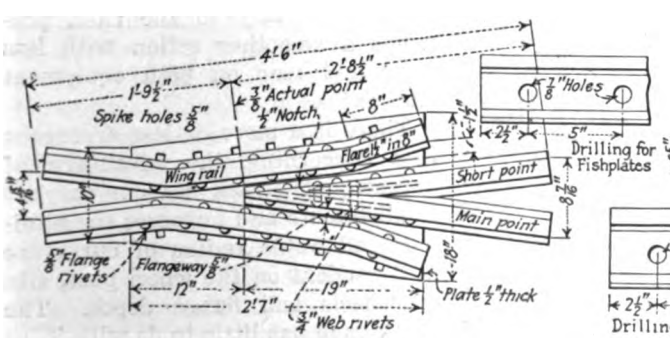

FIG. 39—No. 4 STIFF FROG FOR 40-LB. RAILS
RAIL—3½-in. 40-lb. A.S.C.E. section, first quality. Drilled 2½ in. x 5 in. — ¾-in. holes. FLANGE RIVETS—⅞-in. diameter. 38 total, to be spaced about as shown. To be countersunk on bottom, flush with plate. POINT RAILS—Main point notched to take short point as shown.

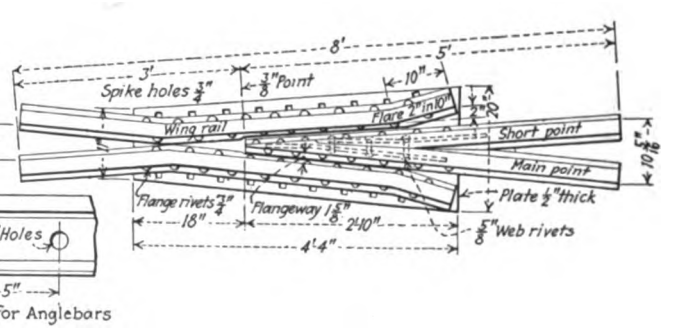

FIG. 40—No. 6 STIFF FROG FOR 60-LB. RAILS
RAIL—4¼-in. 60-lb. A.S.C.E. section, first quality. Drilled 2½ in. x 5 in. — 1-in. holes. FLANGE RIVETS—⅞-in. diameter. 52 total, to be countersunk on bottom, flush with plate. POINT RAILS—Main point notched to take short point as shown.

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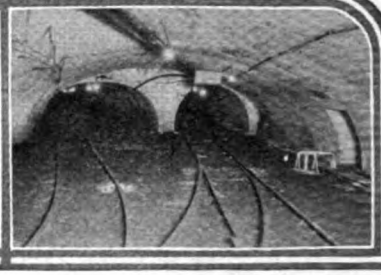
Underground Operation



Sand Jacks in Arkansas Support Roof in Low Coal

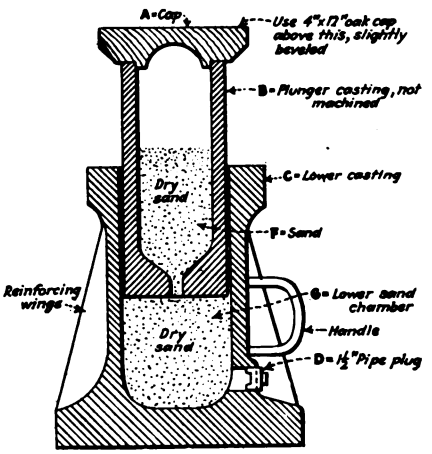
Sand jacks are being used extensively in Europe for the support of the mine roof. They are, however, probably new in this country and the following facts on the sand jacks used at the Paris mine of the Paris Purity Coal Co., in Logan County, Ark., are taken from a paper delivered by J. J. Rutledge, chief engineer, Maryland Bureau of Mines, Baltimore, Md., before the West Virginia Coal Mining Institute.

The draw slate at the Paris Mine is held by round pine props of about 12 in. diameter. Concrete blocks were used for a while as an experiment, and they seemed to give good service, but they were heavy for use in such a thin seam, the coal thickness averaging 25 in. to which must be added the size of the kerf cut by the mining machine into the bottom clay making the total depth from roof to room floor 30 in. Cribs made of pine wood were used and appeared to have given good service but were placed only for the protection of roadways and not at the face; at this latter place props and sand jacks are the only roof supports used. The jacks were designed by the owners of the mine and manufactured by an ironworks in the neighborhood. They weigh about 300 lb. and cost $12 each.

ONLY TWO PARTS TO JACK

They are composed of two pieces, the diameter of the foot being 15 in. and of the top 10 in. The interior diameter of the jack is 8 in., and a 1½ in. plug in the base of the jack permits of the withdrawal of the sand. The upper part of the jack has a cross-like section with four ribs, but it is purposed to make this portion of the jack round, as it has been found that the ribs are readily broken by roof pressure when the jack is slightly out of plumb.

It has been suggested that bird shot be used instead of sand as it is said to be more compressible. Already about one hundred of these jacks are in use at the Paris mine alone. The jacks can be moved ahead at any time by removing the plug and allowing the sand to escape. Each jack will hold up a pressure of 300 tons. Should the lower casting careen, however, the pressure will be thrown on one side and the jack may be broken. New designs will remedy this. Patents for the sand jack have been sought. The roof cover that the jacks support is probably 165 ft. thick, and the load about 14 tons per square foot of roof to be supported.



Strong Yet Easy to Draw

By tapping the sand, the resistance to pressure on the head of the jack can be removed, leaving it loose for transference to any point desired. The jack will stand pressures up to 300 tons if placed on a true footing.

Track Gages and Curve Radii Should Be Carefully Chosen

American coal mines employ many different track gages. Some of these have been chosen wisely; others have been selected merely to follow precedent without any particular regard to the needs or local conditions of the mine or mines served. Many mines also are equipped with track curves of altogether too short radius for the rolling stock used. This causes much haulage delay if not actual danger to life and damage to both cars and locomotives. In the *Employees' Magazine* of the Union Pacific Coal Co., James L. Libby treats of this phase of mining as follows:

The gage of the track is the distance between the inner sides of the balls of the rails. Any number of gages are in use in different mines, but three of the most common are 30, 36 and 42 inches.

The matter of gage should be given careful study in opening up a mine and the proper gage selected to fit existing conditions, as this dimension will be almost impossible to change after the mine attains any depth from the mouth or shaft bottom.

CONDITIONS DICTATE CAR SIZE

Local conditions govern the size and design of cars used, which in turn regulates the gage. The thickness of the seam limits the height of the entry, and the roof and floor conditions limit its width. These two factors govern the width and height of the car, hence its capacity. If both are restrictive the length may be slightly increased, but here we are confronted with the fixed axles combined with a short wheel base in use in coal mines. Cars are, therefore, seldom over 10 ft. long inside. Modern methods and machine mining tend to increase the capacities handled necessitating a wider gage. A broad gage gives greater stability to the cars, promotes a smoother action with less wear and tear on both equipment and tracks.

There is a more or less erroneous idea concerning the advantage of narrow-gage track on curves, but to all intents and purposes the minimum allowable radius of curvature is dependent on the wheel base, size of wheels and flange depth. The track gage has little to do with it, as will be more fully discussed under the subject of curves.

The main advantage of a narrow-gage track is the cost; due to the use of shorter ties, less ballast, and,

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where grading must be done, the width is less. With cars of wood construction, without brakes, the overhang on the sides is limited on account of strength, also wheels must be accessible for spragging. With cars having brakes and constructed with a wood bottom and steel sides, the flare and overhang can be increased and as wide a car built for a 36-in. gage as is now commonly constructed for 42-in. gage.

ADVANTAGE OF BIG CARS

The ratio of weight of coal to weight of car is about the same for both large and small cars. The larger cars do not show any increase in per cent of coal handled as the different parts have to be made heavier, which offsets the increased capacity. The main advantage gained by use of a larger car comes from the less number of cars that must be handled to produce the required tonnage. The system of mining, method of loading and handling the cars, also limit the size of car which can be used economically. A 36-in. gage is large enough for cars that must be man handled and hand loaded, but a 42-in. gage is preferable where cars are handled mechanically and the coal is loaded by machinery.

Track should be well maintained, kept in good alignment, and to grade. Slight reverse curves, swags and bumps, swing and roll the cars, causing unnecessary jars and damage to equipment, with loss of coal. Spillage causes dirty tracks, interferes with haulage and constitutes a serious menace to safety.

CURVES OF LARGE RADIUS REQUIRED

Curves are used to make gradual the changes in direction between straight or tangent tracks, the turnouts for entries, planes, rooms, passing or side tracks, etc. Because of the use of heavy locomotives, with long wheel bases, operated at high speed, curves of a large radius are necessary in order to obtain smooth transportation. Such curves offer less resistance than do those of a smaller radius.

Curves in mines are best designated by their radii in feet. Thus a 200-ft. curve means one wherein the center line of the track is a circle with a 200-ft. radius. A 200-ft. radius curve, on the level, offers the same resistance to movement as $\frac{3}{10}$ per cent grade, while a 100-ft. radius curve offers above the same resistance as a $\frac{6}{10}$ per cent grade. For this reason, where possible, the grades on curves should be lightened to compensate for this resistance. The radius of a curve can be approximately determined with ease and dispatch by the following simple method of calculation.

Using a 10-ft. cord and representing the offset or mid-distance in inches to the gage of the rail at the center by m, the radius of the curve in feet equals $150 \div m$.

Thus when mid-distance is 2 in. we have as the curve radius $150 \div 2 = 75$ ft.; when the mid-distance is 3 in. we have $150 \div 3 = 50$ ft.; when the mid-distance is $1\frac{1}{2}$ in. we have $150 \div 1\frac{1}{2} = 100$ ft.; when the offset is 1 in. the radius of the curve is $150 \div 1 = 150$ ft.

On high-speed motor hauls the outer rail on the curves should be elevated above the inner one, this height varying with the haulage speed and the gage of the track. The distance the rail should be raised may be determined by using a 20 ft. cord and taking the mid-distance from it to the gage line of the rail as the extra height. This will compensate exactly for the following rates of speed on the track gages mentioned: The mid-distance of a 20 ft. cord with a 30 in. gage compensates for a speed of $17\frac{1}{2}$ m.p.h.; with a 36 in. gage for a speed of 16 m.p.h., and with 42 gage the mid-distance for a 20-ft. cord compensates for a speed of 15 m.p.h. Rails should never be elevated more than 6 in., and for smooth action the outer rail should be gradually raised at the rate of about 1 in. in 20 ft. approaching the curve and lowered correspondingly in leaving it.

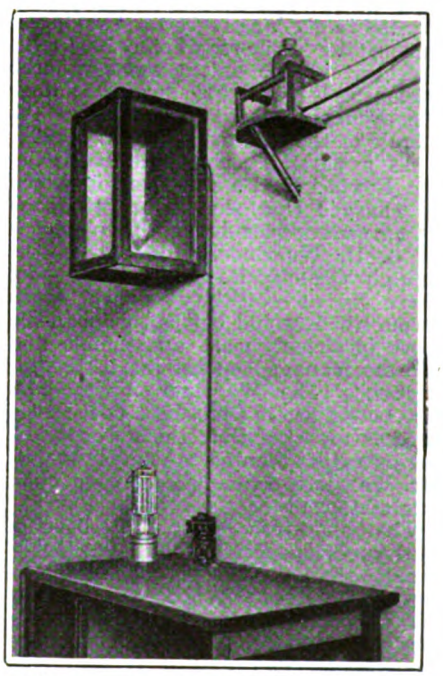
Gas Testing Apparatus Helps Train Firebosses

Training fire bosses and safety men in general, requires care and attention to detail. The detection of gas by means of the safety lamp is comparatively easy to the trained eye but in order to be trained that eye must be experienced. As a means of familiarizing the would-be fireboss with the appearance and behavior of the safety lamp flame when in the presence of gas, means must be provided in the smoke room, laboratory or elsewhere, for artificially creating a gassy atmosphere, one that will readily affect a safety lamp.

Probably the first device of this nature to be employed was the old "umbrella" or "inverted dishpan" apparatus. This consisted of an open ended metal container placed upside down into which gas could be introduced at will. This answered the purpose fairly well except that the lamp could not be viewed from the side. Furthermore in but few mining communities is natural gas available.

The accompanying illustration shows the home-made lamp testing, device in use in the smoke room at one of the largest mines in this country. It consists of an open ended box with the opening down, fastened to the wall of the room. Three sides of this box are of glass. Acetylene gas is introduced into it from an old hand lamp on the desk below by means of a tube leading through a hole in the side frame.

After gas has been turned on for a short time a lighted safety lamp can be raised into the box and the behavior of the flame noted through the glass side. By this means careful training in gas testing can be given under the eye and tutelage of a thoroughly experienced instructor. The management thus has the satisfaction of knowing that the men intrusted with the important work of testing the mines for gas know what to look for and know what it looks like when they see it.



Testing Box in the Smoke Room

Three sides of this inverted open-ended box are made of glass. Gas from the acetylene lamp on the desk below the box can be introduced at will through the side of the box. Into this mixture of gas and air the lighted safety lamp can be raised the behavior of the flame being observed through the glass side of the box. Embryo firebosses thus may be carefully trained in the appearance of the safety lamp flame in the presence of an explosive mixture of gas and air.

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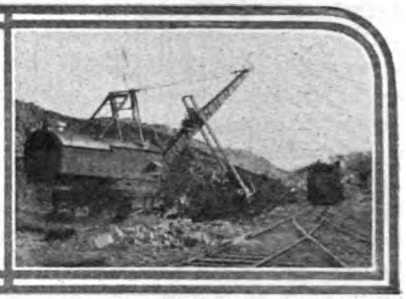
News Of the Industry



Hard-Coal Wage Dispute Becomes Propaganda Battle Since Collapse Of Conference at Philadelphia

The anthracite wage controversy, following the collapse of the third joint conference at Philadelphia last week, again has settled down into a battle of propaganda. The operators are carrying the fight direct to the mine workers. A folder, explaining their final offer at the last conference, has been printed in six languages for circulation among the strikers. John L. Lewis, president of the union, went into the region this week to begin another speech-making tour to strengthen the morale of the men out of work.

As a parting shot at Philadelphia, Mr. Lewis issued a statement in which he charged that the failure to reach an agreement was due to the insistence of S. D. Warriner, president of the Lehigh Coal & Navigation Co., that there be no settlement except upon terms which would be "beneficial to the most inefficient, most uneconomic and poorest managed operations in the industry." The Warriner mines, said Mr. Lewis, are in that class. Mr. Lewis further asserted that the majority of the operators wanted to end the strike. Mr. Warriner refused to comment upon this statement.

The operators expressed disbelief that anybody would take Mr. Lewis' charge that the strike had become a lockout seriously. "Why?" asked Major W. W. Inglis, chairman of the operators' negotiating committee. "Because on the very day that it is made the operators proposed that the men go back to work with the assurance of the old wages until next April—fourteen months.

"There is another statement in his latest outgiving about which I have something to say," continued the operators' spokesman. "Mr. Lewis asserts with great fervor that he will never accept compulsory arbitration. We never even suggested that he should. We have proposed arbitration by mutual agreement and within the terms of a contract. Nothing more. He not only rejected this; he would not even agree that Justice Hughes should sit with the board of conciliation—composed of three miners and three operators—and cast the deciding vote in case of a deadlock."

On Feb. 4 Governor Pinchot journeyed to Philadelphia and conferred with the head of the mine workers' union. Neither Mr. Lewis nor the Governor would make any statement as to the nature of their discussion. On Saturday, however, the Governor made another public attack upon the anthracite industry as a "hard-boiled monopoly defiant to public opinion." Governor Pinchot, in the same statement, assailed the Pennsylvania House committee on mines and mining for refusing to favor his legislative coal control program.

Mr. Warriner, in a statement issued Feb. 8, retorted that the "partisan attitude" of the Governor had obstructed the settlement of the strike and that "the responsibility for its continuance must, in a large measure, be charged to him." Mr. Warriner emphasized the fact that the latest outburst of the Governor followed closely upon the star-chamber session between the Pennsylvania executive and the president of the miners' union.

The anthracite operators' leader takes the Governor to task for charges made by the latter that the industry had mulcted the public through the new sizing standards adopted last spring and for using only the most prosperous companies in building up a plea for regulation. Returns per ton after standardization, said Mr. Warriner, were less than before.

"The Governor," he continued, "must have been acquainted with the figures that have been made public recently by the U. S. Treasury Department in answer to S. R. 99, which show that out of 139 anthracite-producing companies, 47 earned net income amounting to approximately $28,000,000 in 1924, while 92 companies suffered losses amounting to approximately $7,000,000, the net results for the industry being a net income of about $21,000,000, or less than 3 per cent on the valuation of the anthracite industry as given by the U. S. Coal Commission."

The detailed figures to which Mr. Warriner refers appear elsewhere in this issue of *Coal Age*.

Creation of a permanent State Anthracite Coal Supply Commission to take over the direction of the operation of anthracite mines in time of strike was provided in a bill introduced in the Pennsylvania Senate Monday night (Feb. 8) by Senator Charles Steel, of Northumberland County.

Publicity on Costs, Profits and Living Conditions Is Best Safeguard Against Strikes, Says Hammond

"The best way to minimize the danger of strikes and to insure the delivery of the right kind of coal, and at the right price to the consumer, is through the adoption by Congress of the U. S. Coal Commission's report of Sept. 23, 1923," declares John Hays Hammond, chairman of the commission, in a communication to the American Bankers Association *Journal* published Feb. 9.

"In its report the Commission expressed the belief that the . . . moral influence exerted through publicity is an important safeguard of the interest of the public.

"Publicity as to the quality of coal in interstate commerce would greatly deter unscrupulous operators and dealers from the sale of fireproof, adulterated and otherwise unsuitable coal. Publicity as to the cost and profits of the operators, transportation charges, the profits of wholesalers and retailers would enable the consumer to judge whether a fair or an exorbitant price is being charged for his coal. Publicity as to earnings, living conditions and living costs of the miners would enable the public to form a judgment as to the equities of disputes between operators and miners over the renewal of wage agreements; and informed public opinion at such times would exert a deterrent influence upon the adoption of an unreasonable attitude by either or by both parties to the controversy and thus tend to prevent a lockout or a strike.

"All these facts change from season to season and vary from district to district and from mine to mine, and the public is entitled to know them since the transportation of coal in interstate commerce is so affected by the public use and coal enters so intimately into all the necessities and conveniences of modern life—indeed being outranked in importance only by food and water—that there is no longer any private right to secrecy as to such matters as costs, profits, wage rates and working and living conditions in the industry."

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Clairton Byproduct Plant To Add 300 Ovens

Addition of 300 coke ovens at the Clairton byproduct plant of the Carnegie Steel Co. is contemplated and the plans have progressed so far that the awarding of the contract for the installation impends. The improvement will involve an outlay of more than $3,000,000 and work will probably get under way this spring.

When first constructed, the plant consisted of 768 ovens, and a few years ago an addition of 366 ovens was made. The proposed addition will bring the aggregate to 1,434 ovens—the largest byproduct unit in the world.

At present the blast furnaces in the neighborhood of the Clairton plant are supplied with coke from that source, while outlying furnaces get coke from the H. C. Frick Coke Co.'s beehive ovens in the Connellsville and Westmoreland districts.

Three towing steamers and seventy barges also are to be purchased for use on the Monongahela River in transporting coal from mines to the extension of the Clairton plant.

Roads Install 128,557 Cars In 1925; Orders Decline

Class I railroads of the United States installed in service 128,557 freight cars in 1925, according to the Car Service Division of the American Railway Association. This was a decrease of 27,857 cars from the number installed in 1924 and of 69,318 cars from the 1923 total. Of the equipment placed in service during the last year 48,670 were coal cars, 61,140 box cars and 5,761 refrigerator cars.

Freight cars on order on Jan. 1 last totaled 40,794, including 15,368 coal cars, 21,380 box cars and 1,781 refrigerator cars. On Jan. 1, 1925, Class 1 railroads had 55,684 freight cars on order and on Jan. 1, 1924, they had 25,619 on order.

During 1925 Class I railroads placed in service 1,733 locomotives compared with 2,246 in 1924 and 4,037 in 1923. The same roads on Jan. 1, 1926, had 471 locomotives on order compared with 287 on Jan. 1, 1925, and 510 on the same date in 1924.

These figures include new, rebuilt and leased equipment.

Japan May Erect Coal Piers Like Those at Sewalls Point

Coal piers to be erected by the Japanese Government on the Island of Hokkadio probably will be patterned after the piers of the Virginian Ry. at Sewalls Point. Kenege Nakamura and H. Suzuki, representatives of their government, were in Norfolk recently, inspecting the piers and taking drawings of their operations. They stated that the Sewalls Point piers were the finest they had seen, and they left here to inspect coal-handling facilities at Baltimore. It is desired to increase the dumping capacity of the Japanese piers from 5,000 to 10,000 tons a day. The Japanese representatives visited various European coal ports before coming to America.



The Late Col. D. B. Wentz

Blasts at Pittsburgh Mines; To Open Euclid Plant

State police are investigating two explosions at the Warden Mine, at Scott Haven, Pa., Feb. 2. Bombs are believed to have been responsible for the blasts. Officials of the Pittsburgh Coal Co., which owns the mine, state that though the shock of both explosions was felt for several miles, no one was injured. The Warden Mine is one of the largest operated by the Pittsburgh company, employing about 250 men since operations were resumed about a month ago on the 1917 scale.

On Feb. 1 the fan house was dynamited and considerably damaged at the same company's Montour No. 4 Mine, at Hill Station, Washington County, Pa. This mine also is working under the 1917 scale.

The Pittsburgh Coal Co. is preparing to open Euclid Mine, four miles from West Newton, in Westmoreland County, according to an announcement made last week. The mine will be the eighth of the company in the Pittsburgh district to operate under the November, 1917, scale. Men will go to work in the mine within two weeks, it was stated.

Czechoslovak Coal Output Off 15 per Cent in 1925

Czechoslovakia produced 12,753,000 tons of coal in 1925 as against 14,359,000 tons in 1924, a decrease of 11 per cent, according to a cable to the Department of Commerce from Commercial Attaché J. F. Hodgson, Prague. Output of lignite in 1925 was 18,787,000 tons compared with 20,507,000 tons in 1924, a decrease of 8 per cent. These decreases were almost wholly in the first half of the year. Coke output totaled 1,774,000 tons as compared with 2,219,000 tons in 1924, a drop of 20 per cent in 1925.

Colonel Wentz, Well Known Operator, Dead at 52

Colonel Daniel Bertsch Wentz, one of the best known coal operators in the country, and president of the American Mining Congress, died Feb. 9 at his home in Wyncote, Pa. He was fifty-two years old.

Colonel Wentz, who as president of the Stonega Coke & Coal Co., the General Coal Co. and the Hazle Brook Coal Co., maintained his offices in the Land Title Building, Philadelphia, also was a director of many coal companies and banks, among them the Virginia Coal & Iron Co., the Franklin National Bank and the Fidelity Trust Co. A few years ago the General Coal Co. absorbed the Wentz Coal Co., founded by Colonel Wentz's father, the late John S. Wentz. Colonel Wentz was president of the National Coal Association in 1920-21.

In January, 1918, General Goethals selected Colonel Wentz to take charge of the fuel and forage division of the Quartermaster Department. Previous to this he had been one of the "dollar a year men" in Washington and had been assistant to Francis S. Peabody, chairman of the coal committee of the Council of National Defense. For his services with the Quartermaster Corps Colonel Wentz received the Distinguished Service Cross and also was honored by France with the rank of Chevalier of the Legion of Honor.

On Dec. 12, 1923, Colonel Wentz received one-half of his father's estate, valued at $5,886,204. He was a graduate of Harvard and prominent in the social life of Philadelphia.

Changes Made in Coal Work Of Bureau of Mines

Changes were made in the work of the Coal Division of the Bureau of Foreign and Domestic Commerce, effective Jan. 1, 1926, whereby all questions relating to domestic trade in coal and other matters pertaining to the domestic coal industry are being handled by the Coal Division of the Bureau of Mines, and the personnel of the Coal Division of the Bureau of Foreign and Domestic Commerce which has been engaged in such domestic work has been transferred to the Bureau of Mines.

All questions relating to promotion of the American coal export trade, and in general all matters concerning foreign trade in coal and coke, formerly handled by the Coal Division, will be taken care of until further notice by the Minerals Section of the Bureau of Foreign and Domestic Commerce, under the direction of Homer S. Fox, who also will continue in charge of foreign trade promotion in petroleum and other minerals, the Coal Division as such being discontinued in this Bureau.

The monthly statement on the overseas coal trade, special circulars covering foreign trade in coal, assistance rendered in connection with special inquiries to the Bureau on the exporting of coal, and similar services formerly rendered by the Coal Division, will continue to be available through the Minerals Section of this Bureau.

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Explosion Following Fire Kills 19 in Horning Mine; Rock Dust Limits Effects

Nineteen men were instantly killed on Feb. 3 by an explosion in No. 4 mine of the Pittsburgh Terminal Coal Corp., at Horning, about 10 miles south of Pittsburgh, Pa. The explosion occurred at about 4 p.m. as the result of a fire which had started at about 10:30 a.m. at the face of Butt 16 in Sec. 4. This entry and Butt 15, which together constitute a pair, were being developed, but no rooms had been turned from them. Headed by General Superintendent H. M. Ernst, the men who lost their lives in the explosion were engaged in sealing off the fire zone.

Sec. 4 is served by Face Entries 7, 8 and 9. Of the room entries in this section Butts 15 and 16 were furthermost inby and had been extended about 450 ft. from the nearest of the face entries and a distance of about 2½ miles from the hoisting shaft and 3,000 ft. from an airshaft.

The fire was started by a shortwall cutting machine which at the time was sumping out of a cut in a clay vein. The cut opened a feeder of gas, which obviously was ignited by arcing or sparking on or within the machine. The flame jumped to oil and dust on and about the machine. Efforts to beat out the flame by the cutters and an assistant foreman who was present during the cutting were futile. The cutter was of the so-called closed, but not of the government-approved, type.

Unable to Reach 16 Victims

Brattice and board stoppings were erected both on the intake and return butts at points about 70 ft. from the respective faces, inclosing also a crosscut between these entries. A mortar-brick wall had been erected behind the temporary stoppings in the intake butt and a similar wall in the return was nearing completion when the explosion occurred.

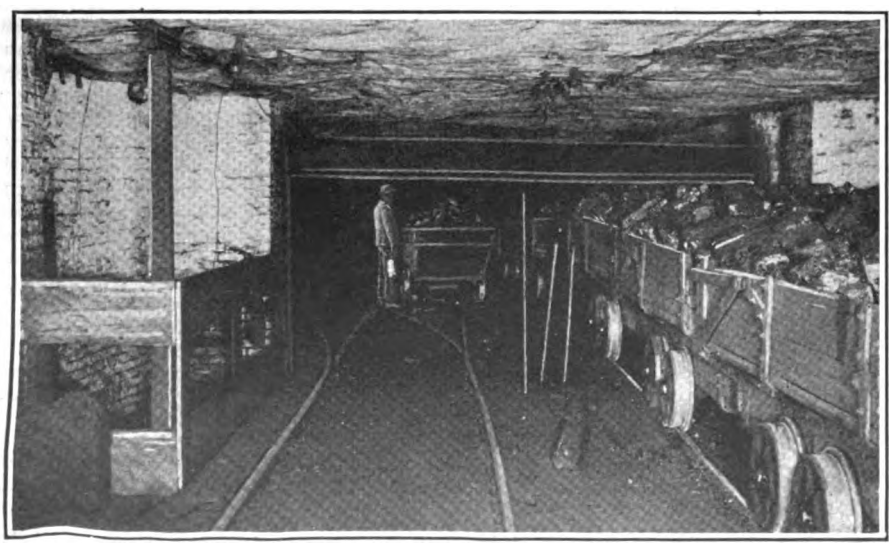
Prior to the time of this dispatch the rescue teams had not been able to reach 16 victims in the fire area of Butts 15 and 16 which has been sealed off by three walls in the face entries. Three bodies were found on the face entries, outby of these butts.

Officials of the company and rescue men believe that rock-dusting confined the explosion to comparatively narrow limits. The intake entries of the mine were thoroughly rock-dusted to the faces, but the returns were not. Rock dust had not yet been applied to Butts 15 and 16.

The blast displayed its greatest force in the return face entry of Sec. 4, which, of course, was not rock-dusted. The explosion was checked after traveling several thousand feet, meanwhile extending with diminishing force into Butts 13 and 14 off this return, crossing over to Butts 13 and 14 of Sec. 3, adjoining, and demolishing two stoppings which closed the latter buts from Sec. 4. The force in Sec. 3 was not marked as evidenced by the fact that two men at work in that area escaped to the airshaft.



Tipple of Pittsburgh Terminal Coal Corp. No. 4 Mine, Where Nineteen Men Lost Their Lives



Shaft Bottom of Ill-Fated Mine

The man with the flame safety lamp is George Travis, superintendent, who was among those who perished in the fire and explosion.

Coal Men of All Ohio Fields Organize to Save Industry

The first all-Ohio organization of coal operators came into being at a meeting in Cleveland Jan. 29, with the appointment of a committee representing the four major fields. It will lay plans for a bureau to tackle the freight rate situation, which operators say discriminates in favor of the mines of lower West Virginia and Kentucky to such an extent that the latter fields have taken the coal trade away right on the doorsills of the Ohio mines.

All fields in the state had representatives present. These were appointed to arrange for the bureau and report at another meeting within a month:

Percy Sprague, of the M. A. Hanna Co., Cleveland, and Fred Braggins, of the Lorain Coal & Dock Co., Columbus, representing eastern Ohio; H. D. Thomas, of the George M. Jones interests, Toledo, and W. E. Tytus, of the Sunday Creek Coal Co., Columbus, representing the Hocking Valley; J. L. Good, of the National Coal Co., Cleveland, and J. Gaines, of the Cambridge Collieries Co., Cleveland, representing the Cambridge seam, and C. L. Terry, of the Midvale-Goshen Coal Co., Cleveland, and N. E. Thomas, of the Akron oal Co., Akron, representing the middle district.

Ezra Van Horn, president of the Pittsburgh Vein Operators' Association, presided. W. H. Haskins, of Coshocton, advocated dropping "jealousies and differences which have split the coal industry in the past" and forming a state organization and united front on freight rate questions.

Sealed proposals will be opened by the Supt. of Lighthouses, Staten Island, N. Y., at 2 p.m., Feb. 18, 1926, for approximately 1,800 tons bituminous coal, in quantities as required from April 1 to June 30, 1926, delivered and trimmed into bunkers of lighthouse vessels, under coal chute at contractor's pocket, New York.

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Federal Non-Intervention in Strike Proves Popular Policy

By Paul Wooton
Washington Correspondent of *Coal Age*

After having shed more darkness than light on retail coal prices the Senate's District of Columbia committee has recessed its "informal" hearings while it tries to persuade the Comptroller's office to undertake some fact-finding in the account books of Washington coal dealers. Rather violent reverberations in the Senate and House keep Congress reminded that there still is a coal situation, but it is apparent that the conflict again has narrowed to the operators and miners themselves. Activities in the other theaters of operation have all but ceased. Evidence continues to pile up that the administration has pursued a very popular course in refusing to intervene. It is certain that executive officials will not allow themselves to be drawn in now that the popularity of their policy is established.

Judging from information reaching Washington, the miners are fighting with their backs to the wall. The desire for peace among the mine workers is becoming so strong that none will be surprised to see a break in their ranks at any time. The leaders still are putting up a bold front but they have surrendered their demands one by one. In accepting the Pinchot proposal they gave up the demand for increased wages, despite the face-saving clause referring to an increase if conditions should warrant. In accepting the Lynett plan they gave up the check-off. It was the mine workers who asked for a resumption of negotiations when the rejection of the Lynett plan was made perfectly plain.

Urge Insistence on Arbitration

Everything has been conceded except the principle of arbitration. The operators are being encouraged to insist on such an understanding by the increasing evidence of public approval and of its willingness to wait until a permanent settlement is reached.

The action of the Pennsylvania Legislature in reporting the Pinchot bills unfavorably, rather than allowing them to die in committee, is regarded in Washington as a sort of grudging courtesy to the Governor—a courtesy that probably would have been withheld had there been any chance of the measures going through.

There seems no chance, however, that Harrisburg can command enough pressure to cause the operators to abandon the firm stand they have taken to insure continuity of production while differences are being threshed out.

The demand of Representative Boylan for the seizure of mines is not regarded seriously. With the end of winter in sight it is increasingly plain that Congress will not attempt to act in the anthracite crisis.

It is expected that the operators will make no new move in the near future. With the coal year so nearly gone the operators have little to gain by a settlement just at this time. So far as their interests are concerned they can wait until May without jeopardizing any of their next winter's business.

There are some who, while admitting that the advantage now rests with the operators, think the ability of the union to hold out is being underestimated. They point out that there have been strikes in which the men, less favorably situated than the anthracite workers, have held out for longer periods. A comparatively recent instance was the fifteen-months strike in eastern Ohio in 1914 and 1915, which finally ended in the mine-run basis of payment.

Largely because of its political possibilities, the Copeland resolution gained sudden and unexpected strength Saturday. It was apparent that the Democrats had decided to make the measure a partisan one. It has vote-getting possibilities and promises to embarass the administration.

Coolidge Not Likely to Intervene

There is no reason to think the President will act on the suggestion that he "invite to the White House the committee of coal operators and miners in order that he may urge upon them the national importance of an immediate settlement of the anthracite coal strike."

The attempt to force the federal executive to intervene in a controversy involving production within a single state, somewhat at variance with Democratic principles did not pass without drawing a warning from Senator King, Utah's Democratic Senator. He pointed out "that the people of Pennsylvania and the Legislature of Pennsylvania should deal with this question."

Senator Reed, of Pennsylvania, presented the following telegram from Whitney & Kemmerer:

> Newspaper reports of this morning state that Senator Copeland, of New York, addressed the Senate yesterday on the coal situation and stated that the people in New England are freezing to death on account of fuel shortage. Investigation does not bear out these facts. The public are responsible for the shortage of coal, if any, in New England, for they had opportunities to secure fuel at any time during the past three months. As operators of union mines in central Pennsylvania, as well as on the Bessemer & Lake Erie Railroad, working under the Jacksonville scale, owing to our inability to receive a price sufficient to cover our costs of production we are working only three days a week. We can offer from 50,000 to 100,000 tons of run-of-mine bituminous coal to any responsible dealer that Senator Copeland may designate at a price of $2.50 free on board mines on Clearfield rate of freight delivery before April 1, 1926.

A bill proposing the creation of a board of industrial adjustment also was made a party bill and was introduced by Senator Robinson, the minority leader. It was referred to the committee on Education and Labor.

The board would be empowered to conciliate differences, encourage arbitration and do general fact-finding so as to recommend means that can be employed to remove the cause of strikes.

The proposed board is to be composed of the Secretary of Labor, the Secretary of Commerce, the Director of the Bureau of Mines and two disinterested citizens. The board will be convened by the President in case of an emergency.

While the coal question was engaging the attention of the Senate on Saturday Representative Watres, Republican, Pennsylvania, introduced a resolution in the House inviting conferences of the miners and operators with the Secretary of Labor sitting in as a mediator.

Rush Coal to Jail Lest Murderers Freeze

Fred Heitzman, of Castner, Curran & Bullitt's branch office in Cincinnati, received the following letter from a large jobbing concern in Toronto, Ont., on Jan. 20:

"We wish you would make an effort to ship the order to Sharon McKay, Cochrane (Ont.) Jail. He is very short of coal, and as he has three or four murderers on hand he is afraid they will freeze to death before he has a chance to hang them."

The coal was speeding on its way within a few hours after the letter was received.

German Coal Industry Has Favorable Balance for 1925

Output of coal in Germany during December, according to Acting Commercial Attaché D. P. Miller, reached 11,367,000 tons; lignite, 12,712,000 tons, and coke, 2,234,000 tons. Totals for the year 1925 were: Coal, 132,729,000 tons; lignite, 139,790,000 tons, and coke, 26,810,000 tons. The figures show a substantial increase over the previous year and also an estimated favorable balance on coal shipments of 225,000,000 marks. Ruhr stocks remain unchanged while imports of British coal have been declining since October.

The U. S. Civil Service Commission announces open competitive examinations for mining engineer, $3,800; associate mining engineer, $3,000; assistant mining engineer, $2,400, to fill vacancies in the Bureau of Mines, for duty in Washington, D. C., or in the field. Receipt of applications will close March 9. Advancement in pay may be made without change in assignment up to $5,000 a year for mining engineer, $3,600 for associate mining engineer, and $3,000 for assistant mining engineer. Applicants must qualify in coal mining engineering, metal mining engineering, non-metallic mining engineering, or some specialized line of mining. Competitors will not be required to report for examination at any place, but will be rated on their education, experience, fitness, and writings to be filed with the application. Full information and application blanks may be obtained from the Civil Service Commission, Washington, D. C., or at the post office or custom house in any city.

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November Coal Output in Canada Exceeds Average

Output from Canadian coal mines during November, 1925, was 1,649,686 tons as against 1,570,379 tons in October and an average of 1,642,786 tons for the month during the five preceding years.

Alberta and Saskatchewan were the only provinces which showed gains in output in November over the preceding month, while Nova Scotia and Saskatchewan showed increases over the average for the month in the five preceding years. British Columbia's production was just equal to the average for the month in the five preceding years.

Total importation of coal in November was 1,387,373 tons as compared with 1,658,501 tons in October and the five-year average for November of 1,974,196 tons. Receipts of coal from Great Britain during the month were 34,727 tons. For the first eleven months of 1925 the total imported into Canada was 15,485,211 tons, or 8 per cent below the preceding five-year average for the period.

Exports of Canadian coal in November totaled 82,946 tons; October, 99,846 tons. Comparison of the November exports with the preceding five-year average showed a decrease of 36 per cent. Total exports for the year to date amounted to 669,325 tons, or 59 per cent less than the five-year average.

More Coal and Oil Consumed By Utilities in December

Public utility power plants consumed more coal and fuel oil in December than in November, according to a report of the U. S. Geological Survey. In December utilities consumed 3,764,934 net tons of coal, compared with 3,470,439 tons in November, as shown by revised figures. Fuel oil consumption by utilities for December totaled 817,548 barrels, compared with 793,387 barrels in November.

More electricity was generated for public use by public-utility power plants in the United States in December, 1925, than ever before in any one month. The total amount of electricity generated passed the 6,000,000,000 kw.-hr. mark for the first time, with a total of 6,108,000,000 kw.-hr. for the month—an average daily output of 197,000,000 kw.-hr., an increase of 2 per cent over the average rate for November.

The total output for 1925 was nearly 66,000,000,000 kw.-hr., an increase of more than 11 per cent over the output for 1924.

W. H. Sawyer, Columbus, Ohio, president of the East St. Louis & Suburban Railway Co. and a prominent engineer in the electrical industry of the United States, has been selected to make a survey of electric power resources that give promise of working a radical economic improvement in Australia. He sailed for Australia Feb. 2 as he was officially appointed by the Government of the State of Victoria, Australia. The official notification bears the following: "To investigate and report on the Yallourn brown-coal electricity-generation scheme and connected power undertakings."

Heavy Losses by Many Producers Of Anthracite Are Revealed in Income-Tax Returns for 1924

Profits and losses of anthracite mining companies in 1924 are revealed in a report of federal income tax returns for that year submitted to the Senate Feb. 3 by Secretary Mellon in response to a resolution by Senator La Follette, adopted early in January. The list includes 159 mining companies, embracing over 95 per cent of production in this field. Net losses were reported by the majority. The data are from returns as originally filed by the corporations and prior to audit by the Treasury Department.

The larger companies showed heavy incomes, but also heavy allowances for depletion and depreciation, which resulted in bringing down the amount of tax that had to be paid. The figures for the principal concerns were as follows:

Concerns Engaged Solely in Mining Anthracite Reporting on Calendar-Year Basis

	Capital Stock—Common	Capital Stock—Preferred	Net Income	Net Loss	Federal Income Tax	Depletion	Depreciation
American Coal Exchange, Inc., Childs, Pa.	$20,000	.....	.....	$9,663	....	.....	$2,579
Beaver Valley Coal Co., Wilkes-Barre, Pa.	1,200	.....	.....	11,347	....	.....	.....
Carbondale Anthracite Collieries, Scranton, Pa.	30,000	$400,000	.....	.....	....	.....	.....
Carbondale Coal Mining Co., Carbondale, Pa.	.....	.....	.....	2,601	....	.....	.....
Central Coal Co., Wilkes-Barre, Pa.	185,000	.....	.....	119,882	....	$661	46,479
East Alden Mining Co., Wilkes-Barre, Pa.	42,650	.....	.....	4,924	....	.....	6,000
East Point Coal Co., Scranton, Pa.	50,000	.....	.....	107,844	....	.....	.....
The Enterprise Coal Co., Scranton, Pa.	750,000	856,311	.....	125,770	....	.....	8,219
Evans Colliery Co., Beaver Meadows, Pa.	100,000	.....	$67,345	.....	$8,418	12,323	11,072
Exeter Coal Co., Pittston, Pa.	.....	.....	6,316	.....	539	7,125	2,263
John Gibbons Coal Co., Scranton, Pa.	25,000	.....	44,675	.....	5,584	.....	.....
Greenridge Coal Co., Scranton, Pa.	200,000	.....	.....	52,765	....	.....	23,184
Haddock Mining Co., Wilkes-Barre, Pa.	500,000	.....	3,378	.....	217	.....	.....
Harris Denby Coal Co., Pittston, Pa.	40,000	.....	.....	10,079	....	2,151	5,434
Hazle Brook Coal Co., Philadelphia, Pa.	2,780,400	1,786,000	.....	254,137	....	.....	239,000
Humbert Coal Co., Inc., Jessup, Pa.	700,000	.....	.....	48,385	....	.....	.....
The Lackawanna Coal Co., Ltd., Scranton, Pa.	50,000	.....	.....	58,782	....	44,430	.....
Laurel Coal Mining Co., Connellsville, Pa.	200,000	.....	.....	6,496	....	.....	.....
George F. Lee Coal Co., Wilkes-Barre, Pa.	75,000	.....	.....	70,212	....	.....	25,575
Locust Mountain Coal Co., Philadelphia, Pa.	788,000	350,000	116,411	.....	14,551	.....	96,058
The Miners Mills Coal Mining Co., Plains, Pa.	.....	.....	.....	9,965	....	2,274	6,633
Mount Jessup Coal Co., Ltd., Peckasville, Pa.	200,000	.....	.....	421,165	....	.....	95,039
Murray B. Coal Co., Philadelphia, Pa.	100,000	50,000	.....	271	....	.....	.....
Murrin Coal Co., Carbondale, Pa.	100,000	.....	.....	29,032	....	9,815	17,278
Nay Aug Coal Mining Co., Dunmore, Pa.	96,400	.....	.....	61,236	....	11,412	8,114
Northern Anthracite Coal Co., Lopez, Pa.	150,000	.....	.....	91,858	....	7,757	43,027
Park Hill Coal Co., Scranton, Pa.	30,000	.....	33,848	.....	4,231	.....	13,253
Pittston Coal Mining Co., Pittston, Pa.	100,000	.....	22,217	.....	2,527	.....	31,944
Plymouth Red Ash Coal Co., Plymouth, Pa	10,000	.....	.....	44,068	....	939	4,695
Price-Pancoast Coal Co., New York, N. Y.	200,000	.....	.....	87,845	....	62,068	86,671
Quinn Coal Co., Scranton, Pa.	10,000	.....	.....	14,198	....	.....	9,323
Racket Brook Coal Co., Carbondale, Pa.	300,000	.....	9,650	.....	956	6,617	34,710
Raub Coal Co., Luzerne, Pa.	100,000	.....	.....	32,955	....	6,529	13,887
Richmondale Coal Co., Carbondale, Pa.	30,000	.....	1,105	.....	....	.....	23,710
Roaring Brook Coal Co., Scranton, Pa.	50,000	.....	.....	908	....	4,173	1,444
The Saint Clair Coal Co., Scranton, Pa.	150,000	.....	28,697	.....	3,587	17,337	76,230
Scranton Anthracite Coal Co., Scranton, Pa.	27,500	.....	26,953	.....	3,369	9,200	13,140
Sherman Coal Corporation, Pottsville, Pa.	25,000	.....	27,890	.....	2,672	.....	14,578
Shipman Coal Co., Bethlehem, Pa.	300,000	240,000	.....	187,448	....	.....	35,515
Spencer Coal Co., Dunmore, Pa.	150,000	.....	.....	27,900	....	18,167	26,192
Sullivan & Flynn Coal Mining Co., Wilkes-Barre, Pa.	72,000	.....	16,768	.....	1,846	3,020	13,721
Thornton Co., Scranton, Pa.	416,000	.....	.....	26,115	....	.....	10,188
Traders Coal Co., Scranton, Pa.	240,000	.....	.....	103,360	....	777	21,136
Wolf Collieries Co., Inc., Wilkes-Barre, Pa.	30,000	.....	.....	6,284	....	3,392	.....
Yatesville Coal Co., Pittston, Pa.	5,000	.....	7,141	.....	643	.....	778
Red Haven Coal Co., Scranton, Pa.	160,401	.....	.....	38,899	....	.....	6,990
Tip Top Coal Co., Scranton, Pa.	31,275	72,100	.....	42,219	....	1,714	907
Boland Bros., Inc., Scranton, Pa.	.....	.....	.....	15,242	....	.....	.....
Carney & Brown Coal Co., Dunmore, Pa.	20,000	.....	.....	28,282	....	.....	1,416
Lincoln Coal Co., Scranton, Pa.	54,000	.....	.....	17,272	....	.....	5,290
Superior Anthracite Coal Co., Scranton, Pa.	500,000	.....	.....	18,370	....	.....	1,379
Fair Coal Co., Scranton, Pa.	23,000	.....	.....	3,692	....	857	6,203
East Boston Coal Co., Kingston, Pa.	129,570	.....	.....	123,507	....	27,151	36,127
Suffolk Anthracite Collieries, Scranton, Pa.	2,522,418	1,150,000	.....	1,104	....	127,775	89,828
West End Colliery Co., New York, N. Y.	480,000	.....	127,178	.....	15,897	50,429	127,788
Mid City Coal Co., Scranton, Pa.	445,000	.....	.....	40,997	....	16,365	20,732

Concerns Engaged in Mining and Washing Anthracite

	Capital Stock—Common	Capital Stock—Preferred	Net Income	Net Loss	Federal Income Tax	Depletion	Depreciation
Alden Coal Co., Alden Station, Pa.	$1,000,000	.....	.....	$64,924	.....	.....	$36,745
Buck Run Coal Co., Minersville, Pa.	200,000	$205,500	.....	176,143	.....	.....	61,866
Clifford Coal Co., Scranton, Pa.	20,000	.....	.....	24,049	.....	.....	16,988
Kingston Coal Co., Kingston, Pa.	1,000,000	.....	$453,656	.....	$56,707	$44,573	132,812
Glen Alden Coal Co., Scranton, Pa.	4,225,595	.....	7,809,069	.....	976,134	2,474,985	1,118,994
The T. F. Quinn Coal Co., Scranton, Pa.	10,000	.....	.....	94,103	.....	.....	11,910
Susquehanna Collieries Co., Philadelphia, Pa.	2,336,800	600,000	.....	315,830	.....	385,756	1,278,342

The Lehigh Valley Coal Co., Philadelphia, which is listed under "concerns engaged in mining anthracite in addition to other activities," reported common stock of $9,465,000; net income, $3,142,456; total federal income tax, $392,807; depletion, $1,249,338; depreciation, $1,175,848.

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Concerns Engaged Solely in Mining Anthracite, Reporting on Fiscal-Year Basis or for a Part of the Year Only

	Capital Stock—Common	Capital Stock—Preferred	Net Income	Net Loss	Federal Income Tax	Depletion	Depreciation	Remarks
Candlemas Collieries Co., Wilkes-Barre, Pa.	$1,000,000	.....	.....	$159,442	.....	$22,663	$174,470	Fiscal year Sept. 1, 1923, to Aug. 31, 1924.
Connell Anthracite Mining Co., Scranton, Pa.	1,078,860	.....	.....	117,413	.....	2,324	18,007	Fiscal year Apr. 1, 1924, to Mar. 31, 1925.
East Bear Ridge Colliery Co., Scranton, Pa.	625,000	.....	.....	72,576	.....	13,915	51,906	Fiscal year ending Sept. 30, 1924.
Grand Tunnel Coal Co., Scranton, Pa.	200,000	$550,000	$109,185	.....	$13,648	.....	23,487	Fiscal year Dec. 1, 1923, to Nov. 30, 1924.
Northumberland Collieries, Inc., Bryn Mawr, Pa.	.....	213,800	.....	7,019	.....	.....	.....	Fiscal year June 1, 1924, to May 31, 1925.
Slocum Hollow Coal Co., Scranton, Pa.	50,000	.....	81,679	.....	10,210	36,322	1,613	Fiscal year ending July 31, 1924
Spring Run Collieries Co., Wilkes-Barre, Pa.	25,000	.....	.....	12,184	.....	2,461	5,086	Fiscal year Sept. 1, 1923, to Aug. 31, 1924.
Clift Coal Co., Wilkes-Barre, Pa.	231,000	.....	.....	13,028	.....	.....	.....	Part year Oct. 16 to Dec. 31, 1924.
Legitta Creek Anthracite Co., Scranton, Pa.	1,500,000	1,000,000	.....	84,553	.....	94,003	49,000	Part year, Apr. 1 to Oct. 31, 1924.
South Penn Collieries Co., Scranton, Pa.	1,629,892	1,163,500	.....	230,291	.....	32,828	17,672	Part year, June 23 to Dec. 31, 1924.
Temple Coal Co., Scranton, Pa.	1,000,000	1,877,959	11,904	.....	1,301	179,771	88,784	Part year, Jan. 1 to Sept. 30, 1924.
Von Storch Collieries Co., Scranton, Pa.	5,000	.....	.....	244,897	.....	82,695	29,508	Part year, Jan. 1 to Nov. 24, 1924.
Temple Anthracite Coal Co., Scranton, Pa.	519,289	2,000,000	3,933	.....	429	59,668	44,572	Part year, Oct. 1 to Dec. 31, 1924.
Lackawanna Valley Fuel Co., Throop, Pa.	250,000	2,700	.....	49,985	.....	.....	14,150	Fiscal year.
Shamokin Colliery Co., Wilkes-Barre, Pa.	250,000	250,000	.....	37,050	.....	.....	80,593	Part year, May 26 to Dec. 31, 1924.

Subsidiary Concerns; Data Reported in Consolidated Income-Tax Returns

	Capital Stock, Common	Net Income	Net Loss	Depletion	Depreciation
Scranton Coal Co., New York, N. Y. (contained in consolidated return of New York, Ontario & Western R. R.)	$200,000	.....	$130,719	$171,302	$48,938
*Elk Hill Coal & Iron Co., New York, N. Y. (contained in consolidated return of New York, Ontario & Western R. R.)	60,000	.....	.....	39,408	39,644
Central Pennsylvania Quarry, Stripping & Construction Co., Hazleton, Pa. (contained in consolidated return of Pennsylvania Quarry, Stripping & Construction Co.; Benjamin Iron & Steel Co.)	600,000	$68,734	.....	.....	48,464
Jeddo-Highland Coal Co., Jeddo, Pa. (contained in consolidated return of Jeddo-Highland Coal Co.; Jeddo Supply Co.; Jeddo Tunnel Co.)	5,000,000	313,868	.....	97,395	602,278
Pardee Bros. & Co., Inc., Latimer Mines, Pa. (contained in consolidated return of Pardee Bros. & Co., Inc.)	2,500,000	26,439	.....	61,367	91,869
Coxe Bros. & Co., Inc., New York, N. Y. (contained in consolidated return of Lehigh Valley R. R. Co.)	2,910,150	1,344,703	.....	163,136	272,901
*New York & Middle Coal Field R. R. & Coal Co., New York, N. Y. (contained in consolidated return of Lehigh Valley Railroad Co.)	1,216,325	79,406	.....	31,666	.....
The Lehigh Coal & Navigation Co., Philadelphia, Pa. (contained in consolidated return of the Lehigh Coal & Navigation Co.)	29,243,400	63,509	.....	480,053	1,045,802
Alliance Coal Mining Co., Philadelphia, Pa. (contained in consolidated return of the Lehigh Coal & Navigation Co.)	2,250,000	.....	273,223	26,251	113,023
Cranberry Creek Coal Co., Philadelphia, Pa. (contained in consolidated return of the Lehigh Coal & Navigation Co.)	1,000,000	222,264	.....	.....	120,740
Lehigh Coal & Navigation Co. of New England, Philadelphia, Pa. (contained in consolidated return of the Lehigh Coal & Navigation Co.)	200,000	496,052	.....	.....	9,248
Harleigh Brookwood Coal Co., Philadelphia, Pa. (contained in consolidated return of Madeira, Hill & Co. and affiliated companies)	1,000,000	.....	886,307	51,781	187,935
Colonial Colliery Co., Philadelphia, Pa. (contained in consolidated return of Madeira, Hill Co. and affiliated companies)	2,200,000	.....	648,779	108,375	116,368
*Silver Lake Coal Co., Philadelphia, Pa. (contained in consolidated return of Madeira, Hill & Co. and affiliated companies)	300,000	.....	10,650	.....	.....
The Philadelphia & Reading Coal & Iron Corp., Philadelphia, Pa. (contained in consolidated return of the Philadelphia & Reading Coal & Iron Corp. and affiliated companies)	5,600,000	.....	52,516	1,102,615	.....
†Trevorton Colliery Co., Cleveland, Ohio (contained in consolidated return of J. P. Burton Coal Co.)	28,125	38,677	.....	17,670	4,205
†Thouron Coal Co., Cleveland, Ohio (contained in consolidated return of J. P. Burton Coal Co.)	50,000	88,704	.....	.....	.....
Lehigh & Wilkes-Barre Coal Co., Wilkes-Barre, Pa. (contained in consolidated return of Lehigh & Wilkes-Barre Corp.	16,917,500	6,732,282	.....	1,207,985	732,708
Lehigh & Wilkes-Barre Coal Co. of New Jersey, Wilkes-Barre, Pa. (contained in consolidated return of Lehigh & Wilkes-Barre Corp.	50,000	4,781	.....	.....	.....
Lenigh & Wilkes-Barre Coal Co. of Massachusetts, Wilkes-Barre, Pa. (contained in consolidated return of Lehigh & Wilkes-Barre Corp	300,000	.....	19,467	.....	34,057
Lehigh-Luzerne Coal Co., Wilkes-Barre, Pa. (contained in consolidated return of Lehigh & Wilkes-Barre Corp.)	.....	(1)	(2)	.....	.....
Pine Hill Collieries Co., Minersville, Pa. (contained in consolidated return of Pine Hill Collieries Co.)	317,123	.....	164,060	19,318	14,767
Pine Hill Coal Co., Minersville, Pa. (contained in consolidated return of Pine Hill Collieries Co.)	250,000	.....	400,092	23,811	24,027
‡Hillside Coal & Iron Co., New York, N. Y. (contained in consolidated return of Erie Railroad Co.)	1,000,000	.....	.....	405,497	109,218
Pennsylvania Coal Co., New York, N. Y. (contained in consolidated return of Erie Railroad Co.)	5,000,000	.....	.....	1,332,549	397,570
The Hudson Coal Co., New York, N. Y. (contained in consolidated return of the Delaware & Hudson Co.)	16,675,250	6,980,378	.....	.....	.....
Repplier Coal Co., Minersville, Pa. (contained in consolidated return of Peaked Mountain Coal Co., Wilmington, Del.)	20,000	.....	135,158	.....	36,932

*Lessor company. †Fiscal year ending March 31, 1925. ‡Net income not reported for subsidiary company. (1) No assets. (2) Non-operating.

C. & O. Asks Permit to Buy Island Creek Ry.

The Interstate Commerce Commission has been asked to approve the purchase of the Island Creek Ry., linking Holden and Logan, in West Virginia, by the Chesapeake & Ohio Ry. It is understood that a consideration of $1,500,000 has been agreed upon between the C. & O. and the Island Creek Coal Co., owners.

The road has been under lease to the C. & O. since 1912, and all equipment used on the line is owned by the railroad company.

The proposed purchase contemplates the selling in fee of the entire Island Creek road, its branch lines and switches. There will be no change in operating policy should the sale be consummated.

All freight carried over the Logan and Southern branch, up Main Island Creek, which is owned by the C. & O., must be hauled over the Island Creek road to find an outlet to the main line of the C. & O.

Big Muddy Project Shelved

Reports received from Washington since the survey recently made by Major John C. Gotwalls, U. S. District Engineer, indicate that the project for dredging the Big Muddy River is not considered practical, as had been hoped by coal interests and industries in general throughout the southern Illinois coal fields. Plans were under way for dredging the river as an additional outlet for the shipment of coal into Northern and Eastern markets, but no doubt the scheme will be pigeonholed, temporarily at least.

There still remains the possibility of shipping from the interior mines by rail to the Mississippi and thence by barge to the Twin Cities. The rates on this combined rail-water service are about 80 per cent of the all-rail charges.

The Upper Mississippi Barge Line Corporation plans to expend $600,000 for equipment for use on the upper Mississippi line. Later this will be replaced by government boats specially designed for this service.

Kentucky Legislature Kills Coal Tax Bill

The Kentucky Legislature killed the Hutcherson coal tax bill on Feb. 5 by an adverse vote in the House of 51 to 42 on a motion of its author to read it into the calendar despite an adverse report by the Committee on Revenue and Taxation.

Rising to a point of order at the opening of the session, Representative Milliken, Simpson County, chairman of the committee, said he had heard rumors that proponents of the coal tax planned an effort to take the bill from the committee. He then reported the bill adversely.

Mr. Hutcherson then put his motion to have it read into the calendar and defended the bill in a ten-minute speech. Representative Jones of Harlan spoke against it for ten minutes, when the roll call was taken.

Representatives Strange, Bowling Green, and Pulliam, Paducah, have similar bills in the hands of the same committee.

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A. I. M. E. Enriches Program By Additional Addresses

The final program of the 133d session of the American Institute of Mining & Metallurgical Engineers, just received, shows several changes of interest to coal men. In the morning mine-ventilation session of Monday, Feb. 15, A. S. Richardson, ventilation engineer, Anaconda Copper Mining Co., will discuss "Theoretical Operating Performance of Mine Fans."

At the meeting on Tuesday afternoon Graham Bright will present data on the use of loading machines in bituminous mines; R. H. Sweetser, of the American Rolling Mill Co., Columbus, Ohio, will speak on the evaluation of coal. The article by Thomas Fraser and H. L. Yancey on the air-sand process of cleaning coal will be transferred to this session. S. W. Parr, of the University of Illinois, Urbana, Ill., will discuss the relation of origin and state of carbonization of coal to the problems of low-temperature carbonization.

The Wednesday morning session will have the added attraction of an address on the selection of coal for the manufacture of coke, by H. J. Rose, Koppers Co. Laboratories, Mellon Institute, Pittsburgh, Pa.

C. J. Hicks, of the Standard Oil Co. of New Jersey, and J. M. Shore, editor of *Service Talks* of the Philadelphia Rapid Transit Co., will supplement the remarks of George E. Roberts, vice-president, National City Bank, at the afternoon session held by the Industrial Relations Committee.

The ground movement and subsidence meeting in the afternoon will embrace not only H. N. Eavenson's remarks on coal-mine subsidence but some by C. M. Young, mining engineer, University of Kansas, on subsidence round a salt well, and others by George S. Rice of the U. S. Bureau of Mines, on the Gros Ventre slide near Jackson's Hole, Wyo., and ground movements and rock bursts on the Rand, a discussion of the report of the South African Commission on Rock Bursts.

On the afternoon of Wednesday also the Mining Methods Committee will hold open session, and Theodore Marvine, of the *Explosives Engineer*, will discuss blasting in coal mines of the United States.



C. R. Seem

Newly elected president of the Engineers' Society of Northeastern Pennsylvania, who assumed office Jan. 21. Mr. Seem is electrical engineer of the Glen Alden Coal Co., of Scranton, recognized as one of the most completely electrified anthracite companies.

Orient Blast Due to Match Used to Light Lamp

The explosion in the New Orient Mine, of the Chicago, Wilmington & Franklin Coal Co., near West Frankfort, Ill., Feb. 1, in which five men were killed, is believed to have been due to the attempt of a bratticeman to relight his lamp with a match while gas was escaping. A. D. Lewis, State Director of Mines and Minerals, announced that this conclusion was based on the inquiry of an investigating committee, which found a broken match stem and an open safety lamp belonging to Lige Hindman, a bratticeman.

Director Lewis advised officials of the company that "had it not been for the fine condition of the mine and for the fact that the mine was rock-dusted very thoroughly, undoubtedly you would have had the greatest disaster at your mine in the history of coal mining. The department wishes to congratulate you and the company for going further than the law requires to make your mine safe."

American Methods Used by I. W. W. Exiles To Increase Output of Russian Coal Mines

American coal mining methods are being introduced to Russia by the American industrial colony, composed largely of former I. W. W. members, with William ("Big Bill") Haywood, former head of the Western Federation of Miners, as one of the organizers. The American exiles, according to the Associated Press, are building a town on the American plan at Kamerova, and also are constructing an iron bridge over the Tom River below Tomsk.

The colony is operating in the Kuznetsk basin and is said to have made great strides during the last year in the production of coal, coke, iron and naphthaline. Several new coke furnaces have been installed, increasing the output by 75,000 tons annually and coal production was increased by 60 per cent in 1925, bringing the annual output to about 1,000,000 tons a year.

The Americans have erected a new electrical plant and a large chemical works for the manufacture of coal-tar products.

Ventilating Code Rejected By A.E.S.C. Ballot

The mine ventilating code proposed to the American Engineering Standards Committee for adoption has failed of approval on a mail ballot sent out Dec. 19. It has been returned to its sponsors for revision through the sectional committee and may be presented again later. The code was originally signed by the representatives selected by the Mine Correlating Committee, including one from the Bureau of Mines. The Bureau withdrew its sanction and sponsorship at the last minute, and the mail ballot was ordered only after a delay that was much criticised.

The Bureau lodged objections to the code for several reasons. It believed the code should segregate the mechanical and economic factors from those involving safety and health of miners. It objected because there were no specific standards set up for the quantity of air to be furnished per man underground and no specifications on proportions of firedamp and inflammable gas which may be present in an atmosphere in which it is safe for men to work. The term "booster fan" appeared, to the Bureau, to be confused with auxiliary and small blower fans.

A long explanation of the need for large airways seemed to have no place in such a code. Also, to George S. Rice, chief engineer of the Bureau, the code's provision that crosscuts be not less than 200 ft. apart "seemed unwise" because he believed that spacing is too long for a gaseous mine.

To Continue Mining Research At Carnegie Tech.

C. G. Dunkle, secretary of the Pittsburgh Section of the American Chemical Society, has been appointed to a research fellowship in mining and metallurgy at the Carnegie Institute of Technology. He is a graduate of the University of Pittsburgh in the class of 1922. This appointment fills a vacancy caused by the death of Benjamin E. Hess, of Los Angeles, Cal., and a graduate of California Institute of Technology, who was killed on Dec. 19 in a train wreck.

Mr. Dunkle will continue the investigations in a "study of flame propagation in natural gas and air," that were interrupted by the death of his predecessor. Under a plan in effect for the past several years, the research work will be conducted in co-operation with the Pittsburgh Station of the U. S. Bureau of Mines and an advisory board of Pittsburgh district coal operators and engineers, with H. F. Coward, principal assistant of the Safety in Mines Research Board of England, and G. W. Jones, fuels chemist of the U. S. Bureau of Mines, directly in charge of the study of this problem.

Announcement also is made of the appointment of John W. Greene, of Seattle, Wash., to a newly-created research fellowship to study "reactivity of coke." This fellowship is to be financed for the coming ten months by the American Gas Association.

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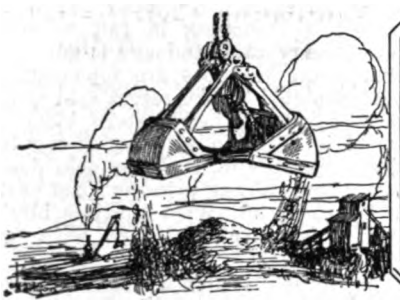
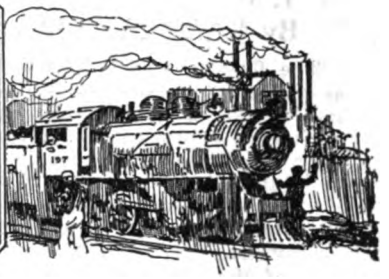


Production And the Market



Light Spot Call for Steam Coals Accentuated By Stronger Domestic Demand

Developments in the coal markets of the country the first week of February intensified the factors which have been dominating the situation since the beginning of the calendar year. The breaking up of the third anthracite wage conference at Philadelphia was immediately reflected in increased demand for prepared bituminous coals and other substitute fuels all along the Atlantic seaboard and indirectly as far inland as the Indiana-Ohio state line. This demand was given a sharper edge by the cold wave that pressed on the heels of the dissolution of the wage negotiations. Weather demand for domestic coals also was felt in the Middle Western fields. There the situation was accentuated slightly by the fact that eastern demand cut down the tonnage of prepared sizes of West Virginia coals normally offered to western buyers.

Steam coals, on the other hand, suffer both from the marked absence of active spot buying by the big industrial consumers and from the fact that the eagerness of the producers to book every possible ton of prepared coal while the domestic trade is ready to pay the price has resulted in a surplus of smaller sizes. Industrial purchasing agents are thoroughly cognizant of this state of affairs and they are using that knowledge to their own advantage. That explains why some high-volatile slack from Kentucky is to be had at 50c. at the mines and why some distress tonnage has sold at half that price. Such quotations, of course, do not represent the average range, but the price list has generally weakened.

The only real cloud on the horizon of the steam coal buyer is the possibility of a breakdown in transportation. Service, on the whole, has been maintained on a remarkable plane of efficiency. Local congestion in Pennsylvania, however, has warned the cautious purchaser that there are limits to all things—even transportation.

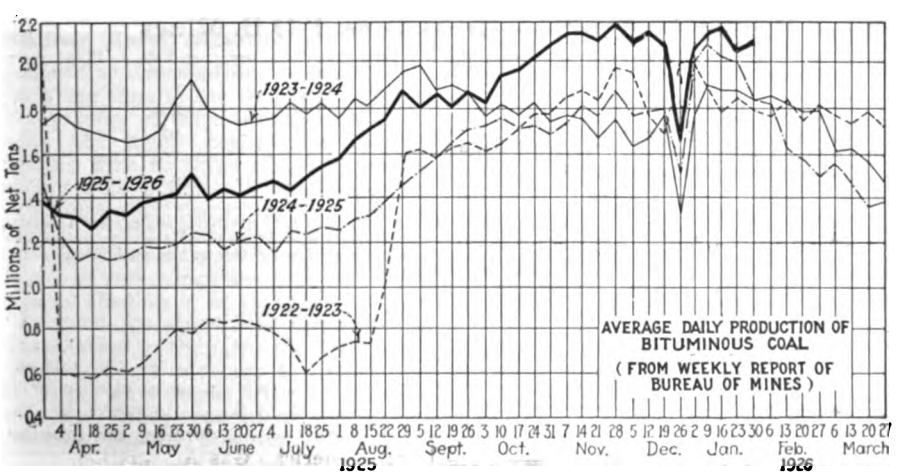
In the meantime, the rate of production is unusually high. Preliminary figures for the week ended Jan. 30 show a total output of 12,602,000 net tons. Production for the month was estimated at 53,701,000 tons. This is not the maximum recorded, but it compares favorably with the tonnages of years of extraordinary activity. Even allowing full weight to the added tonnage moving to consumers who normally burn anthracite, these figures evidence a healthy undercurrent to the general business conditions of the nation. The coal man's complaint is that this undercurrent has had little or no effect upon the prices paid for fuel.

Prices Still on Decline

The gravamen of this complaint is reflected in the *Coal Age* Index of prices on bituminous coal for Feb. 8. The index number was 177 and the corresponding price was $2.14. For Feb. 1 the index was 178 and the corresponding price was $2.16.

Dumpings at Hampton Roads the week ended Feb. 4 dropped to 388,265 net tons, as compared with 440,522 tons the preceding week. Heavy seas were in part responsible for the sharp decline: export business was the principal sufferer.

There has been no check to the rising quotations on coke moving to the retail trade. In the case of the Connellsville field, which is the worst offender, ovens have quoted $12@$13 on yard crushed coke for sales direct to the dealer. Where the middleman has intervened, some quotations at New York and Philadelphia have gone to $14 and $15, but little coke has moved at the last-named figures.



Estimates of Production

(Net Tons)

BITUMINOUS

	1925	1926
Jan. 16	12,044,000	13,069,000
Jan. 23 (a)	11,588,000	12,431,000
Jan. 30 (b)	11,073,000	12,602,000
Daily average	1,846,000	2,100,000
Coal yr. to date	(c) 394,519,000	448,054,000
Daily av. to date	1,543,000	1,747,000

ANTHRACITE

Jan. 16	1,803,000	37,000
Jan. 23	1,740,000	47,000
Jan. 30	1,730,000	34,000
Coal yr. to date	(c) 71,987,000	40,654,000

BEEHIVE COKE

Jan. 23 (a)	265,000	343,000
Jan. 30 (b)	250,000	338,000
Cal. yr. to date	(c) 1,128,000	1,379,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

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Middle West in Doldrums

The Chicago market is again in the doldrums. Operators who gambled on the weather and tried to run full-time are now paying for their temerity.

Steam sizes have been the hardest hit. Western Kentucky 2-in. screenings, shipped to Chicago on consignment, have been seeking buyers at 65@95c. and some spot tonnage also has been available at the lower figure. Fairly good distress strip mine-run from southern Indiana and western Kentucky has been offered as low as 95c.

High-grade southern Illinois screenings are easy at $1.40 and spot Belleville, Springfield and Fifth Vein Indiana fine coal is to be had at $1. Few producers, however, will accept orders for future shipment at those figures.

Trade is dragging in the Carterville field and "no bills" of all sizes clutter up the mine tracks. Under high pressure, mines are working from three to five days a week. Railroad buying from the shaft operations is good. Stripping pits also are receiving a fair share of locomotive fuel orders.

Business has slumped off materially in the Duquoin and Jackson County fields. Working time, with minimum tonnages, ranges from three to five days. Domestic demand in the Mt. Olive district is fair, but steam sizes are hard to move. "No bills" are piling up. Standard district mines are living a hand-to-mouth existence.

Domestic Trade Unexciting

The domestic trade in the Middle West is not exciting. Anthracite is no longer to be had at Chicago and coke is the most popular substitute. Prices on egg and nut coke have advanced sharply. Byproduct plants are sold up and some of the smaller gas companies are finding a ready market for gashouse coke.

Pocahontas egg and nut are scarce at rising prices. Demand for southern Illinois 6x3-in. furnace and 3x2-in. egg is little better than normal because of the anthracite shortage High-volatile coals from eastern Kentucky and West Virginia are moving in fair volume. Quite a respectable tonnage is going to Iowa, where retailers are replenishing stocks depleted by the recent cold snap. Every now and then eastern block is offered in Chicago at bargain-counter prices. Some 4-in. coal has sold down to $2. The average price on good eastern Kentucky and West Virginia block, however, is nearer $2.75@$3, with egg at $2@$2.50.

The return of milder weather has played hob with the St. Louis local market. Coke shows activity, but smokeless demand has receded as prices have advanced. Country domestic trade is slow and steam demand also has declined.

Kentucky Screenings Hit Toboggan

With the exception of a giddy drop in screenings, the Louisville market revealed little change the first week in February. Steam nut suffered somewhat in sympathy with screenings, and some mine-run, principally low grade,

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	Feb. 9 1925	Jan. 25 1926	Feb. 1 1926	Feb. 8 1926†
Smokeless lump	Columbus	$3.85	$4.35	$4.35	$4.25@$4.50
Smokeless mine run	Columbus	1.90	2.60	2.85	*2.40@2.75*
Smokeless screenings	Columbus	1.20	1.85	1.60	**1.75@2.00**
Smokeless lump	Chicago	3.50	4.00	4.35	**4.50@4.75**
Smokeless mine run	Chicago	1.50	2.10	2.35	2.25@2.50
Smokeless lump	Cincinnati	3.85	4.25	4.10	**4.25@5.00**
Smokeless mine run	Cincinnati	2.00	2.25	2.50	2.50
Smokeless screenings	Cincinnati	1.25	1.35	1.35	*1.00@1.50*
*Smokeless mine run	Boston	4.45	4.85	4.85	4.75@5.00
Clearfield mine run	Boston	1.95	2.05	2.05	1.90@2.25
Cambria mine run	Boston	2.30	2.35	2.40	*2.15@2.60*
Somerset mine run	Boston	2.10	2.15	2.20	*2.00@2.35*
Pool 1 (Navy Standard)	New York	2.75	3.05	3.05	2.85@3.25
Pool 1 (Navy Standard)	Philadelphia	2.80	2.95	2.95	**2.85@3.30**
Pool 1 (Navy Standard)	Baltimore	2.25	2.30	2.30	2.25@2.35
Pool 9 (Super. Low Vol.)	New York	2.10	2.55	2.55	2.40@2.75
Pool 9 (Super. Low Vol.)	Philadelphia	2.20	2.60	2.60	2.50@2.75
Pool 9 (Super. Low Vol.)	Baltimore	1.85	2.15	2.15	2.10@2.20
Pool 10 (H.Gr.Low Vol.)	New York	1.85	2.25	2.25	2.15@2.40
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.85	2.35	2.35	2.20@2.50
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.70	1.95	1.95	1.90@2.00
Pool 11 (Low Vol.)	New York	1.60	2.10	2.10	2.00@2.25
Pool 11 (Low Vol.)	Philadelphia	1.65	2.10	2.10	**2.10@2.30**
Pool 11 (Low Vol.)	Baltimore	1.50	1.70	1.70	1.70@1.75
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.50	1.60	1.60	1.50@1.70
Pool 54-64 (Gas and St.)	Philadelphia	1.50	1.60	1.60	1.55@1.70
Pool 54-64 (Gas and St.)	Baltimore	1.65	1.65	1.65	1.60@1.70
Pittsburgh se'd gas	Pittsburgh	2.50	2.65	2.65	2.60@2.75
Pittsburgh gas mine run	Pittsburgh	2.25	2.10	2.10	2.00@2.25
Pittsburgh mine run (St.)	Pittsburgh	1.95	2.05	2.05	2.00@2.10
Pittsburgh slack (Gas)	Pittsburgh	1.45	1.45	1.25	*1.15@1.25*
Kanawha lump	Columbus	2.50	2.25	2.25	2.00@2.50
Kanawha mine run	Columbus	1.60	1.70	1.70	*1.45@1.80*
Kanawha screenings	Columbus	.65	.85	.65	.50@.85
W. Va. lump	Cincinnati	2.00	2.60	2.75	2.50@3.00
W. Va. gas mine run	Cincinnati	1.35	1.45	1.50	1.40@1.60
W. Va. steam mine run	Cincinnati	1.25	1.30	1.35	*1.25@1.40*
W. Va. screenings	Cincinnati	.75	.75	.80	.60@1.00
Hocking lump	Columbus	2.50	2.35	2.45	**2.25@2.75**
Hocking mine run	Columbus	1.60	1.75	1.75	*1.50@1.85*
Hocking screenings	Columbus	1.10	1.20	1.15	*1.00@1.15*
Pitts. No. 8 lump	Cleveland	2.30	2.30	2.30	1.90@2.75
Pitts. No. 8 mine run	Cleveland	1.85	1.80	1.80	**1.85@1.90**
Pitts. No. 8 screenings	Cleveland	1.30	1.30	1.15	*1.05@1.15*

Midwest	Market Quoted	Feb. 9 1925	Jan. 25 1926	Feb. 1 1926	Feb. 8 1926†
Franklin, Ill. lump	Chicago	$3.10	$3.50	$3.50	$3.50
Franklin, Ill. mine run	Chicago	2.35	2.50	2.50	2.35@2.65
Franklin, Ill. screenings	Chicago	1.60	1.85	1.60	*1.40@1.75*
Central, Ill. lump	Chicago	2.85	3.10	3.10	*2.75@3.00*
Central, Ill. mine run	Chicago	2.20	2.30	2.30	*2.00@2.25*
Central, Ill. screenings	Chicago	1.55	1.40	1.25	*1.00@1.25*
Ind. 4th Vein lump	Chicago	2.85	3.00	3.00	2.75@3.25
Ind. 4th Vein mine run	Chicago	2.35	2.30	2.30	2.25@2.35
Ind. 4th Vein screenings	Chicago	1.45	1.85	1.70	1.65@1.75
Ind. 5th Vein lump	Chicago	2.60	2.40	2.55	2.40@2.75
Ind. 5th Vein mine run	Chicago	2.10	1.95	1.95	1.85@2.10
Ind. 5th Vein screenings	Chicago	1.30	1.25	1.25	*1.00@1.25*
Mt. Olive lump	St. Louis	2.85	2.85	2.85	2.75@3.00
Mt. Olive mine run	St. Louis	2.35	2.00	2.00	**2.00@2.10**
Mt. Olive screenings	St. Louis	1.60	1.75	1.75	1.75
Standard lump	St. Louis	2.35	2.45	2.45	2.40@2.50
Standard mine run	St. Louis	1.95	1.80	1.80	1.75@1.90
Standard screenings	St. Louis	1.10	1.05	1.05	1.00@1.10
West Ky. block	Louisville	2.55	2.05	2.00	1.85@2.15
West Ky. mine run	Louisville	1.35	1.35	1.35	*1.15@1.50*
West Ky. screenings	Louisville	1.05	.90	.90	*.50@.80*
West Ky. block	Chicago	2.35	2.10	2.35	2.25@2.50
West Ky. mine run	Chicago	1.35	1.50	1.50	1.25@1.75
South and Southwest					
Big Seam lump	Birmingham	2.85	2.75	2.75	2.50@3.00
Big Seam mine run	Birmingham	1.75	2.10	2.10	*1.75@2.25*
Big Seam (washed)	Birmingham	1.85	2.30	2.30	*2.00@2.50*
S. E. Ky. block	Chicago	2.75	2.85	2.85	2.75@3.00
S. E. Ky. mine run	Chicago	1.50	1.85	1.85	1.75@2.00
S. E. Ky. block	Louisville	2.60	2.85	2.75	2.50@3.00
S. E. Ky. mine run	Louisville	1.35	1.55	1.55	1.35@1.75
S. E. Ky. screenings	Louisville	.85	1.00	1.00	*.40@.70*
S. E. Ky. block	Cincinnati	2.60	3.00	3.00	2.75@3.25
S. E. Ky. mine run	Cincinnati	1.30	1.40	1.50	*1.15@1.75*
S. E. Ky. screenings	Cincinnati	.80	.80	.80	.50@1.10
Kansas lump	Kansas City	4.85	5.00	5.00	5.00
Kansas mine run	Kansas City	3.35	3.10	3.10	3.00@3.25
Kansas screenings	Kansas City	2.50	2.30	2.30	**2.35**

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**; declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Feb. 9, 1925 Independent	Feb. 9, 1925 Company	Feb. 1, 1926 Independent	Feb. 1, 1926 Company	Feb. 8 1926 Independent	Feb. 8 1926 Company
Broken	New York	$2.34	.....	$8.00@$9.25				
Broken	Philadelphia	2.39	.....	9.15				
Egg	New York	2.34	$8.50@$9.25	8.75@9.25				
Egg	Philadelphia	2.39	9.45@9.75	8.80@9.25				
Egg	Chicago*	5.06	8.17@8.40	8.08				
Stove	New York	2.34	9.50@10.00	9.00@9.50				
Stove	Philadelphia	2.39	10.00@10.75	9.15@9.50				
Stove	Chicago*	5.06	8.80@9.00	8.53@8.65				
Chestnut	New York	2.34	9.75@10.50	8.75@9.40				
Chestnut	Philadelphia	2.39	10.00@10.75	9.25@9.40				
Chestnut	Chicago*	5.06	8.61@9.00	8.40@8.41				
Pea	New York	2.22	4.75@5.50	5.50@6.00				
Pea	Philadelphia	2.14	5.75@6.00	6.00				
Pea	Chicago*	4.79	5.36@5.75	5.36@5.95				
Buckwheat No. 1	New York	2.22	2.35@3.00	3.00@3.15				
Buckwheat No. 1	Philadelphia	2.14	2.50@3.00	3.00				
Rice	New York	2.22	2.00@2.25	2.00@2.25				
Rice	Philadelphia	2.14	2.00@2.25	2.25				
Barley	New York	2.22	1.40@1.65	1.50				
Barley	Philadelphia	2.14	1.50	1.50				
Birdseye	New York	2.22	1.65@1.75	1.60				

*Net tons, f.o.b. mines.

Due to suspension of mining in hard-coal fields and practical stoppage of shipments, quotations are only nominal and are not printed. *Coal Age* quotations on anthracite will be resumed when the new prices are available.

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also weakened slightly. Heavy consumers are reducing stockpiles and show no buying interest despite the low prices. Most of the movement of block, lump and egg has been on old western orders or for eastern shipment.

Western Kentucky block is $1.85@$2.15; egg and lump, $1.75@$2; mine-run, $1.15@$1.50; nut, $1.25@$1.50; screenings, pea and slack, and nut and slack, 50@80c. Eastern Kentucky block is $2.50@$3; lump, $2.25@$2.50; egg, $2@$2.25; nut, $1.75@$2; mine-run, $1.35@$1.75; screenings, 40@70c. Some distress eastern Kentucky slack has been sold to the trade at 25c.

After a month-end spurt, prompted by sub-zero weather, domestic coal demand at the Head of the Lakes again dropped as the mercury rose. Bookings of a fair volume of industrial orders from Minnesota and northern Wisconsin furnished a pleasing contrast to the domestic decline. Iron and steel interests were the most active factors in this market. Hydro-electric companies, short of water power, also bought.

No Hard Coal on the Docks

For the first time since the 1902 strike, the docks are bare of hard coal. The recent cold spell caused a last rush on the part of consumers which speedily cleaned up the little anthracite left. Consumers are cheerfully buying substitutes. Sales of Pocahontas and other smokeless coals are setting new high records. Domestic coke and briquets also are in good demand. Many householders declare they will use smokeless coals as long as the present wide spread in prices between those coals and anthracite exists.

Smokeless stocks on the docks are liberal. It is estimated that a fair carry-over of that coal will remain on hand at the opening of navigation. The recent cut of 50c. on prepared sizes was prompted by the fact that retailers in the Twin Cities have been buying all-rail.

Bituminous stocks now on the docks approximate 4,500,000 tons.

A week of moderate weather lessened consumption in Milwaukee territory. Despite this general tapering off in domestic demand, it is still difficult to obtain Pocahontas coal, but prices are unchanged. Increasing demand has pushed the retail price on nut coke to $16—the same price to which range was raised the week preceding.

Weather Hurts Southwestern Demand

Warm weather has begun to cut down operating time in the Southwest. There is a surplus of all sizes in the Kansas fields and many mines have reduced running time to three and four days a week. This policy will soon clean up screenings accumulations, but how to dispose of surplus prepared sizes without sacrificing all profit is the problem. Prices on screenings are firm, but there is some shading in lump figures.

Demand for sized coal for domestic consumption in the Colorado field holds steady. Mines continue to operate on an 85-per cent basis, with transportation and labor conditions favorable. Domestic demand, however, is unevenly distributed; western Kansas and Nebraska are the heavy buyers. Colorado mines have about 300 "no bills" of various sizes on track. Unless these are moved soon, a cut in production will be inevitable.

Utah operators, due to weather conditions, are finding the domestic market —at no time this winter really brisk— again slow and draggy. Industrial demand is normal. There is no change in prices. Opening of new mines has made competition exceptionally keen.

Upsets in Cincinnati Market

Extremes meet in a review of the Cincinnati market the past week. High-volatile slack is still on the auction block and the situation of mine-run is little better. Block, on the other hand, stands firm at the $2.50@$3 range. Some low-volatile slack has sold at $1, but the general run of prices is $1.25@$1.50. Low-volatile lump commands $4.25 in the spot market; egg, nut and stove bring $5 for western delivery and $1 more when the buyer is located in the East.

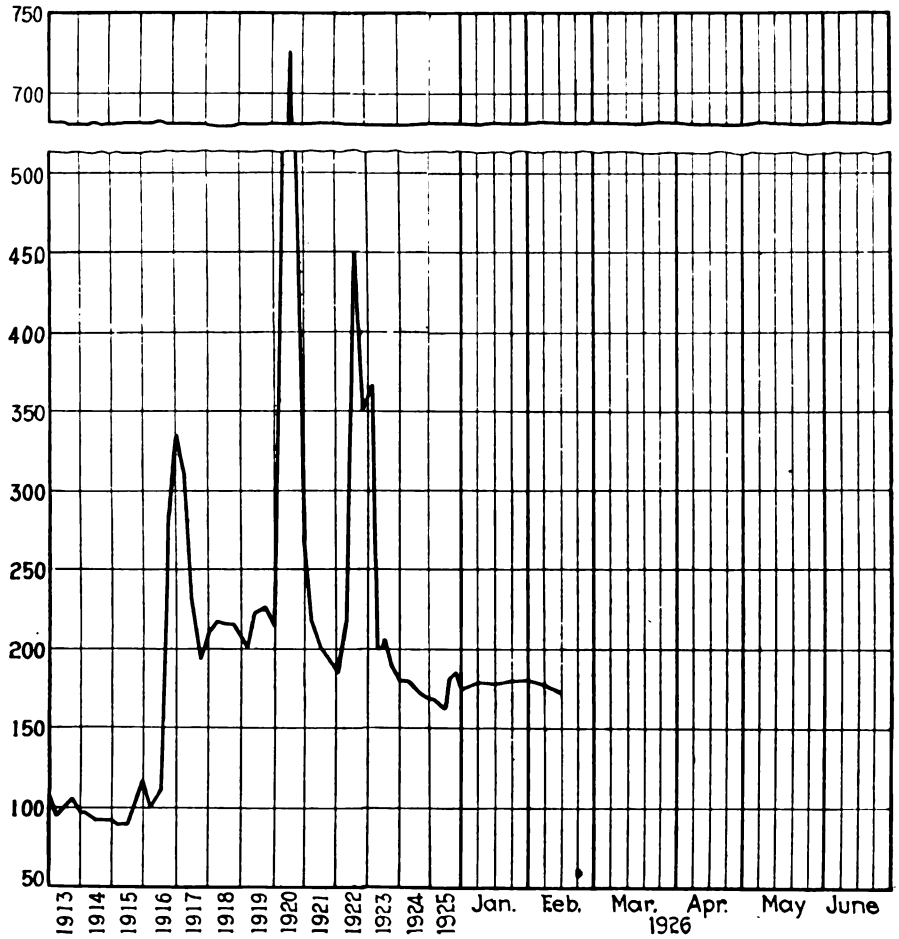
Producers are striving to avoid glutting the Cincinnati market. The latest interchange report of the American Railway Association shows a decrease of 1,222 cars in the coal interchanged through the Cincinnati gateways and a much lighter movement of empties to the Chesapeake & Ohio. Counting unbilled loads against the mine allotment on the Louisville & Nashville has forced many operators enjoying a good business in domestic sizes to dump nut and slack on the market at any price.

Another factor in upsetting prices has been the attitude of industrial purchasing agents, who stocked heavily last November to beat down prices during January-March. One Kentucky producer with heavy bookings of domestic orders has been selling slack at 50c., while many other producers in the same field hold to $1@$1.10. New River slack is holding up to $1.25@$1.50. The $1 price mentioned in a preceding paragraph applied to Pocahontas coal; the explanation lies in the refusal of byproduct ovens to take their usual quotas of coal from that field.

Retail business is brisk. The same weather conditions which created that condition, however, have badly hampered river movement.

Central Ohio Trade Drags

Central Ohio domestic trade again succumbed to weather conditions last week. Dealers, who are rather heavily stocked, are devoting their attention to cleaning up as much as possible. Smokeless coals lead in consumer de-



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926				1925	1924
	Feb. 8	Feb. 1	Jan. 25	Jan. 18	Feb. 9	Feb. 11
Index	177	178	178	181	168	188
Weighted average price	$2.14	$2.16	$2.16	$2.19	$2.03	$2.27

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.

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mand. Splints have weakened considerably and Ohio coals are very dull. There has been little retail price cutting. Smokeless sells at $9.50@$10; splints, $7@$7.50; Kentucky block, $7.25@$7.50; Hocking, $6@$6.50.

The market for industrial coal continues dull and irregular. Spot buying is the rule with many large consumers, including the City of Columbus. Screenings are so weak that many mines in the Hocking Valley and Cambridge fields have closed down. Pomeroy Bend operators paying the 1917 scale still keep going. Some lots of screenings have sold under 50c.

Output in the Hocking Valley, Cambridge, Crooksville and Jackson districts approximates 18 per cent of capacity. Pomeroy Bend is averaging 35 to 40 per cent.

Slack prices in the Cleveland market are touching new low levels. The cheerful side of the situation is that the slump is indicative of heavy and more profitable domestic demand for large coal. The sad angle is the fact that the low prices are in part due to the competition of bargain-counter West Virginia offerings. The surplus of screenings also has diminished inquiry for other steam grades.

Milder weather has slowed down retail activity. Dealers bought heavily during the recent cold wave and now are reluctant to add much to the stocks on hand.

During the week ended Jan. 30 the No. 8 field in eastern Ohio produced approximately 259,000 tons, or 37 per cent of capacity. The output was 17,000 tons less than that of the week preceding and 10,000 tons under the total for a year ago.

No Gain in Pittsburgh District

The Pittsburgh district has undergone no improvement with the new month. Local demand for domestic sizes continues fair, but prices are unsatisfactory. Nut and egg for eastern delivery bring $2.75@$3.25, but the tonnage is limited.

Slack, which recently slumped badly, seems to have found a level at $1@$1.10 for steam coal and $1.15@$1.25 for gas. These prices are 25 to 30c. under the quotations ruling until the break.

The district is operating on a 30-per cent basis.

Developments in the anthracite strike have helped the central Pennsylvania bituminous field. January output is estimated at 5,011,348 tons—the largest since December, 1920, when 5,418,829 tons was loaded. Prices are stronger. Pool 18 is quoted at $1.80@$2; pool 11, $1.90@$2.20; pool 10, $2.25@$2.50; pool 9, $2.40@$2.70; pool 1, $3@$3.50; pool 71, $2.60@$2.90. Prepared sizes are offered at $5.25@$5.50. Run of oven coke brings $7 and sized coke is $10.

The Buffalo bituminous trade is dull and discouraging. Slack has tumbled. Some tonnage has been sold at $1, although standard quotations are $1.25@$1.40 on Fairmont and $1.30@$1.60 on No. 8 coal. Fairmont lump is held at $1.50@$1.75; mine-run, $1.40@$1.50. Youghiogheny gas lump is available at $2.25@$2.50; Pittsburgh steam lump at $2@$2.25 and short-rate Allegheny Valley mine-run at $1.75@$2.

Car Loadings and Supply

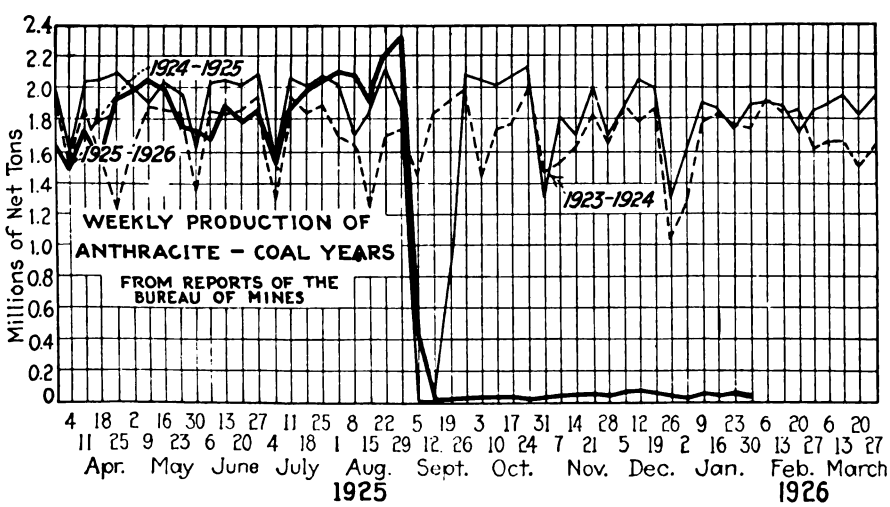
	Cars Loaded	
	All Cars	Coal Cars
Week ended Jan. 23, 1926.....	921,734	180,923
Preceding week.....	936,655	192,820
Week ended Jan. 24, 1925.....	924,254	201,229

	Surplus Cars		Car Shortages	
	All Cars	Coal Cars	All Cars	Coal Cars
Jan. 22, 1926...	264,781	96,255	.....	.....
Jan. 15, 1926...	309,155	115,502	.....	.....
Jan. 22, 1925...	228,836	77,964	.....	.....

New England Market Sluggish

The New England bituminous market is decidedly sluggish for this season of the year. Industrial demand is intermittent and light and the householder is more indifferent than conservative trade observers had anticipated. Nevertheless, several of the West Virginia smokeless shippers say they are sold up for the fortnight on prepared coal and high-grade Pennsylvania low-volatile screened coal is bringing $5@$6.50, with little offered. There are reports that as high as $8 has been asked by some shippers of Pocahontas and New River egg and stove.

Many consumers, however, show a strong preference for foreign coals. Several cargoes of Welsh anthracite and patent fuel have been badly delayed by the storms. A cargo was landed at New Bedford last week after tossing the waters for nearly a month. A cargo consigned to Boston was abandoned 800 miles off Halifax.



There have been only minor variations in the f.o.b. vessel prices on West Virginia smokeless at Hampton Roads. The range is controlled by accumulations at the piers, but no sales have been reported under $4.75 or above $5 for Navy Standard. On cars, Boston and Providence, this coal brings $6.25@$6.40 gross. There is little retail demand for mine-run.

New York Market Active

The New York bituminous market was active last week. Shippers faced some transportation difficulties, but these were not serious enough to jam shipments, although snow storms in central Pennsylvania closed down some smaller mines. There was, however, much congestion at some of the local piers. The number of cars waiting to be dumped reached 5,000, which is almost double the normal number.

Mine-run was in steady demand. Prepared sizes of New River and Pocahontas were snapped up at $7@$8. High-volatiles were quoted at $3.25@$4.25, but the tonnage was limited. There was a scarcity of sized coals from the Broad Top field. Some shippers demanded up to $9 for Broad Top coal, but the average quotations on 4-in. lump ranged between $5 and $6. Sized low-volatile from central Pennsylvania was held at $6@$7. Some medium-volatile coal was offered at $4@$5.

Congestion Hits Philadelphia

The great drawback to the Philadelphia market last week was delayed transportation. The Pennsylvania R.R. asserts that considerable progress has been made in clearing up the congestion between Altoona and Harrisburg, but coal still comes in slowly. To add to the difficulties, a two-foot snow storm hit the region Feb. 3, cutting down car supply.

Prices on sized bituminous have advanced. Pennsylvania low-volatiles and Pocahontas range from $7.50 to $8, with most shippers sold up. High-volatiles, such as the Fairmont and Westmoreland coals, are in stronger demand as a result, but quotations have not shifted from the $4@$4.25 range. Many householders are now using these coals.

The accumulation of slack is the major problem confronting the operators. The railroad congestion, however, has brought some relief, as industrial consumers are now showing a little more interest in the question of shipments.

No real change is apparent in the Baltimore bituminous situation. All grades are in easy supply and prices have shown little fluctuation.

Prices Up at Hampton Roads

The coal business at Hampton Roads last week was on the up grade. The failure of the anthracite wage negotiations strengthened prices and demand and broadened inquiries for tonnage. Mine quotations on coals sized for household consumption were boosted, but no change in local retail prices was anticipated. The heavy seas had a bad effect upon export shipments, but coastwise and bunker deliveries held up as well as could be expected.

Birmingham market conditions have not changed materially in the past

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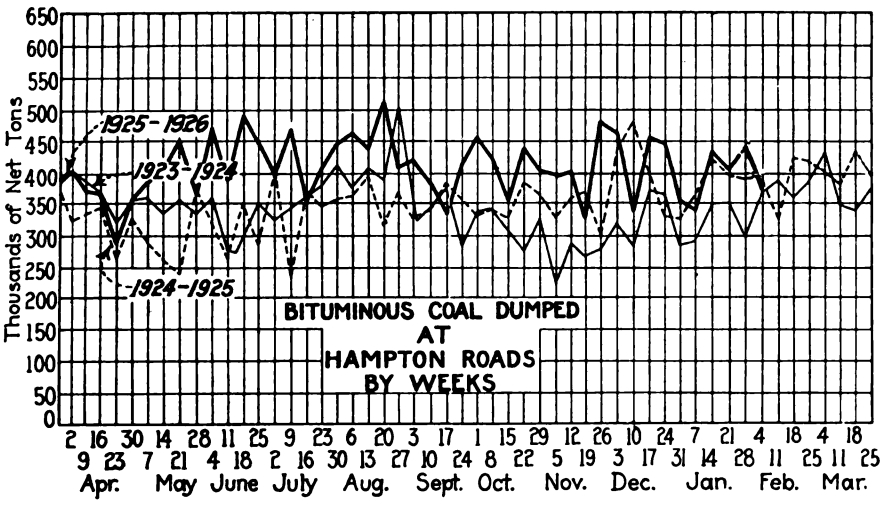

week. Medium and lower quality coals dragged, but the output was moved without serious delay. Washed coals still lead in activity. Railroads are taking large quantities of fuel on contract. The bunker trade is featureless, but the volume is ahead of last year.

Most of the better domestic coals are sold up through February, with a fair amount of new business coming in to augment mine bookings. Medium and lower grades are moving moderately well. Both retailers and consumers, however, are buying on a hand-to-mouth basis.

Prices, except on some of the less desirable steam coals, are steady. High pressure is being maintained in the coke market, egg and nut advancing to $7.50@$8 the past week as the result of the extraordinary demand and shortage in supply. Foundry coke moved up to $7. Gas coke also sold at $7.

New York Cries for Substitutes

Substitutes for anthracite in the New York market were short last week. Demand was increased by the break in the wage negotiations at Philadelphia and was further intensified by the heavy snow storm which swamped retail dealers with new orders. Many of the latter were for less than ton lots.

The scarcity of coke strengthened the market on sized soft coal. Run-of-oven coke was quoted at $11@$12.50, with the average selling price around $11.50. Sized coke sold at $13.50@$14, with a few agents asking up to $15.

There was another rush of Philadelphia retailers for substitute fuels last week, following the breaking up of the third wage conference. The overcautious dealers who had been holding back buying found they were compelled to pay even higher prices. Low-volatile sized coals were around $7.50 and Connellsville sized coke was offered at $13@$14.50.

Coke Prices Still Up

Run of oven coke at Connellsville ovens jumped another dollar early last week under the bidding of eastern buyers demanding car numbers. The region is rife with conflicting claims as to future business; some producers declare they have the situation well in hand and can ship as promised when sales are made; others insist that coke sold a month ago is just being loaded.

Certain sales agents have practically withdrawn from the market. They consider the outlook too uncertain and are unwilling to take the chance of a slump in prices and cancellation of orders. There is much more direct selling by the ovens to eastern buyers than was the case some weeks ago. The prices of $10@$11 on run-of-oven and $12@$13 on yard crushed coke, therefore, represent the actual realizations of the ovens.

The blast furnaces are entirely out of the picture. Those that are operating have contracts averaging $4.

The Connellsville *Courier* reports coke output in the Connellsville and Lower Connellsville regions for the week ended Jan. 30 at 107,700 tons from the furnace ovens and 125,180 tons from the merchant ovens. Furnace oven production decreased 2,900 tons; merchant oven output increased 910 tons over the production for the preceding week.

Coal Produced in the United States in 1924[a]

(Exclusive of Product of Wagon Mines)

State	Net Tons: Loaded at Mines for Shipment	Sold to Local Trade and Used By Employees	Used at Mines for Steam and Heat	Made Into Coke at Mines	Total Quantity	Value: Total	Value: Average per Ton	Number of Employees: Underground: Miners b	Underground: All Others	Surface	Total	Average Number of Days Worked	Average Tons per Man per Day
Alabama	18,395,094	348,580	215,450	171,060	19,130,184	$44,756,000	$2.34	15,892	7,216	4,848	27,956	220	3.11
Alaska	93,932	4,321	1,410	.....	99,663	560,000	5.62	60	40	67	167	287	2.08
Arkansas	1,402,929	15,019	33,555	.....	1,451,503	5,898,000	4.06	1,811	732	807	3,350	134	3.24
Cal., Idaho, Neb. and Oregon	8,352	7,851	750	.....	16,953	71,000	4.19	36	20	27	83	156	1.31
Colorado	9,512,534	561,539	236,696	133,329	10,444,098	31,863,000	3.05	8,023	2,978	1,953	12,954	178	4.52
Georgia	58,097	611	1,839	14,400	74,947	271,000	3.62	55	19	69	143	248	2.11
Illinois	63,689,920	3,319,700	1,313,661	.....	68,323,281	155,260,000	2.27	59,451	21,306	8,606	89,363	148	5.16
Indiana	20,338,416	725,561	416,236	.....	21,480,213	46,453,000	2.16	17,717	6,210	3,631	27,558	136	5.75
Iowa	4,351,252	993,393	123,805	.....	5,468,450	18,097,000	3.31	8,382	2,677	1,042	12,101	161	2.80
Kansas	3,871,125	309,806	66,802	.....	4,247,733	12,854,000	3.03	6,182	1,250	1,129	8,561	151	3.29
Kentucky	43,683,182	859,023	458,205	146,794	45,147,204	84,733,000	1.88	31,864	14,703	9,199	55,766	174	4.67
Maryland	1,945,259	171,925	16,519	.....	2,133,703	4,629,000	2.17	2,373	856	547	3,776	173	3.27
Michigan	767,359	6,433	57,228	.....	831,020	3,602,000	4.33	1,016	390	145	1,551	178	3.00
Missouri	2,169,155	244,302	67,423	.....	2,480,880	8,154,000	3.29	3,649	1,068	1,260	5,977	135	3.08
Montana	2,650,836	170,590	83,939	.....	2,905,365	8,596,000	2.96	1,852	823	521	3,196	173	5.26
New Mexico	2,549,438	49,001	51,412	136,212	2,786,063	9,774,000	3.51	2,416	851	939	4,206	204	3.25
North Carolina	51,094	1,200	4,800	.....	57,094	224,000	3.92	60	33	27	120	287	1.66
North Dakota	957,987	212,994	29,546	.....	1,200,527	2,473,000	2.06	671	186	441	1,298	165	5.62
Ohio	27,404,951	2,685,565	382,491	.....	30,473,007	62,011,000	2.03	29,481	8,966	5,782	44,229	143	4.82
Oklahoma	2,236,937	35,999	56,679	.....	2,329,615	8,590,000	3.69	3,324	1,740	1,080	6,144	124	3.05
Pa. (bituminous)	110,240,821	6,565,736	1,835,366	11,991,850	130,633,773	295,164,000	2.26	108,773	38,312	22,237	169,322	180	4.27
South Dakota	3,000	9,043	.....	.....	12,043	36,000	2.99	40	.....	.....	40	138	2.18
Tennessee	4,142,873	73,700	109,781	230,201	4,556,555	9,711,000	2.13	5,726	2,236	1,403	9,365	159	3.05
Texas	1,119,048	7,256	20,707	.....	1,147,011	1,721,000	1.50	1,426	456	313	2,195	166	3.16
Utah	4,107,261	51,400	60,566	268,930	4,488,157	12,057,000	2.69	2,369	1,023	938	4,330	182	5.70
Virginia	9,756,162	168,530	51,951	716,821	10,693,464	21,823,000	2.04	6,131	4,255	2,293	12,679	226	3.73
Washington	2,442,059	92,366	69,903	49,339	2,653,667	9,689,000	3.65	2,192	982	684	3,858	202	3.41
West Virginia	97,169,314	3,307,505	652,855	533,223	101,662,897	185,229,000	1.82	55,067	30,480	16,656	102,203	182	5.48
Wyoming	6,447,307	112,055	198,106	.....	6,757,468	18,327,000	2.71	4,285	1,772	1,056	7,113	176	5.41
Total, bituminous	441,565,694	21,111,004	6,617,681	14,392,159	483,686,538	1,062,626,000	2.20	380,324	151,580	87,700	619,604	171	4.56
Pa. anthracite	77,247,499	3,043,939	7,635,424	.....	87,926,862	477,231,000	5.43	76,035	43,328	40,646	160,009	274	2.00
Grand total	518,813,193	24,154,943	14,253,105	14,392,159	571,613,400	1,539,857,000	2.69	456,359	194,908	128,346	779,613	192	3.81

a Note that the coal statistics of the Geological Survey for a given year include only the mines that had an output in that year. Many mines that operated in 1923 produced no coal in 1924; moreover, many of the mines that did produce in 1924 worked for a short time only. The number of active bituminous mines of commercial size in the United States was 9,331 in 1923 and 7,586 in 1924.

b Includes also loaders and shotfirers.

Statistics issued by U. S. Bureau of Mines.

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Foreign Market And Export News

No Break in Demand On British Collieries; Inquiries Also Growing

The improvement in the British coal market is well maintained. All sections show a broadening of inquiries and substantial bookings to carry the trade well into February have been made. Superior large and smalls are rather scarce for prompt shipment, and prices are strongly held. Ordinary drys and sized products are in keen demand, and prices are very firm.

French inquiries are much better, and good business awaits fulfilment. South America remains fairly active, though effective demand is checked by a sharp rise in the outward freight, which adds two or three shillings to the c.i.f. price.

Best Admiralty large is closely booked over the next two or three weeks, and prices are steady to firm. Ordinary drys are meeting more demand at the lower levels. Monmouthshire collieries are busy, and a steady inquiry is passing. Patent fuel is dull.

There was very little spot coal available for late January delivery in the Newcastle market and the odd lots on offer were taken up at very high prices. All classes of fuel, including cokes, show increased values, but the chief improvements are in best quality gas and steam coals. Contracts and inquiries show much more confidence in the future than one might have expected in view of recent developments. In the coal fields more pits are restarting, and most of those idle are idle from the result of disputes rather than lack of trade.

Output by British collieries during the week ended Jan. 23, according to a special cable to *Coal Age*, totaled 5,540,000 gross tons, compared with 5,460,000 tons in the preceding week.

Better Tone to Belgian Trade

The general feeling in the Belgian market is better than a month ago as far as industrial coals are concerned. Domestic demand continues satisfactory. It is also self-evident that the suppression of import licenses for the free German coals did not fail to improve the situation of the Borinage collieries.

In the Charleroi district stocks are diminishing and the demand is particularly active in 5/10 and 10/20 lean coals. Smalls used in lime production command 69 fr. In the Borinage, stocks are again being drawn from.

Prices at the mine are generally unchanged. Transportation rates on steam coals have been cut 20 per cent, but rates on domestic coals, pitch and pitwood have been increased 30 per cent.

During 1925 Belgium received 2,902,908 tons of reparation coal (of which 1,326,592 tons were coking smalls; 390,137 tons coking, and 260,835 tons coke) as against 4,381,786 tons in 1924 (of which 1,321,374 tons were coking small; 1,024,008, coking coal, and 540,448 tons coke).

Owing to the raising of fiscal charges, the reparation coals bear a slight increase since Jan. 13. The new taxes will be: Cokes, 1.20 fr. instead of 0.12; coking coals, 0.80 instead of 0.08; flaming coals, 71.2 centimes instead of 7.8 centimes.

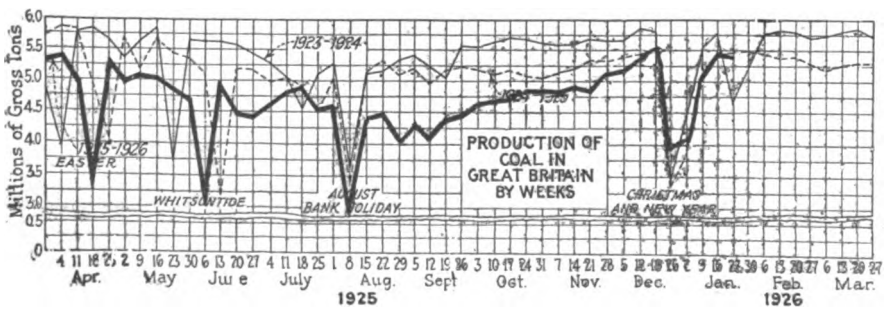
French Coal Prices Advanced to Meet Wage Demand

Paris, France, Jan. 20.—There is but little change in the French coal market. Demand is steady and collieries are sold up for the month and part of February. Transportation has improved. It is not yet practicable to use all the waterways, but the number again opened to ordinary traffic is increasing every day. Delays in the delivery of the French, as well as of the Belgian coals, however, still compel consumers to use more British coal, in spite of high prices due to the adverse exchange.

The Miners' National Federation has sent the Comité Central des Houillères a request for higher wages, based on a 25 per cent increase in living costs. A meeting held at Douai Jan. 16 between the coal owners' representatives of the Nord and Pas de Calais and those of their men agreed that from Jan. 16 to May 15 the super-indemnity for cost of living (*surprime de vie chère*) should be raised from 40 to 100 per cent. For the underground man, whose wage is the highest, the increase granted will amount to 1.80. Nord and Pas de Calais coal prices have been increased 4 fr.

The Lorraine collieries (La Houve) have raised their prices 5 fr. in order to maintain their prices in the same limits as the Sarre collieries, which have just increased their rates 3 to 7 fr.

Contrary to what has been reported, the French-German negotiations to conclude a coal agreement have not been resumed and they probably will not be resumed for a while.



Egyptian Orders to Wales

Announcement has just been made by the Egyptian State Rys. as to the results of the bidding of Dec. 2, 1925, for the supply of colliery screened Welsh coal. This announcement states that:

Sixteen offers were received and contracts have been placed as follows:

Messrs. Watts, Watts & Co., for the supply of 200,000 metric tons, at £1 8s. 9d. per metric ton. Payment to be made on the delivered weight less two per cent of the freight only or, in the option of the Administration, on the bill of lading quantity less an allowance of two per cent on coal and freight.

Messrs. Beynon & Co., for the supply of 50,000 metric tons at £1 9s. 9d. per metric ton.

Messrs. W. Milburn & Co., for the supply of 50,000 metric tons at £1 9s. 10d. per metric ton.

Each contract is for delivery c.i.f. (Alexandria).

Export Clearances, Week Ended Feb. 6, 1926

FROM HAMPTON ROADS

For Italy	Tons
Ital. Str. Brenta II, for Genoa	2,885
Ital. Str. Antonietta, for Bagnoli	6,152
Ital. Str. Campania, for Porto Ferrajo	6,935
Jap. Str. Etna Maru, for Genoa	9,127
For New Brunswick:	
Br. Schr. Cape Blomidon, for St. John	626
For Brazil:	
Br. Str. Polycarp, for Para	1,006

FROM BALTIMORE

For Egypt:	
Ital. Str. Roana, for Alexandria	9,348

Hampton Roads Coal Dumpings*

(In Gross Tons)

N. & W. Piers, Lamberts Pt.:	Jan. 28	Feb. 4
Tons dumped for week	181,832	158,403
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	70,730	76,690
C.&O. Piers, Newport News:		
Tons dumped for week	140,761	111,572

* Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shipper's protest

Pier and Bunker Prices, Gross Tons

PIERS

	Jan. 30	Feb. 6†
Pool 1, New York	$6.00@$6.35	$6.00@$6.35
Pool 9, New York	5.50@ 5.75	5.50@ 5.75
Pool 10, New York	5.20@ 5.40	5.25@ 5.50
Pool 11, New York	4.85@ 5.25	4.85@ 5.25
Pool 9, Philadelphia	5.30@ 5.40	5.50@ 5.80
Pool 10, Philadelphia	5.05@ 5.25	5.30@ 5.50
Pool 11, Philadelphia	4.80@ 5.00	4.80@ 5.20
Pool 1, Hamp. Roads	4.90@ 5.00	5.00@ 5.10
Pool 2, Hamp. Roads	4.65@ 4.75	4.65@ 4.75
Pools 5-6-7, Hamp. Rds.	4.25@ 4.35	4.40@ 4.50

BUNKERS

Pool 1, New York	$6.25@$6.60	$6.25@$6.50
Pool 9, New York	5.75@ 6.00	5.75@ 6.00
Pool 10, New York	5.45@ 5.65	5.50@ 5.75
Pool 11, New York	5.10@ 5.50	5.10@ 5.50
Pool 9, Philadelphia	5.55@ 5.70	5.75@ 6.00
Pool 10, Philadelphia	5.25@ 5.50	5.55@ 5.75
Pool 11, Philadelphia	5.10@ 5.25	5.15@ 5.45
Pool 1, Hamp. Roads	5.00	5.10
Pool 2, Hamp. Roads	4.75	4.75
Pools 5-6-7, Hamp. Rds.	4.35	4.50

Current Quotations, British Coal, f.o.b. Port, Gross Tons

Quotations by Cable to *Coal Age*

Cardiff:	Jan. 30	Feb. 6†
Admiralty, large	23s.@23s.6d.	23s.3d.
Steam smalls	14s.6d.	14s.6d.
Newcastle:		
Best steams	16s.9d.@18s.	16s.7d.@18s.
Best gas	17s.	16s.7d.@18s.
Best bunkers	16s.6d.	16s.6d.

† Advances over previous week shown in **heavy type**; declines in *italics*.

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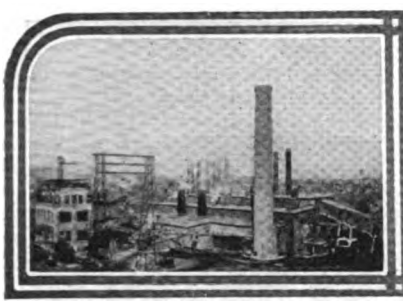
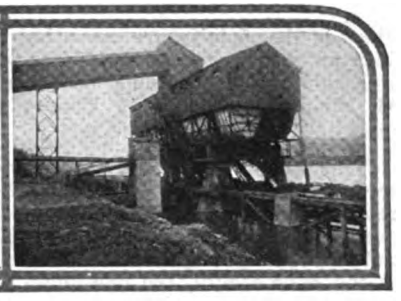


News Items From Field and Trade



ALABAMA

Plans are being formulated for holding the annual state first-aid and mine-rescue meet early next summer. Alabama Mining Institute, Bureau of Mines, Joseph A. Holmes Safety Association and other organizations sponsoring these meets are now giving the matter attention. Officials of the Bureau of Mines and the Safety Association are visiting the different mining fields, giving instructions to the teams and offering all the assistance possible in preparing the men for this important work.

A first mortgage six and one-half per cent gold bond issue of the Porter Coal Co. is being marketed by Ward, Sterne & Co., Birmingham. The company was reorganized in 1922 when W. Carson Adams, E. J. Rowe and J. A. Norman acquired the stock of the Pratt-Southern company, which owned 1,160 acres of mineral rights and 160 acres of surface rights at Porter, adjacent to the Risco holdings of the Republic Iron & Steel Co. The Porter Coal Co. was formed as a holding company and started at once to put the mine property in first-class condition. During this period limited operations were maintained. With the completion of a coal washer in a few weeks, the company expects to resume full-time operation.

ARKANSAS

Mine No. 8 near Bates, owned by W. J. Francis, was flooded recently and workmen were forced to abandon mine No. 2. Considerable equipment was lost but the employees escaped.

COLORADO

R. N. Jones, of Trinidad, formerly master mechanic for the Victor-American Fuel Co., and William Liddle, of Palisade, for three years foreman of the Garfield mine, announce that they have obtained a five-year lease on the Garfield mine and plan to work it on a large scale. They are to take over the property Feb. 15, and expect to have 25 men at work a few days later. The new lessees will erect a new tipple where the old one recently torn down was located. They expect to mine 200 tons daily. The new operators will have the option of buying the mine from its present owner, Albert E. Bayless, of Oklahoma City. No coal has been shipped from the Garfield mine for two or three years.

His property closed up and posted for the second time, Fred Sevcik, owner of the Cottonwood mine, two and a half miles north of Colorado Springs, has filed suit against F. J. Dalrymple, state inspector of coal mines, in district court asking for an injunction to restrain the inspector or his deputies from requiring him to place a certified official in charge and from the installation of a ventilator fan, as provided in the new state mining law. Sevcik does all the underground work in the mine himself, the complaint states, others being employed for the surface jobs. Sevcik won his first action against Dalrymple Jan. 21.

Colorado mines produced 10,412,041 tons of coal in 1925, according to an announcement by State Inspector James Dalrymple. This is 89,047 tons less than was mined in 1924. December output was 1,249,656 tons. The average number of men employed in and about the mines last year was 12,138, and the number of days worked per mine was 156.4.

A. M. Wilson, City Manager, and S. E. Nichols, City Clerk of Colorado Springs, have closed a one-year contract with the Colorado Fuel & Iron Co. for Toller coal for use by the municipal gas plant. The company will supply the plant with approximately 10,000 tons of coal during the year. Its bid was $4.70 per ton.

ILLINOIS

Rice Miller, of Hillsboro, was appointed receiver for the Illinois Coal Corporation on Jan. 28 by Judge W. C. Lindley in U. S. District Court at Danville, the appointment being made on the petition of the American Mine Equipment Co., and with the consent of the coal corporation. The corporation has property valued at $10,000,000, operating six mines in Illinois—at Nason, Springfield, Auburn, Girard, Virden and Nokomis. It has bonds outstanding of approximately $6,000,000. Albert J. Nason is president of the corporation. The Nason mine is one of the largest in the world. It is a twin-tipple operation sunk about a year and a half ago and recently completed.

The Peabody Coal Co., Chicago, is equipping Mine No. 6 with automatic cushioned horn cage stops and table keepers. This is the sixteenth mine of this company to install such equipment.

A large seam of coal was struck late in January at a depth of 246 ft. at the shaft being sunk on the Judge Early Farm, one mile south of Sherman. Sixteen tons of coal were hoisted the first day. The shaft is 7x6 ft. and two cages will be used. Work will be started at once on the outbuildings and the tipple.

William A. Wilson, of Belleville, has resigned as St. Clair County Mine Inspector to accept a position as manager of a coal mine in Freeburg.

The Old Ben Coal Corporation with 14 mines in southern Illinois and offices in St. Louis and Chicago, announces through John E. Jones, safety engineer of the company, a marked decrease in the fatality rate of men employed at its properties during 1925. Last year the rate was 1.17 men for each million tons mined compared with 3.02 in the preceding year.

Initial preparations for two large strip operations are being made west of Duquoin by two different interests. Options on the two tracts have been taken and it is stated that between 25 and 35 drills will be employed in the next 60 days to ascertain the exact position of the coal.

The Peabody Coal Co.'s mine No. 9, Taylorville, produced 1,318,780 tons of coal in the 252 days it operated in 1925. Its payroll for the year amounted to $1,844,538. No. 58, another Taylorville mine, also made a high mark. It hoisted 947,551 tons during 292 working days. Its pay-roll totaled $1,439,371. The total hoists of Peabody mines for the entire district were 5,680,551 tons for 1,724 working days. The district payroll was $8,968,371.

The Randall Mine, one mile north of Freeburg, is expected to be reopened about the middle of February, the property having changed hands recently. William J. Reichert, president of the Freeburg Milling Co., is reported to have purchased the property at a price stated to be over $16,000. The mine, which is one of the smaller operations in the Freeburg district, has been idle for the past two years.

INDIANA

Non-union mines in southern Indiana, closed up several weeks ago when an "army" of 1,500 union miners made a tour of the field, are gradually resuming work under the arrangements that prevailed prior to the visit of the unionists. The return to normal conditions in the region is being made without disturbance or interference, according to mine operators.

The Wasson-Pocahontas Coal Co., of Vincennes, has filed a final certificate of dissolution.

Growth of coal mining activities in and about Petersburgh has forced the enlargement of the New York Central R.R. yards there. Trackage double that now in use is being laid. Most

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mines in the vicinity are operating full time, and three engines are being used to assemble the outgoing coal trains. All strip mines in Pike County are operating full time.

Pleas of union miners for 18 non-union workers to quit work at the Sargeant mine No. 2, near Newburgh, were scorned by the non-union men last Friday. Met by a union delegation at the mine mouth, the non-union men proceeded to work without heeding the delegation's request that they quit and join the union.

The Bardyke mine, north of Terre Haute, which had been idle since early in December due to a fire which burned the tipple, has resumed operations. This mine is one of the large producers in the Terre Haute field. The mine is owned by the Fort Harrison Mining Co. and employs a large number of men.

William L. Williamson, for thirty years associated with the W. W. Ray coal interests at Terre Haute, has sold out his interest to the Ray company and will open a new coal jobbing company. He was a stockholder with the Ray interests in the Neutral Coal Producers Co. He will handle all grades of coal and has taken options on two mining properties which he intends to develop later.

KANSAS

Early returns from the run-off election, Feb. 2, in District 14, United Mine Workers (Kansas), indicated that district headquarters will be moved from Pittsburg to Frontenac, Matt L. Walters, district president, announced the day after the election. Frontenac offered the district free use of Miners' Hall there for offices. Three contestants were voted on at an election in December, at which time Arma, one of the contesting towns, was eliminated.

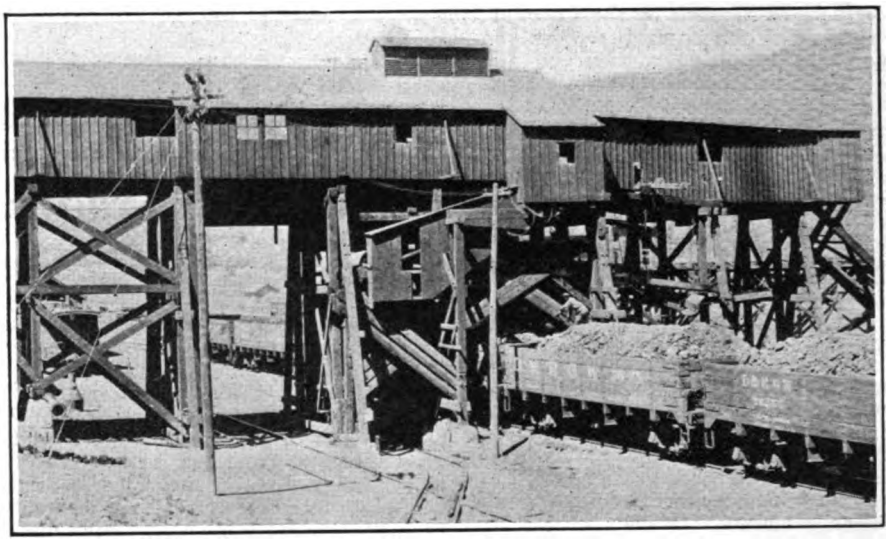
KENTUCKY

Formation of a coal mining company to be known as the Community Coal Co. is under way by business men of Corydon, Frank Ramsey, prominent merchant, presided at a preliminary meeting of 35 interested persons late in January. It is proposed to sink a new shaft near the city.

Vice-President Garth of the Hazard-Bluegrass Coal Corp. says his company plans the installation of new machinery and the construction of 40 new houses. The capacity of the plant is expected to be enlarged to 40 or more cars daily.

Guy H. Sowards, of the Southwestern Fuel Co., Louisville, who during the war was connected with the office of the Fuel Administrator, has been appointed a first lieutenant in the Quartermaster's Reserve Corps, supply division, to look after coal buying in war times for the Fifth Corps Area.

Establishment of a mine rescue station at Pineville is being urged by the Kentucky Coal Operators' Association. The project would serve 400 tipple mines, employing 50,000 workers, according to data presented by E. R. Clayton, secretary of the Harlan County Coal Operators' Association, and R. E. Howe, Knoxville, Tenn., secretary of the Southern Appalachian Coal Operators' Association. With a car operating out of Pineville, witnesses said, most of the coal district in eastern Kentucky and northern Tennessee could be cared for in case of emergency. Safety campaigns by the government were advocated in conjunction with the actual rescue work.



Bon Carbo Tipple of the American Smelting & Refining Co.

This tipple, located at Bon Carbo, Colo., handles coal for the smelting and refining company's plant about five miles away. The mine from which the coal is taken is equipped with excellent haulage facilities. About 1,200 tons of coal per day is loaded at this tipple.

MINNESOTA

The addition to the Inland Coal & Dock Co.'s plant at Duluth is nearing completion, and it is scheduled to be ready to receive coal at the opening of navigation. With the new addition the Inland dock will be one of the largest coal-handling plants at the Head of the Lakes.

MISSOURI

The Graddy mine, about two miles west of Lexington, was destroyed by fire late in January. All the equipment, the shop and machinery were lost. The mine is owned by E. J. McGrew. It was operated under lease by Ivan Beebe.

George J. L. Wulff, president of the Western Coal & Mining Co., St. Louis, and president of the Southwestern Interstate Coal Operators' Association, headquarters Kansas City, will represent Missouri on the board of directors of the National Coal Association. He will fill the unexpired term of F. W. Lukins, of Kansas City, who died recently.

OHIO

A suit to test the Ohio workmen's compensation law was started in the Jackson County courts recently by Attorney General C. C. Crabbe of Ohio against William McDonald, owner of the mine near Jackson, to compel McDonald to pay to the widow of Charles West the sum of $5,117 as death award. West was killed in the mine Oct. 23, 1924, and since Mr. McDonald was not a subscriber to the state compensation fund, it is held that he is liable for the death award. The result of the suit will be watched with much interest by smaller operators in Ohio.

Secretary H. C. Cain of the Columbus Board of Purchase has rejected all bids received Jan. 27 for coal for the various city departments. He announces that the supply necessary will be purchased on the open market for the time being at least. The bids called for 12,500 tons of Ohio nut, pea and slack for the municipal light plant; 7,000 tons of the same grade and size for the Scioto River pumping station and 2,500 tons for the garbage disposal plant.

A civil action has been brought in the Perry County courts by Allen Ripley, John F. Riley, Alexander Beattie and Joseph Francis against the Primrose Coal Co. to collect $31,000 claimed for the removal of 20,000 tons of mineral stone No. 6 vein from under their land by the defendant company. The plaintiffs also set forth that this operation rendered the coal on their lands inaccessible and ask for damages for that action.

The Maher Collieries Co. (H. F. Pollock, general manager), Bridgeport, is putting in a feeder and a retarder to control the cars on a steep grade.

Clyde S. Palmer has closed the branch offices of the Blue Star Coal Co. and the Three Points Coal Co., which have been maintained in the Union Central Building, Cincinnati, for some time past. Mr. Palmer has gone to Miami, Fla., where he will be in the plumbers' supplies business.

Walter A. Jones, of Columbus, and Fred E. Butcher, of Danville, Ill., receivers for the Wayne Coal Co., of Pittsburgh, are taking steps to liquidate the concern. Inventories of the various properties are being made, preparatory to offering them for sale. The suit which culminated in the re-

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ceivership was brought by the Colonial Trust Co., of Pittsburgh, to recover on a mortgage of $3,800,300 issued in 1917. The mortgage was given to float an issue of sinking fund bonds amounting to $12,156,000. All of this issue of bonds has been cancelled with the exception of $3,800,300 due in February, 1925. Properties of the company are located in Jefferson County and Athens County, Ohio, and in the Pittsburgh field. All are stripping operations.

OKLAHOMA

A recent report from Henryetta, in District 21, United Mine Workers, where a strike was called Sept. 1, 1925, showed that in that field in the last week of January twenty-four mines were working and nine were idle. Of the twenty-four mines in operation, twelve, operating open shop, under the 1917 wage scale, were producing more than 3,000 tons a day. Four mines, employing union miners under the 1924 scale, were producing 1,300 tons a day, and eight small mines, operated co-operatively, were producing 300 tons a day.

PENNSYLVANIA

Four men were killed at Archbald Jan. 31 when a cave-in occurred in an abandoned stripping operation of the Hudson Coal Co. The men were engaged in "bootleg" mining of coal when a huge rock was jarred loose and enveloped them.

The Wilmore Coal Co., of Philadelphia, announced the appointment on Feb. 1, of R. M. Mullen as general superintendent, and Frank King as superintendent, with offices in Windber, Somerset County. Mr. Mullen is a native of Indiana and a graduate in engineering at Princeton. He has been associated with the development of Windber coal since the beginning of operations. Mr. King is a graduate of Pennsylvania State College and has been located in Windber for three years.

James H. Allport, president of the Rich Hill Coal Co., at Barnesboro, and president of the Barnesboro Bank, is being prominently mentioned as a candidate for the Republican nomination for Congress from the Cambria County congressional district. The present Congressman, Anderson H. Walters, will not be a candidate to succeed himself. Mr. Allport is a member of the board of directors of the Central Pennsylvania Coal Producers' Association and served on the engineering board of Dr. Garfield's Fuel Administration during the World War.

The Bethlehem Mines Corporation is understood to be planning to start two more mines on the 1917 scale, at Ellsworth and Bentleyville. The company now has two mines working on this basis at Marianna and Cokeburg, in the Pittsburgh district.

Ninety-six per cent of the employees of the Orient Coal & Coke Co. (subsidiary of A. M. Byers Co.), Pittsburgh, have subscribed to a plan for employees' insurance arranged with the Metropolitan Life Insurance Co. Under the terms of the plan general employees may obtain $1,000 policies for 75c. per month and foremen and supervisory employees $2,000 policies for $1.50 per month, the company paying the balance of the net cost.

The Lehigh Valley Coal Co. has installed a mine pump at the Stockton end of the Shaft colliery that is said to be a forerunner of the time when the status of the pump runner in event of strikes won't be cause for anxiety. This pump is run by electricity and it needs no attention from a pump runner. Several times a week it is inspected, but that is all. An arrangement throws on the current when the rising waters submerge the end of the tail pipe and the same contrivance throws off the current when the pump lowers the level and leaves the tail pipe free from water.

Hillman Coal & Coke Co., of Pittsburgh, is improving the Edna No. 2 Mine, at Irwin, and will install a set of automatic cagers.

It is reported that negotiations are under way for the construction of a byproduct coke plant which will produce 1,000 tons daily near Morrell, south of Connellsville. Connellsville and New York capital is interested, the former owning 1,500 acres of coal lying 60 ft. under the surface. A 1,000-ton byproduct plant, as figured in the Connellsville district, would be equivalent to a 500-ton beehive plant.

The Harmon Creek Coal Co., one of the concerns in which John A. Bell, bankrupt coal man, owned a chief interest, has filed an answer in court at Pittsburgh, to a suit in equity filed by the Colonial Trust Co. of Pittsburgh, which seeks the inclusion of 500 acres of valuable coal land in Ohio in a mortgage made by the defendant company. The company claims that the property was acquired six months after the signing of the bond agreement.

TEXAS

Dr. J. P. Sparks, of Rockdale, has been appointed to the State Mining Board to succeed E. A. Camp, of Rockdale, whose term expired Jan. 1. W. K. Gordon, of Fort Worth; John Legory, of Crockett; Pete Kramer, of Mingus; D. B. Hollis, of Lovelady; L. R. Stoddard, of Calvin; and Adam R. Johnson, of Austin, compose the board, and their terms expire August 5, 1926. Frank Willis Denison, of Bastrop, is state mining inspector.

WEST VIRGINIA

Walter R. Thurmond, one of the leading operators of the Logan field, announces the consolidation of four coal companies in which he and his associates are interested in that field into one large company, the Thurmond Consolidated Coal Co., capitalized at $1,000,000. The companies merged are the Argyle Coal Co., Thurmond Coal Co., Logan Eagle Coal Co. and the Perry Branch Coal Co. Officers of the old companies as well as directors will continue in the new company, Mr. Thurmond being the general manager and A. E. Wait secretary and treasurer. The Thurmond Consolidated Coal Co. controls approximately 6,500 acres of coal land in Logan County, operating five mines with an annual production of about 750,000 tons. Finishing touches were put on the merger at Charleston.

The Consolidation Coal Co. is opening additional mines in the Fairmount field as rapidly as it can get the labor to man them. Thus far fifteen of its mines have gone into operation. In 1925 the company produced 8,042,280 tons, notwithstanding the long shut down in the early part of the year. Its 1924 output was 7,957,456 tons.

The U. S. Circuit Court of Appeals at Richmond has upheld a decision of the U. S. District Court at Charleston awarding a judgment of $94,437.82 to the Dingress Run Coal Co. against the Steel & Tube Co. of America. The litigation involved a dispute over a 10 per cent sliding scale of royalties on coal mined on land leased from the Dingress Run company by the steel company. The latter company contended that the coal had not been sold but had been shipped to its furnaces in the west and that therefore no royalty was due to the plaintiff company. The court, however, ruled in favor of the coal company. The decision deals with royalties on coal mined during 1920 and 1921.

The Sitnek Coal Mining Co. of Lumberport, recently installed a set of yoked horn feeders.

The W. H. Green Co. has acquired the mine and assets of the Greenmar Coal Co., Elkins, and will operate them.

The United Mine Workers is erecting additional barracks to house evicted miners' families at Watson, Chiefton, Monongah, Ida May, Wendel and Bower.

The Grey Eagle Mining Co., a Delaware corporation, has been granted permission to transact business in West Virginia.

An extensive crushing and screening plant for coke has been constructed by the West Virginia Coal & Coke Co. at its Coalton operation, in Randolph County, and is now in operation. Sizes of coke corresponding to anthracite sizes generally in use will be prepared.

The Guardian Coal Co. has increased its capital stock from $1,000,000 to $2,500,000.

The Morrison Coal & Coke Co., of which John C. Wolf, of Baltimore, is secretary, has been authorized to do business in West Virginia and similar permission has been granted the David Thomas Coal Co., of Ohio, of which David S. Thomas, of Naugatuck, W. Va., is secretary.

The State Compensation Department has started making payments to the orphans and widows of the men who lost their lives in the recent explosion in Jamison mine No. 8, near Farmington. The total awards will approximate $100,000.

S. A. Williams, Wheeling coal operator, has entered suit against C. E. Tuttle, president of the Pittsburgh Ter-

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minal Coal Corp., and his agent, B. F. Hoffacker, for $200,000, alleged to be due from the sale of 2,600 acres of coal at Potomac, W. Va., near Wheeling. The suit was filed in Wheeling. Williams declared he sold the property to Tuttle through Hoffacker, in December, 1924, and that he had received nothing in payment. He said he understood the property was to be included in the North American Coal Corporation merger, and asks the attachment of the Potomac property to prevent its inclusion in the merger.

WYOMING

Union Pacific Mine No. 4, at Reliance, was shut down during the week ending Jan. 30 as the result of a fire which broke through from old workings into the haulageway in a drift of No. 1 mine. The fire was controlled early in the week by stopping back about 800 ft. of the drift, the stops being placed at each end of the fire. This fire has been burning for slightly over 10 years and has been stopped back at various times. The fire has made it necessary to drive crosscuts from the drift to another entry so that coal could be hauled from No. 4 Mine.

Cumberland mines of the Union Pacific Coal Co. received the safety banner for the last six months of 1925, having had the lowest percentage of accidents to man shifts of any group of mines of that company. Cumberland also won the banner for the first six months of the last year. The company's accident record for 1925 shows only five fatalities during the working of almost 480,000 man shifts. The number of fatal accidents in 1924 was nine. For the second time in 25 years the Rock Springs mines, the largest of the company, were without a death.

The Wyoming Federation of Labor has organized fourteen Workmen's Educational Institutes in Wyoming, nine of which are in the coal districts. These schools, organized through the activities of Dr. R. V. Holwell, of Casper, are at Rock Springs, Superior, Kemmerer, Acme, Monarch, Gebo, Lander, Casper, Cheyenne, Rawlins, Hanna, Crosby and Hudson.

CANADA

Shipments of coal from the Larchwood basin near Shelburn, Ont., have commenced and 45 tons have been received in Toronto to be followed by other shipments within a few days. The coal is taken from an open pit 20 ft. deep. Considerable diamond drilling and some development work have been done since government geologists pronounced the coal to be anthraxoitite and of no commercial value. It is understood that an experimental test to crush and press it in a mixture of fuel or some similar scheme is to be attempted.

Toronto's 1,000-ton Alberta coal order has been awarded by the Board of Control and deliveries are to commence forthwith at the rate of six cars per week. Five hundred tons of Rosedale deep seam in egg or larger sizes will be purchased from the Rosedale Coal Co. at $4 per ton f.o.b. mines, and the other five hundred tons from the Northern Fuel Supply Co., this latter to be mixed lump at $3.75 per ton f.o.b. mines.

At the meeting of the Alberta Coal Operators' Association, held at Calgary on Jan. 23, a coal advisory board was elected to co-operate with the Alberta Government in extending the market for Alberta coal. W. W. McBain, of Edmonton, and Jesse Gouge, of Drumheller, were appointed as representatives to lay the coal operators' case before the federal government. The Premier of Alberta, who was present at the meeting, promised that his government would do its utmost to co-operate with the association in extending the coal trade of the province.

North Toronto rate payers recently held a meeting which developed into a red-hot discussion of Alberta coal. C. Edwards, a member of the Citizens' Association, dilated at length on the advantages of Alberta coal, and passed through the audience samples of a shipment which had just reached Toronto, and which, according to him, could be delivered at the consumer's doorstep for $15 a ton. This coal, he maintained, was semi-hard, smokeless and practically sootless. The audience quickly warmed up to the samples, and decided on the spot to purchase through Mr. Edwards one carload of the shipment.

Traffic

Adjust Hard-Coal Rates To Upper New York

In a supplemental order in Docket 15006, commonly known as the Anthracite Substitute Case, the Interstate Commerce Commission has removed certain existing disparities in the rates on anthracite from Pennsylvania points moving to destinations in upper New York State. These adjustments involve some increases in the single-line rates, and generally reductions in the rates for joint-line hauls. To illustrate: It is proposed to increase the present single-line rate to Albany, N. Y., to $2.75, and to increase or reduce, as the case may be, the rate for joint-line hauls to $2.88, the rates on pea size and generally on smaller sizes to be 25c. less.

Commissioners Eastman, McManamy and Hall dissented.

Reduce Some Alabama Rates Via Birmingham

By formal order issued Jan. 26 the Alabama Public Service Commission approved rates of $1.54 per net ton from Louisville & Nashville R.R. mines north of Birmingham, and $1.64 per net ton from mines of the same railroad south and west of Birmingham on coal in carloads to Florence, Sheffield and Tuscumbia, as proposed by the Louisville & Nashville, Southern, North Alabama, St. Louis & San Francisco railroads.

These new rates have been prescribed by the commission for application via Birmingham. The commission ruled that no present necessity was shown for opening of the proposed route through Decatur for the transportation of coal from Louisville & Nashville mines to Florence Sheffield and Tuscumbia. Proposal of new rates by the carriers and the order of the commission followed filing with the commission by the Florence Chamber of Commerce of a petition against then existing rates between the points named on coal in carloads, the rates in effect representing a combination of the lowest single-line rates, which it is stated, amounted to more than $3 a ton.

Obituary

Thomas F. Downing, of Huntington, W. Va., general manager of the Monitor Coal & Coke Co., died Feb. 4, following an operation in a Philadelphia hospital. Mr. Downing was born in England and came to this country when 22 years old. For a number of years before coming to West Virginia, in 1913, he was associated with the Judge Geo. W. Robertson coal interests of Pennsylvania. Mr. Downing was generally regarded as quite successful in his management of the Monitor company, which operated mines in Logan County. At the time of his death he was a director of the Logan Coal Operators' Association. Besides his widow and two daughters, Mr. Downing is survived by a son, Thos. F. Downing, Jr., of Philadelphia, who is connected with the coal business.

Col. Lloyd G. McCrum, aged 50 years, a veteran of the World War and former Somerset County (Pa.) coal operator, died at the New Haven Hospital, New Haven, Conn., on Feb. 3. He had been a patient in the hospital for a month, suffering with Bright's disease. Mr. McCrum left the Somerset coal field five years ago and went to New York, where he became manager of the Richmond Radiator Co., later becoming president of the concern. He was a native of Uniontown, Fayette County. He is survived by his wife and one daughter.

W. L. Mapother, president of the Louisville & Nashville R.R., dropped dead in the street in Panama City, Feb. 3. He was born in Louisville, Ky., in 1872 and entered the employ of the L. & N. at the age of 16. In 1902 he was appointed chief clerk of the executive department, under Vice-President Milton H. Smith, and at the age of 32 became first vice-president. Nine years later he was elevated to the directorate of the road. William G. McAdoo, war-time Director General of the U. S. Railroad Administration, appointed Mapother federal manager with supervision over the operations of the L. & N. and other roads. After the dissolution of the Railroad Administration, following the war, Mr. Mapother was elected executive vice-president in March, 1920. One year later he was elected president to succeed Mr. Smith, who had died a month before.

Association Activities

At the fourteenth annual meeting and dinner of the **Cincinnati Coal Exchange**, held last week, Burke Keeney, last year's president, formally handed the reins of office to Nolan L. Mahan, recently elected William C. Culkins, executive secretary of the Chamber of Commerce, of which the Coal Exchange is a subsidiary, was the toastmaster. The principal speakers were J. M. Dewberry, coal and coke agent of the Louisville & Nashville Ry.; J. M. Hutton, D. C. VanZandt of the Norfolk & Western lines, and George Neale, president of the East Harlan Coal Co. William Heitzman read the yearly report of the treasurer and reported that all was well with the funds.

Members of the **Montana Coal Operators' Association**, in annual meeting at Billings, Mont., re-elected all the old officers for another year. The officers are W. C. Whyte, Anaconda, president; H. S. Hopka, Roundup, vice-president; and M. F. Purcell, Billings, secretary-treasurer. Members of the board of directors are: C. C. Anderson, Seattle, Wash.; James Needham, Chicago; R. W. Wilson, Great Falls; J. M. Freeman, Red Lodge; R. D. Scott, Red Lodge; H. S. Hopka, Roundup; George Wilson, Sand Coulee, and Thomas Good, Washoe, are alternate members of the board. Outside of the election, the association transacted only routine business at its meeting.

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Coming Meetings

Pittsburgh Vein Operators' Association. Annual meeting, Feb. 15, Cleveland, Ohio. Secretary, D. F. Hurd, Marion Bldg., Cleveland, Ohio.

American Institute of Mining and Metallurgical Engineers. Annual meeting, Feb. 15-17, 1926, at Engineering Societies' Building, New York City. Secretary, Dr. H. Foster Bain, 29 West 39th St., New York.

The Rocky Mountain Mining Institute. Winter meeting, Feb. 23-25, 1926, at Albany Hotel, Denver, Colo. Secretary, Benedict Shubart, Boston Building, Denver, Colo.

Canadian Institute of Mining and Metallurgy. Twenty-eighth annual and general meeting, March 3-5, at the Windsor Hotel, Montreal, Quebec, Canada. Secretary, G. C. Mackenzie, 603 Drummond Bldg., Montreal, Que., Canada.

New England Coal Dealers' Association. Annual meeting at the State Armory, Worcester, Mass, April 7 and 8. Secretary, E. I. Clark, 141 Milk St., Boston, Mass.

The American Mining Congress. Annual Exposition of Coal Mining Equipment, May 24-28, at Cincinnati, Ohio, in conjunction with the annual meeting of practical operating officials. Assistant secretary, E. R. Coombes, Washington, D. C.

International Geological Congress. The fourteenth congress will be held in Madrid, Spain, commencing May 24, 1926. From May 5 to 22 excursions of interest to the visiting delegates will be arranged. Information concerning the congress can be obtained from the secretary of the organising committee, Enrique Dupuy de Lome, Plaza de los Mostenses, 2, Madrid, Spain.

American Wholesale Coal Association. Annual meeting, June 7-9, at Toledo, Ohio, Treasurer, R. B. Starek, Union Fuel Bldg., Chicago, Ill.

New Companies

The Hackers Creek Coal Mining Co., of Buckhannon, has taken out a state charter, it has been announced. This company operates chiefly in the Hackers Creek district of Lewis County. The capital stock is $10,000. The incorporators are George A. Quertinmont, Ophelia Quertinmont, Eugenia Lambert, Emile Monnoyer and Cecile Monnoyer.

Incorporation papers have been filed in Birmingham, Ala., by the **Thacker Creek Coal Co.** to engage in coal mining, etc. J. D. Glasgow is president, S. H. Smith, vice-president; E. N. Hamill, secretary-treasurer. Capital stock is given at $22,000.

The East Kentucky Coal Sales Co., Inc., has been chartered with a capital of $10,000 to mine and sell coal in the Harlan field. The incorporators are: J. W. Thomas, Herman Dittmar, Phineas Phillips, Helen Pernice and Meyer Albert.

Industrial Notes

The Strom Division of the **Marlin-Rockwell Corp.** has moved its Philadelphia office to 1211 Franklin Trust Bldg., 15th and Chestnut Sts. A. W. Wiese will continue as manager in that territory.

William K. Vanderpoel, formerly general superintendent of distribution of the Public Service Electric & Gas Co., New Jersey, has become vice-president and executive engineer of the **Okonite Co.** and the **Okonite-Callender Cable Co., Inc.**

At the annual meeting of the **Roberts & Schaefer Co.**, Chicago, on Jan. 25, the directors created a new office of chairman of the board, to which Col. Warren R. Roberts was elected. Edward E. Barrett was elected president: John J. Roberts, treasurer; Frank E. Mueller, first vice-president; Clyde P. Ross, second vice-president, and Ray W. Arms, third vice-president.

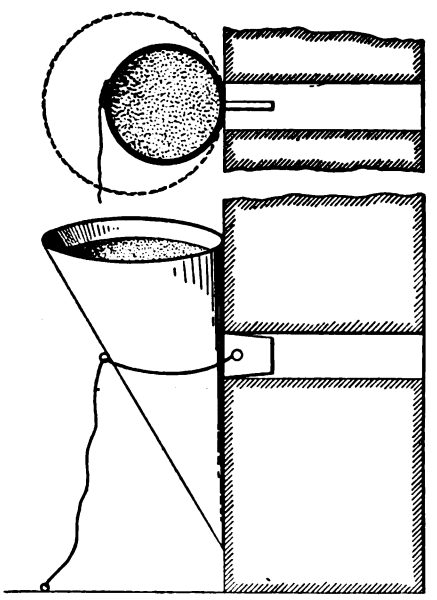
Fraser & Chalmers of Canada, Ltd., with offices in the Canada Cement Building, Montreal, have been appointed sales representatives for the provinces of Quebec, Nova Scotia, New Brunswick and Ontario by the **Terry Steam Turbine Co.**, Hartford, Conn.

New Equipment

Dust Bag Mounts Guard Over Mouth of Shot Hole

That a bag of incombustible dust be suspended outside a shot hole—in order to provide, in front of a blownout shot should one occur, a dense cloud that would extinguish the flame—has been frequently proposed. There are two difficulties—providing for the suspension and the danger of igniting the bag.

Dr. Kruskopf, of Germany, has devised a method of driving within the mouth of the hole a truncated steel



Holds Rock Dust in Place

This arrangement by which a bag of dust is hung in a loop of wire over the mouth of a shothole is intended to insure a flame-quenching cloud with each shot. The wire is attached to a wedge in the hole.

wedge or dowel which can be recovered after each shot. This wedge is perforated, and a wire about 3 ft. long is passed through the hole. As the wire and wedge fall together when the shot is fired, it is easy to find the wedge even when covered with coal. It can, therefore, be used over and over again.

Impregnated and incombustible bags of the correct size and shape are provided, and one is slipped into the loop of the wire. The loop is made of such size that the bag is held with the greater part of the dust above the center line of the hole. The bags are manufactured of such size that from 4½ to 5½ lb. of dust can be used as prescribed.

Tests made at Neunkirchen in the Koenig mine showed that no ignition took place when 17½ oz. of gelatinous dynamite blew out, the shot having been tamped in a 2⅞-in. hole with one tamping cartridge of rock dust and protected by 2.2 lb. of dust in a bag of the kind described. The hole was 2 ft. deep and 8 to 9 per cent of methane was present in the atmosphere. When a shot of 78 grains of the same explosive, without tamping or exterior protection, was fired the gas exploded despite the fact that the loading was only about one-hundredth as large. The Wolf Safety Lamp Co. of America, 220 Taaffe Place, Brooklyn, is prepared to supply this equipment.

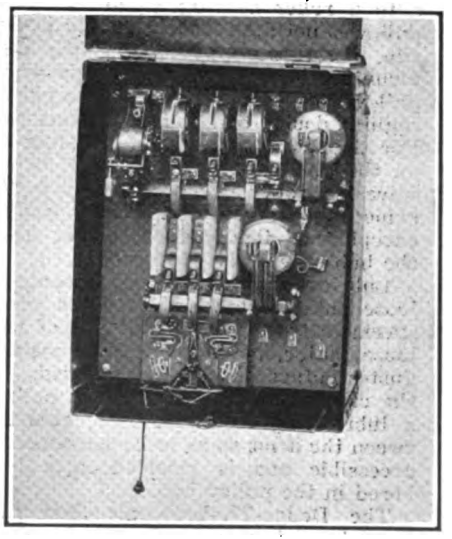
Improvements in Starters Increase Reliability

Primary resistance starters for squirrel cage induction motors built by the General Electric Co. and designated as CR-7056-D-1, have been superseded by two new types, the CR-7056-D-3 in sizes up to 25 hp., and the CR-7056-D-4 in capacities from 25 to 50 hp. The D-3 is provided with arc barriers and the D-4 is equipped with magnetic blowouts and arc chutes, permitting the handling of the larger motor currents. Both starters have an improved magnetic time interlock, an important change being that the operating spring is in compression instead of tension. The interlock can thus be adjusted more easily.

These resistors also have been redesigned and enlarged to give greater capacity, and conform to Classification No. 16 of the Electric Power Club, which provides 200 per cent full load current or more on the first point for 15 sec. out of every 4 min.

The inclosing case of the D-3 starter opens from the top, is ventilated, has two 1¼-in. knockouts in the top and has two knockouts of the same size in the bottom. These provide ample space for power and control wires. The cover may be padlocked shut if desired.

The inclosing case of the D-4 starter is larger than that of the D-3, in order to make room for the increased size of



New Starter With Cover Raised

This is a starter of the larger type intended for serving motors from 25 to 50 hp. The smaller sizes, however, or those of less than 25 hp. are similar, differing only in detail.

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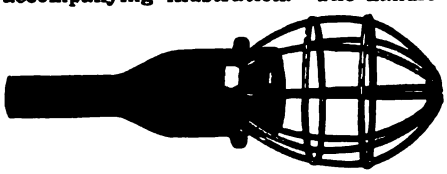
the equipment. This case opens on the side and, like the D-3, can be padlocked shut if desired. It is provided with two, 2-in. knockouts in both top and bottom. Both forms of starter are arranged for wall mounting and have an approximate weight of 122 lb.

Portable Insulated Socket Prevents Short-Circuits

In many places in and about the mine and mine plant, both above and below ground, portable electric lamps on extension bars are necessary for a proper execution of the work in hand. To meet the demand for a safe equipment of this kind, the Daniel Woodhead Co., of 15 North Jefferson St., Chicago, makes the portable socket cover shown in the accompanying illustration. The handle



Strong Insulated Portable Socket Cover

of this device is made of a high-grade rubber compound so proportioned as to withstand the abuses common to the type of service in which it will be used. The wire guard also is insulated to prevent possible shortcircuiting during inspections behind switchboards.

Loose Pulley Is Fitted with Roller Bearing

A new loose pulley that incorporates the advantages claimed for the tapered roller bearing, as well as certain other desirable features, recently has been introduced by the Dodge Mfg. Corp., of Mishawaka, Ind. This pulley includes a Timken roller bearing in its hub and the new pulleys are now available in both iron and steel.

The roller bearing loose pulley consists of an Oneida steel pulley provided with an extra large bore to accommodate a roller bearing mounting. The pulley is not split, but is riveted at the rim, the clamp hub holding the unit mounting in place. The loose cast-iron pulleys are made from the company's regular double-belt solid iron patterns. For diameters up to and including 20 in. the pulleys are counterbored to receive the roller mounting which is the same as that used in the steel pulley except that the housing is not used, the hub serving as the housing.

Lubrication, always important in loose pulley operation, has been given special attention in the design of this loose pulley, and, in addition, positive dust-proofness has been provided. In the case of both steel and iron pulleys a lubricating feed pipe is located between the arms so as to be conveniently accessible and is inserted in a hole bored in the pulley hub.

The Dodge-Timken unit mounting consists of two tapered roller bearings mounted on a ground steel tube and fitted to an accurately machined cast-iron housing. Grease seals and two clamping collars are mounted on the threaded ends of the steel tube. The tube is slotted and threaded at each end and is held to the shaft by the two collars which are used to obtain accurate adjustment of the bearings on the steel tube. In diameters over 20 in. the pulleys are bored straight to receive the unit mounting which is secured by set screws. The special grease seals positively prevent dust from working in or the lubricant working out.

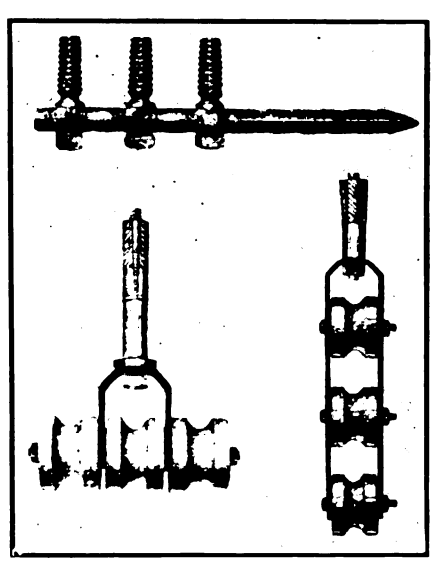
A feature that the manufacturer considers of importance is the availability of both iron and steel loose pulleys from stock. The pulleys are made with standardized bores and the unit mountings have standardized outside diameters to accommodate all ordinary shaft sizes. It is, therefore, possible in certain cases to change the bore of the pulley by merely applying another unit with a housing having an outside diameter conforming to the pulley bore and with a tube to accommodate the desired shaft diameter.

Simplified Suspensions for Three-Wire Feeder Lines

Three schemes for suspending 3-phase feeder lines or combining other circuits onto one bracket are provided by new devices developed by the Ohio Brass Co. Each of these devices has three insulators or spools assembled so as to carry three wires with the use of only one expansion bolt or barbed pin.

In one, the right angle triple-pin type attachment can be made either in the roof or wall by means of the barbed pin. Thus either a horizontal or a vertical position of the insulators is secured. This fitting uses any standard 1-in. threaded insulator and, consequently, can be used where it is desired to take advantage of high tension porcelain insulators. All three are accessible and the device is said to be easy to erect.

The other devices are modifications of the clevis frame used with the O-B Type C single spool assembly, adapted to carry three spools. Attachment to the roof is made with an expansion bolt. In one, the spools are mounted one above another and in the other the three spools are carried side by side on a bolt extended through the clevis. In addition to use for 3-phase power feeder lines these fittings are being employed in combinations of phone lines, signal wires, feeder and other circuits, thus simplifying construction.



Handy Suspensions for Three-Wire Circuits

Standard insulators are used exclusively and in every case all three are held in place from a single attachment. This greatly simplifies circuit suspension.

Galvanizing Does Not Render New Castings Brittle

Hot-dip galvanizing has long been recognized as one of the best known methods for rust-proofing castings. Unfortunately, however, ordinary malleable castings are frequently rendered brittle by this process, although experience has demonstrated the great desirability of this method of zinc coating as a means of preventing rust. In order to overcome the deleterious effects of the process upon malleable castings, The Ohio Brass Co., of Mansfield, Ohio, has developed a new metal, called "Flecto" iron. This is a malleable iron which, by virtue of a heat treating process, is rendered immune from all tendency to become brittle when hot-dip galvanized. In addition also to retaining all the desirable characteristics of malleable iron, this process so improves the quality of the metal that it is considered as being practically a new alloy.

Although announcement of this new process is only now being made, it is understood that all malleable iron castings produced by this manufacturer during the past few years have been treated by this process. Announcement has been purposely withheld until the metallurgy of the new material might be thoroughly proved by practical use in the field. The most valuable characteristic of the new iron is that it will stand galvanizing by the hot-dip method without any tendency to become brittle. It, therefore, always retains its malleable property. In fact, treatment of castings by the new process so improves their physical characteristics that all castings of this company are now being treated by this process, whether they are to be galvanized or not. The process for making the new metal is patented, but is available to other manufacturers under liberal license agreements.

Trade Literature

The Link-Belt Co., Chicago, Ill., has issued **All-Purpose Crawler Crane Book No. 895**, containing 48 pages and illustrating and describing the use of the dragline, dipper and trench shovel, skimmer scoop, hook blocks and piledrivers. Data on lifting capacities are given.

General Electric Co., Schenectady, N. Y., has issued the following bulletins: GEA-255, G-E Arc Welder, Type WD-11; GEA-67, CR-2931, **Float Switches for Automatic Pumping Equipments**, Water Level Control; GEA-9, **Gas Engine-Driven Arc Welding Sets**, consisting of a WD-12 generator and Buda engine. These folders are 8 x 10½ in. and illustrated.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has issued a 56-page catalog on **Safety Switches**. Included in the catalog is a new type of safety inclosed switch, externally operated and with a quick-break mechanism; a quick-make, quick-break compensator switch made in capacities of from 30 to 400 amperes; a Universal meter trim also is described. At the end of the catalog comparative switch information and wiring data are given.

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Belt Conveyors Win Their Way In Room Mining—Page 255

COAL AGE

The World's Accepted Authority on Coal Mining

McGraw-Hill Pub. Co., Inc. **February 18, 1926** Price 20 Cents per Copy



The answer to lower cost of "mining"
271 billion gallons!

The industry "mines" 2½ times as many tons of water as of coal. To lower the cost of operating the 60,000 pumps required to take care of this water "tonnage" the industry is depending upon automatic pumping.

Automatic pumping is now saving thousands of dollars a year for mines in all parts of the anthracite and bituminous regions. No denying its revolutionary economies in labor, maintenance and power costs.

The Hazleton Automatic Pumping System can be applied to ALL centrifugal pumps—old or new—of ANY make. The very simple automatic apparatus has been recently made even simpler. Every mine official should learn the latest news on the development of this automatic system. Write today.

WRITE FOR BOOKLET

Write for your copy of the Hazleton 24-page Booklet, giving complete details on automatic control and operation of centrifugal pumps.

BARRETT, HAENTJENS & CO., HAZLETON, PA.

HAZLETON PUMPS

MANUFACTURED IN THE HEART OF A GREAT MINING REGION

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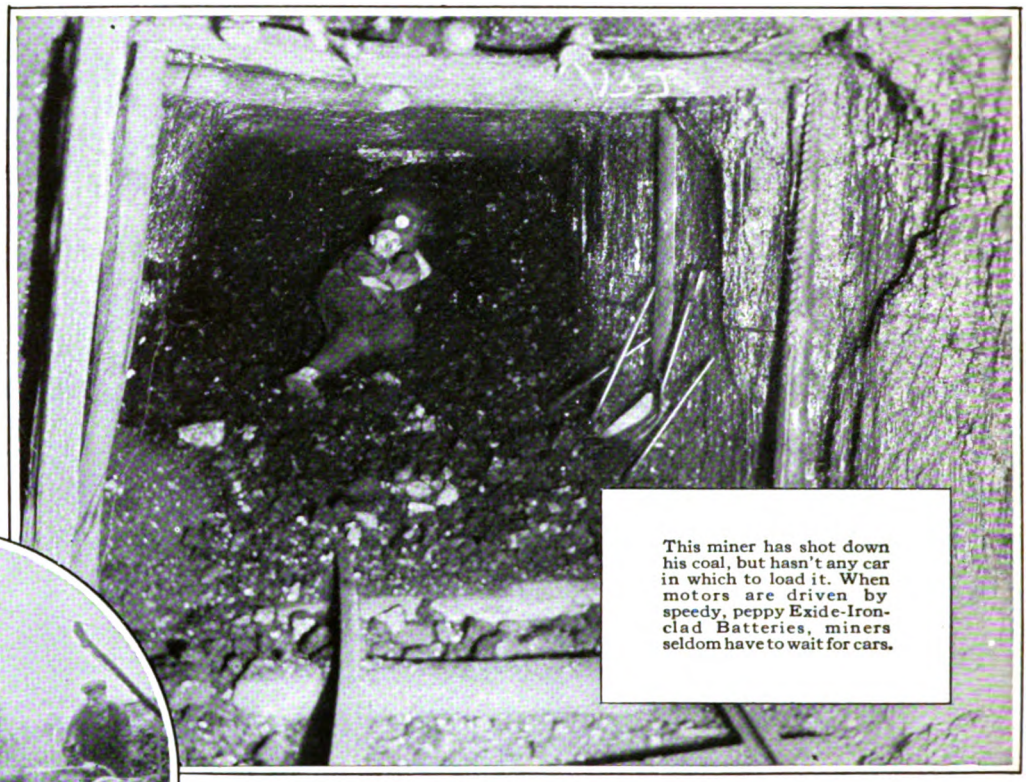
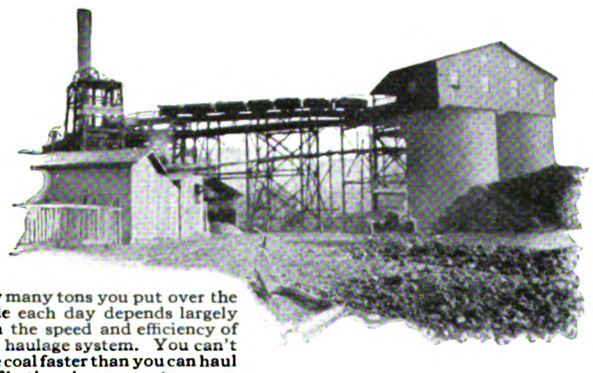


The camera caught this trolley motor at the instant it was taking the rails after jumping the track. (Note the stick snapped in half by the weight of the wheel.) Battery motors often jump the track, too, and then the ruggedness of the battery is severely tested. If the battery is an Exide-Ironclad, however, you need not worry.

This miner has shot down his coal, but hasn't any car in which to load it. When motors are driven by speedy, peppy Exide-Ironclad Batteries, miners seldom have to wait for cars.



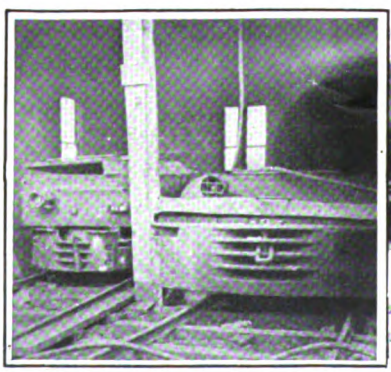
More Speed
and less cost in hauling coal

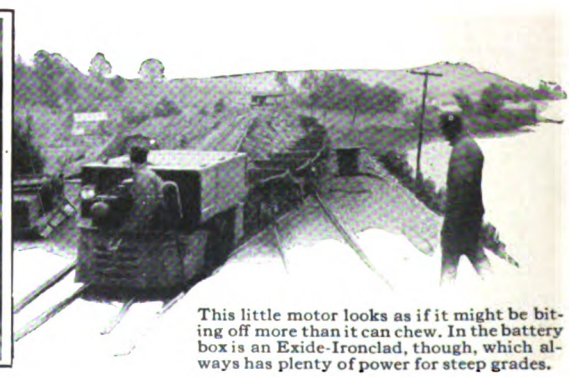


How many tons you put over the tipple each day depends largely upon the speed and efficiency of your haulage system. You can't mine coal faster than you can haul it. That's why more tons are mined daily when Exide-Ironclads drive the haulage motors.

IF you equip your battery motors with Exide-Ironclad Batteries you will not only speed up your entire haulage system but also cut down the cost of moving each ton from the face to the tipple or breaker. The Exide-Ironclad's speed and pep last all day; its power on grades is great; its charging efficiency is high; its repair cost almost nil; its life long; and its first cost reasonable. Send for free booklet, No. 1791—"Facts for Consideration in *Selecting a Battery* for Locomotive Service."

These motors have done their day's work and are on charge. They are taking current quickly, easily, and wasting very little of it, for the batteries are Exide-Ironclads, and this battery is extremely efficient on charge.





This little motor looks as if it might be biting off more than it can chew. In the battery box is an Exide-Ironclad, though, which always has plenty of power for steep grades.

Exide
IRONCLAD
BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia

Exide Batteries of Canada, Limited, 153 Dufferin Street, Toronto

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 29 New York, February 18, 1926 *Number 7*

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Flexible System of Belt Conveyors Is Applied to Thin-Seam Room-and-Pillar Mining 255
BY J. H. EDWARDS.

Alabama Coal Plant Handles Output of Three Slopes 258

Machines Keep Mine Books Up-to-the-Minute 259
BY JOHN C. MCNEIL, C.P.A.

Five-Year Agreement Ends Longest Strike in History of Anthracite Industry 268

Congress Harps on Coal Despite Strike's End 270
Advisory Committee Report Made Public 271
Caught in Coal Slide, Turns Up Safe in Tender 271
Lawton Guilty of Contempt; Sentence Withheld 271
One Dead, 19 Hurt, 600 Escape in Ohio Mine Blast 271
Defers Filling Read's Place 271
Kernohan Named Manager of Houston Coal Co. 272
Scale of 1922 for Two Years in Nova Scotia 272
To Extend Co-operative Study of Explosions 272
Spurr Nominated Chairman New York Group A.I.M.E. 272
Rocky Mountain Institute Plans Live Meeting 272
National Board to Study Spanish Fuel Problem 272
Philadelphia Has World's Largest Coal Dumper 273
N. Y. Coal Exports Decline 273
Coal Company to Make Own Liquid Oxygen Explosive 273
Mail Order Coal Company in Financial Straits 273
C. & O. Plans Connection with Virginian Ry. 273
Use of Permissibles Gains 273

Editorials 253
Practical Pointers 265
Book Reviews 267
Problems in Underground Management 266
Weekly Review and the Market 273
Foreign Market and Export News 278
News Items from Field and Trade 279
Traffic 282
New Equipment 283

And Now— The "Jigger"

CONVEYORS COMMAND ATTENTION. They simply cannot be held in the coal industry's background. Conveyors, conveyors, everywhere, speeding, shuffling, shaking and jigging. Next week "the original jigging conveyor," the Eickhoff, as it operates at Toms Creek, Va., in Pennsylvania, and in Wyoming will be described by Frank H. Kneeland, associate editor. He is just back from Virginia with first-hand impressions of the performance the German machine is giving in the mines of the Virginia Iron, Coal & Coke Co.

Mr. Kneeland likes a good many things about this "jigging," electrically driven, sectional, trough conveyor. It seems designed particularly for low coal such as that at Toms Creek but is giving a good account of itself in thicker beds. It fits into almost any method of mining and even can be equipped with a stout end section which can dig and load coal into itself in narrow work. It serves in ordinary room work and slabbing and also is readily applied to pillar drawing. When a room is driven up the full distance a break through is turned through the pillar either right or left. A cross feeder chute is installed in this break through and driven from the main conveyor. The pillar is then brought back by successive cuts.

In his article, the author suggests some ideas in mining methods which may prove helpful to those who are now using the Eickhoff machine or who will use it in the future. He suggests, also, an improvement in the driving mechanism, but his general conclusion is that the machine if properly applied, offers great cost-cutting possibilities in coal mining.

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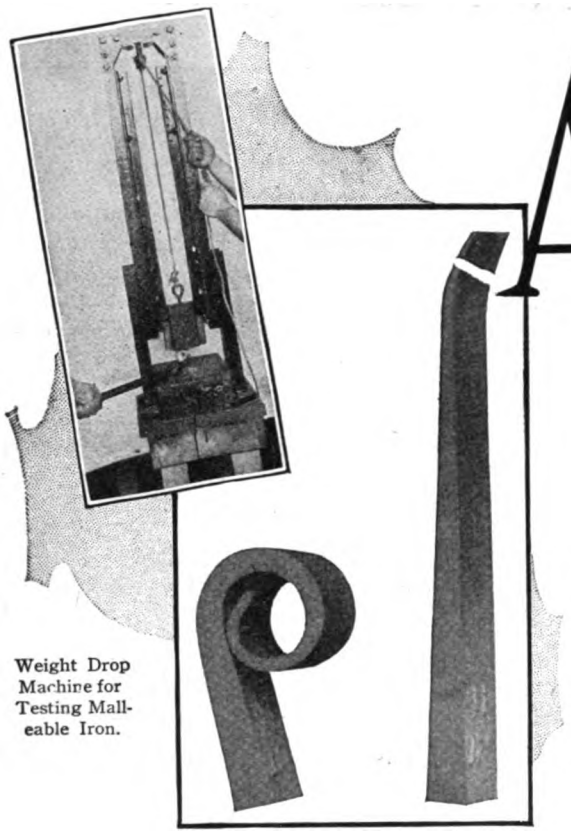

Weight Drop Machine for Testing Malleable Iron.

A New Malleable

O-B FLECTO IRON

Insurance against breakage of Hot-dip Galvanized Malleable Fittings

HERE ARE TWO identical test pieces of Hot-dip Galvanized Malleable Cast Iron. Both were made from the same raw materials, in the same furnace, and under the same working conditions.

What is the difference?

Simply this.

The test piece on the left is galvanized O-B FLECTO IRON. It bends. It is ductile. It will not break in service. It is your insurance against broken or brittle malleable fittings.

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O-B Flecto Iron

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Hot-dip Galvanizing of malleable iron has a tendency to cause it to become embrittled. Experience has shown that an average of 20%, or 1 out of every 5 ordinary malleable castings are brittle after galvanizing. Out of the same heat, after hot-dip galvanizing, part of the castings will be brittle—while the remainder will retain their malleable properties.

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COAL AGE

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

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Lewis Defeated

THE LARGEST coal strike on record in American industrial annals closed quietly and swiftly, and without the blare of publicity. Shorn of pretense and smoke-screenings, the victory was to the public and to the operators, and defeat to the dogged leader of the union forces. The union "vowing it would ne'er consent, consented" to arbitration, although the forbidden word was kept out of the simple document which recorded renewed co-operation. The check-off, also excluded by name from this document, was circuitously referred to in a paragraph which specifies that it and other inside arrangements between operators and union officials shall be the subject of "negotiation." The demands of the miners for fixed wages for five years—an impossible economic condition—were successfully resisted; and afterward they lessened the demand to a two-year fixed wage. The crumb which the union finally obtained was a fixed wage scale for less than a year and after that a wage subject to arbitration. What private understanding, if any, the opposing sides may have other than the signed agreement, is of course not certain; but it is certain that the operators backed by the public and by the President, have been able to resist arbitrary and ruinous demands which could only have led to economic and social disaster. This conclusion is accentuated by the loud peals of victory given off from the headquarters of the union leaders, while the operators maintain a demure and resigned attitude. If there was any private understanding concerning the terms of settlement, one is inclined to think it was that Mr. Lewis should be allowed to roar to his followers that he had achieved a great victory and be permitted to "get away with it." And there is no doubt that his misguided followers, impoverished and without advantage, will believe that they have won, and experience the joy and contentment that goes with it.

One point of Administration strategy glimmers out now which was not open to detection before. The Administration policy was, wisely, hands off, and resistance to the strategy of Lewis to get the government to intervene. And to cover the situation the President had written Congress asking it to give him the aid and administrative authority recommended in the report of the U. S. Coal Commission. This, then, was his reply, and that of his party, when Democratic politicians demanded the intervention of the President—that Congress should heed his earlier plea and give him the advantage of position asked for. Now that the strike is settled, it appears that those Republican heads of committees in Congress who had in charge the introduction of the special legislation asked for, will take action. "It was not proper," they say, "to embarrass the President by bringing this up during the strike." No cleverer piece of politics could be imagined; and it was sound sense withal.

The present crisis over, the anthracite industry will apply itself to the problem of regaining its lost markets, to problems of how to keep the price of coal down through keeping the cost down. And lower wages do not necessarily mean reduced costs. The American system, amply tested since the war, and only instanced by the methods of Henry Ford and others, is that in many cases high wages mean low costs. Mechanicalization, system, efficiency, cutting out of waste, reduce costs; but frequently low wages go along with high costs, for they are symbolic of a generally slack system of operation. In this general contention the union leaders have been correct. The coal operators beyond doubt have these big problems fully in mind.

Make the Standby Automatic

ONLY SEVEN YEARS AGO the representatives of a large electrical manufacturer discouraged the officials of a certain coal company in their quest for a truly automatic substation and spoke disparagingly of its possibilities. At that time the manufacturer in question had sold several such stations for street railway work but considered the equipment too complicated for installation at the mines. Today automatic electrical control has become standard practice at mine plants and the equipment is believed to be more reliable and dependable than a substation attendant.

Following the same line of thought, why should not automatic starting equipment be provided for the internal combustion standby engines installed for fan drives? There are instances where two or three men are employed at remotely located fans chiefly for the purpose of starting the standby engine in case of failure of the electric power supply. The cost of such attendance usually ranges between $3,000 and $5,400 per year.

Engines that have found greatest favor in fan standby service are now equipped with electric starters. So far as automatically starting the engine itself is concerned, therefore, it would appear that the addition of a few relays would be all that would be necessary. In order to insure prompt starting of the power unit in cold weather, however, an electric fumer or vaporizer might advisably be installed. If the engine is direct connected to the fan it drives, the interposition of a magnetic clutch would facilitate connection of the two machines after the prime mover had been brought up to speed.

As to the reverse operation, stopping the engine and reconnecting the fan to its driving motor upon return of line power, this also could be accomplished automatically but probably this would not be necessary. Instead it might be found advisable to dispatch a mechanic to the fan whenever a suitable signal indicated that the standby unit had been called upon to start. This man could remain at the fan and stop the engine upon restoration of normal conditions.

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Some expensively operated steam fans are now in use that would have been changed over to electric drive long ago had it not been considered necessary that an attendant be kept at the fan at all times to start the standby engine if line power were utilized. The extensive adoption of automatic starting for gasoline engines employed as fan standbys would effect appreciable total savings in the coal fields as a whole.

Coal Will Serve the Farmer

THOSE WHO FEAR a decline in the gross consumption of coal in this country, because greater and greater boiler and furnace efficiencies are being obtained in the burning of this fuel in the larger steam plants, forget that a limit to the exercising of efficiencies exists and that the gaining of higher efficiencies becomes increasingly difficult. The growth of power consumption is so rapid that fuel saved by improved practices in central stations—and more besides—will be required.

The future power demands of the farmer will contribute to a healthy growth of the coal industry. The agriculturist will establish greater stability in coal as his requirements will be regular; for he is active even when those engaged in other industries are idle. People must eat whatever else they may refrain from doing.

The coal industry should take heart in what was said relating to the future of the farmer, at the annual banquet of the Engineers' Society of Western Pennsylvania, in Pittsburgh on Jan. 25. Gen. Guy Tripp, chairman of the board of directors of the Westinghouse Electric & Manufacturing Co., pointed to the need for a wide application of power to jobs on the farm and conceded to the farmer prosperity by this means.

Later, as a side issue in his address, George E. Roberts, financer and economist of New York City, dealt with the economic side of farming. About one-third of the population of the United States lives on farms. Products from the soil are generally in excess of domestic consumption. This fact is viewed with alarm by many economists who point to it as one of the reasons for the financial embarrassment of the farmer in the past. But Mr. Roberts believes otherwise; he thinks there is no immediate danger of our farmers exceeding an economical limit of production. The surplus of products will be taken gladly in foreign markets. His views coupled with those of Mr. Tripp depict clearly a situation of the future which will affect the coal industry for the better.

The needs of the American farmer will necessitate a gigantic power program in which transmission lines will be extended in every direction to the farms. Being a more or less heavy industry farming will consume much electrical power. The coal industry will expand thereby in about the same degree as the interests which produce power.

Lighter Wheels, Heavier Loads

IN THESE DAYS of low prices and fierce competition no stone is being left unturned to decrease coal costs. One means of furthering this end that is now receiving serious attention in some quarters is the substitution of steel for iron wheels on the mine rolling stock. Several advantages are realized from this change.

Heretofore the chilled-tread, cast-iron wheel has been used almost exclusively on American mine cars. England and Canada, on the other hand, have long been users of the steel wheel. It seems really strange, therefore, that the United States has been so backward in its adoption.

Steel casting is far tougher and more ductile than cast iron. It is however, more difficult to produce. A steel casting is much more liable to be rough, contain blow holes, cold shuts and the like than iron which melts and pours at a far lower temperature. Consequently a good steel casting is harder to manufacture and correspondingly more expensive than is an iron casting of comparable quality.

At the present time several coal companies are trying out steel wheels on their mine cars. Such wheels are much lighter than those made of cast iron and will withstand spragging better, although the practice of using sprags is fast going to the discard. In wrecks or derailments also steel wheels are less vulnerable. Under heavy shock or impact they will bend or distort whereas an iron wheel will break.

It is probably the lessened weight, however, that appeals most strongly to the coal-mining man. A certain company in Kentucky that employs nearly 2,000 mine cars has reduced the weight of the individual wheels from 174 to 100 lb. (both limits being approximate) through the substitution of steel for iron. This is a decrease of roughly 43 per cent in the weight of the wheel itself and means that a steel-wheeled car weighs about 300 lb. less than one fitted with iron wheels.

Assuming that the new wheels will rotate as easily as the older ones any decrease in their weight signifies that a locomotive with a given tractive effort will be able to haul as much more coal as the trip is decreased in weight. In the Kentucky instance the decrease in total car weight resulting from the substitution of steel wheels for iron is about 7 per cent. Thus a locomotive capable of hauling a trip of 14 cars fitted with iron wheels could haul 15 cars equipped with the lighter steel wheels, the weights, capacities and loadings of the car bodies remaining the same.

Mechanical Sparks

A WORKMAN recently repairing a leaky gas main in New York City tried to cut the pipe with a chisel. The resultant spark set fire to the gas causing a violent explosion. The danger of mechanical sparks igniting methane when an atmosphere with an explosive mixture of the gas exists in the mine should not be overlooked. The only safe corrective is to create a ventilating current that will remove the gas, perhaps not from the immediate point where the spark is struck but in the air around it.

It may be impossible to ventilate an under or other cut in the coal—any application of a fan specially to perform that service might add to the hazard and would raise the fine dust—but the working place should always be so ventilated that the gas if ignited will not find in the air of the room sufficient fuel to propagate the flame.

The disaster at the Horning mine, some say, was due to a mechanical spark igniting gas and to the gas igniting coal. In isolating the fire an explosion occurred. The operating company had made every effort to keep the mine safe. Nevertheless, it may be said that if the ignition was from a mechanical spark, had the cutter-bars been sprinkled the gas might not have ignited, and had a box of rock dust been available the fire might have been extinguished.

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Flexible System of Belt Conveyors Is Applied To Thin-Seam Room-and-Pillar Mining

Pennsylvania Coal & Coke Corp. Builds and Uses Two Types—20-Ft., 470-Lb. Self-Contained Units at Face Deliver to Main Belt on Rollers Between Posts

By J. H. Edwards
Associate Editor

EXPERIENCE during the past eighteen months in the mines of the Pennsylvania Coal & Coke Corporation with belt conveyors in room-and-pillar mining has proved the practicability of this system. This company, which operates thirty-two mines in central Pennsylvania, was one of the first to develop in a practical way the use of self-contained short-length belt conveyors. The company was also a pioneer in the use of jack-supported main conveyors for rooms.

Belt conveyors are now operating in three of the mines. During the past year 33,100 tons were loaded over belts. Additional conveyors are now being built in the company shop to increase the tonnage mined by this method.

After considerable experimentation the company is using a 20-ft., self-contained belt conveyor unit parallel to each 30-ft. face, arranged so that it discharges onto a belt conveyor of another type laid along the rib to a car loading point at the room neck. Two wide rooms may be worked simultaneously by the short transverse conveyors serving one main conveyor. As the face advances the main conveyor is lengthened by the use of a number of the 20-ft. units working in tandem until the distance is great enough to permit a 50-ft. extension of the main belt.

The main conveyor consists of a head or drive section, one or more 100-ft. lengths of 22-in. composition belt, a number of sets of wooden idlers and light-weight roof jacks. Fig. 2 shows one of these main conveyors in use in the Moss Creek mine of the company, where a good deal of the experimenting was done. The head section, which is the one mounted at the entry, has two drive pulleys and an idler. As shown in Fig. 3, the motor is belted to the head pulley *A*, the shaft of which is connected by a chain to the other driving pulley, *B*.

In the space between the head and tail sections the idlers supporting the belt are wooden rollers, mounted 6 ft. apart. The upper or troughing idler consists of three pieces, one cylindrical and two cone-shaped. The bottom idler is cylindrical and made in one piece. The bottom roller is omitted from alternate idler sets. This means that the lower strand of the belt is supported at 12-ft. intervals.

The rollers and bearings are of simple construction. The wood is bored somewhat larger than the shaft and molten babbitt poured around in a mandrel to form a bearing. Lubricant is applied to the rollers only when the conveyor is moved to a new room. At that time the hole in the roller is stuffed with grease and the shaft is pushed through it.

The main conveyor is extended in 50-ft. lengths—that is, by splicing in 100-ft. sections of belting as the room progresses. To make the extension it is necessary only to open a splice in the belt, move the tail section 50-ft. ahead, set up seven idler sets, and splice in the extra 100-ft. piece of belting.

Temporary extensions to the main conveyor are formed by using one, two, or three of the 20-ft. self-contained conveyors which are interchangeable with that used across the face in a 28- to 30-ft. room. As an extension to the main conveyor, these short conveyors are lapped, one over the other, as shown in Fig. 1. The extension can be varied by changing the length of lap. The 5-in. wooden side boards of the short conveyor are removable in sections in order to provide for this lapping.

In Fig. 1 is shown one of the 20-ft. lateral or face conveyors emptying into a similar conveyor which is serving as an extension to the main. The head end of the face conveyor is elevated by being set on a "horse" made with wooden legs and a pipe cross member.

Construction of the 20-ft. conveyors can best be explained by referring to the shop views, Figs. 4 and 6. The light weight of this device is such as would seem to qualify the mechanics of the company to design and build airplanes. The unit, complete with the 16-in. belt but without the 1-hp. motor, weighs only 470 lb.

The main frame of the unit is made up of two 3-in. light-weight channels, an 18-ft. sheet 16 in. wide by ⅛ in. thick and two 2-in., wood-filled steel angles 20 ft. long. No idlers are provided. The upper strand of the belt slides on the steel sheet, and the bottom strand is supported every 3 ft. by a cross-piece of ½-in. pipe.

IS THIS A PROPHESY FULFILLED?

WHEN the modern surge toward mechanical loading underground got well on its way a few years ago a good many sound mining men declared the industry would shift from one fanciful scheme to another but eventually would come back to old-fashioned room-and-pillar methods of mining no matter what sort of machines they used. These men held that it was wrong to make the system of mining conform to the machine. The machine, they thought, ought to conform to the system of mining. This is exactly what the Pennsylvania Coal & Coke Corporation has done. It has made use of the flexibility of the belt and applied it as fully as possible to old-style mining layout. The performance of the belt units thus far has been good. The future must speak for itself.

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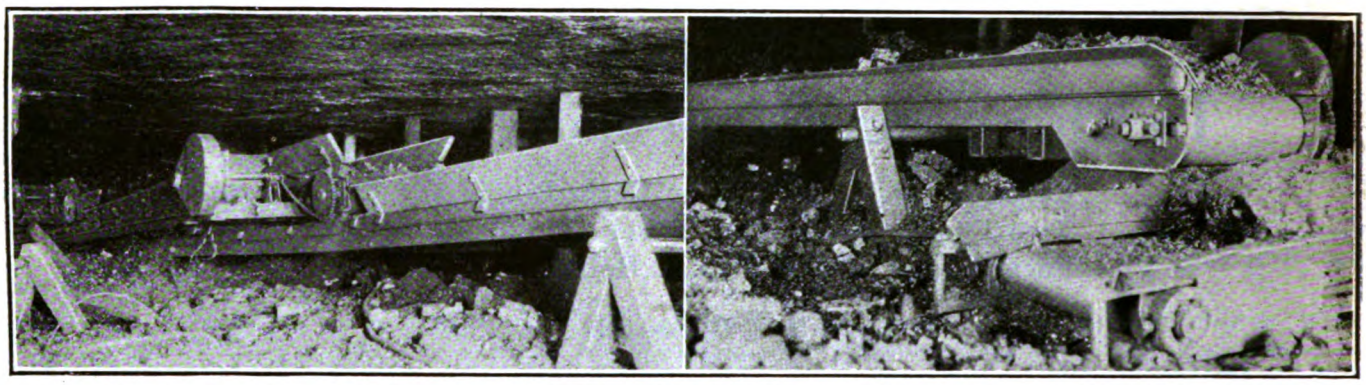

Fig. 1—Overlapping Conveyors Extending Back to the Face Discharge Coal Into Main Belt

The view at the left looking toward the face, shows three 20-ft. unit-conveyors acting in tandem as an extension. These units are used until the face advances far enough to allow a 50-ft. extension on the longer conveyor. The center unit is lapped several feet over the one in front of it, which has a section of the side boards removed to permit this arrangement. The picture at the right in this pair shows the unit conveyor discharging into the main. The room is 30 ft. wide. The use of a 20-ft. lateral conveyor at the face leaves space for stabling the mining machine at one end. After the cut is made the conveyor is advanced to within 2 ft. of the face. Some of the coal falls on the belt when the shot is fired.

The ⅛-in. sheet is kept from sagging through the center by a number of ¾-in. cross angles set 18 in. apart.

In the construction, electric welding takes the place of all riveting. The crowned, squirrel-cage drive pulley, of 6½-in. diameter, is made up by welding twenty ⅛- x ¾-in. strips to five disks which in turn are welded to the shaft. A screw adjustment of 6 in. for belt tightening is provided at the tail pulley.

TAIL PIECE AIDS MACHINE

An important detail of the construction is a tail piece which follows back the tail-pulley bearing filling the gap between the upper and lower strands of the belt and preventing the entrance of fine coal. The white mark near the head of the adjusting screw, Fig. 6, indicates the back end of this tail piece which slides against the web of the channel. Some of the first conveyors which were built without this device gave trouble. The belt stuck because fine coal worked its way between the strands.

The widening portion of the side frames at the drive pulley is formed by splitting the 3-in. channel, expanding it to 7 in. and welding in a filler web to support the bearing. To date, thirty of these 20-ft. conveyors have been built in the company shop at Gallatzin, Pa. All parts are made interchangeable by the use of jigs for forming and drilling. A roller chain is used for the single-reduction drive between the motor and head pulley.

The illustrations which show the conveyors at work were taken in Moss Creek mine, No. 21, at Marstellar, Pa. This mine is in the Lower Freeport seam which has an average thickness of about 40 in. in the section where the conveyors are used. About 6 in. from the bottom of the coal there is a parting consisting of 1 to 2 in. of "mining slate." Above the coal is 2 to 4 in. of draw slate, and over that 8 to 12 in. of what is locally termed "cannelized slate."

Fig. 5, taken from the mine map, indicates the methods employed in a series of eleven rooms, each 275 ft. long. The positions of the main and 20-ft. conveyors, as they were arranged when the photographs were made for the illustrations in this article, are indicated in full lines. The positions of the main conveyor while mining rooms Nos. 1 and 10 inclusive, are shown by the dotted lines.

Rooms 1 and 2 were driven double with the main conveyor in room 2. The coal from room No. 1 was moved through the crosscuts to the main conveyor by means of the 20-ft., self-contained conveyors. Drawing the pillars proved difficult. An unfavorable cave while drawing the third pillar influenced the management to try a different method on the next set up.

DIFFERENT METHODS TRIED

The three-room system was tried on rooms 3, 4 and 5, with the main conveyor in room 4, which was driven only 10 to 12 ft. wide. In this case the pillars were drawn with less trouble but at an unfavorable cost. In the next set up the three-room system was tried again, the main conveyor being installed in the narrow room, No. 7. Here was tried the idea of drawing pillars by starting with a diagonal crosscut. The principal objection to this was the use of too many conveyors.

Rooms 9 and 10 were driven double with 15-ft. pillars between, and no attempt made to recover the pillar

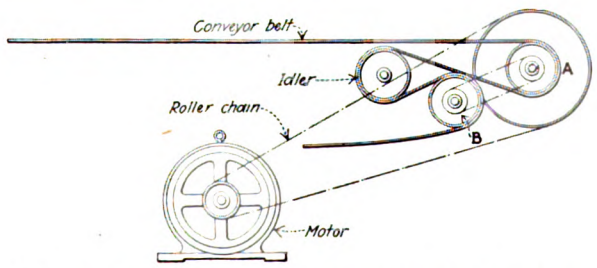

Fig. 3—Drive Scheme at Head of Main Conveyor

The motor is belted directly to a large pulley mounted on the same shaft as the conveyor-belt pulley, *A*. The other belt drive pulley, *B*, is connected to the first by a roller chain.

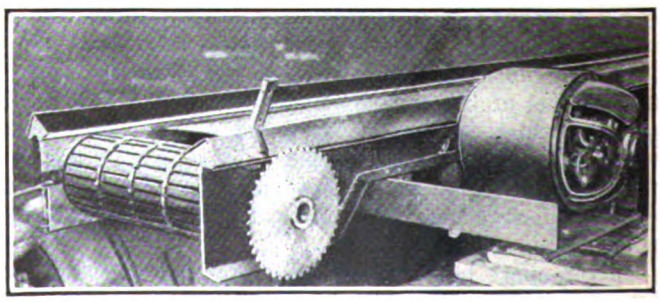

Fig. 4—Drive End of 20-Ft. Conveyor

Without the ¾-hp. motor but with the belt, the conveyor weighs only 470 lb. Electric welds take the place of all rivets in the construction. Instead of the belt rolling over idlers, as on the main conveyor, it slides on the sheet-steel bottom. The drive pulley which has a diameter of 6½ in. at the crown is made light by squirrel-cage construction.

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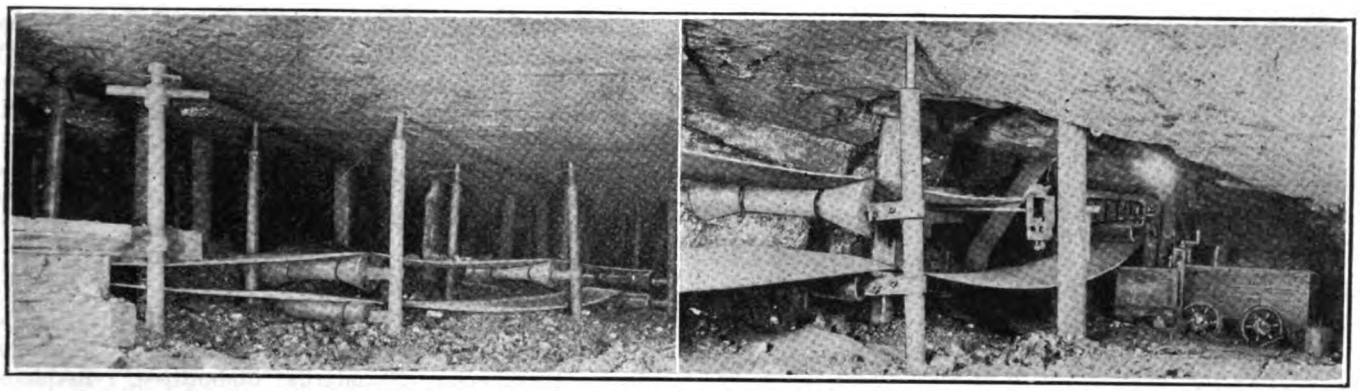


Fig. 2—Belts Supported Thus Transport Coal from Face Conveyors to the Loading Point

The tail end of the main conveyor is shown at the left of this pair of pictures. The conveyor is operating in a room 30 ft. wide. One end of the frame of section equipped with a take-up mechanism can be seen in the left side of the photograph. The belt, which is 22 in. wide is in 100-ft. lengths. The head or discharge end of the main conveyor appears in the photograph at the right. The steel frame of this drive section is only 15 ft. long. The motor is belted to a pulley mounted on the shaft of the end driving-roller. The idlers supporting the belt are of wood with babbitt centers. The upper or troughing idlers are in three sections each turning freely on the shaft. This plan of carrying coal out of rooms by belt has some advantages due to its flexibility.

coal. In this instance the main conveyor was set up in room 9. Of the various methods tried up to this time the latter proved the most attractive from the standpoints of safety and cost.

ONE ROOM DRIVEN SINGLE

No. 11 room, the one being worked when the photographs were made, is being driven single in order to obtain a cost comparison between that and the double-room method. In this place four men were employed at the face and one at the entry. From 12 to 18 in. of top is taken down at the loading point on the entry to provide head room for the main conveyor and its drive pulley. The main and the 20-ft. conveyors are all controlled by the entryman. The 30-ft. face is undercut to a depth of 6 ft. with a shortwall machine. After a cut is finished the machine is stabled at the end of the lateral conveyor on the opposite side of the room from the main conveyor.

The cycle of operations at the face is as follows: After the completion of a cut, the lateral conveyor is moved to within 2 ft. of the face, and posts set back of the conveyor on 3- to 4-ft. centers. The coal is then drilled by hand and is shot with permissible explosives set off by a magneto-type firing battery. Some of the coal falls upon the conveyor, which has the side board removed from the side next to the face to prevent damage to the board, and to decrease the shoveling height.

The four face men then start loading the half of the face on the side where the machine is stabled. After this section of the face is loaded, two of the men sump in with the machine and start the next cut. When they have cut as far as the coal is loaded, they leave the machine under the coal and help complete the loading. When the remainder of the face is being cut, the other two men start drilling. The main conveyor is extended by decreasing the lap of the 20-ft. conveyors, by adding another 20-ft. conveyor, or by adding 100 ft. of belt, as the status of the work may dictate.

RESULTS OF TIME STUDY

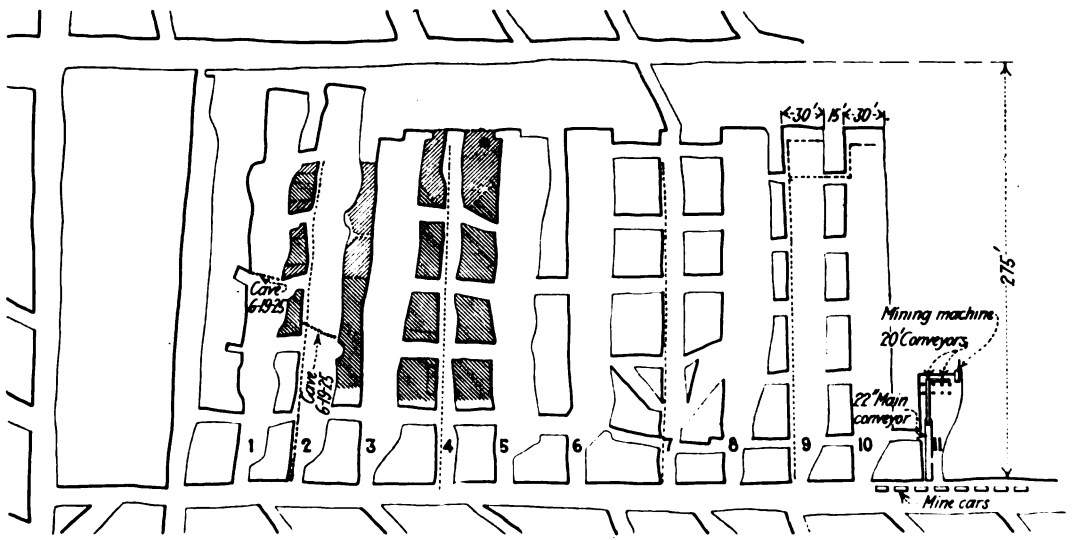
The rooms are worked by two 8-hr. shifts. A stop-watch time study during eleven cycles on three consecutive days showed that 38 per cent of the time was consumed in preparation, 47 per cent in loading, and 7 per cent in moving and adjusting the conveyors. The rest of the time, or eight per cent, was without productive result. The preparation included cutting, drilling, shooting, and timbering. The men are paid day wages provided for the various occupations by the union scale.

According to C. L. Watkins, vice-president in charge of operations, results so far obtained indicate that the two-room method will prove the most economical for his company's condition. With that system one entry man and one main conveyor serves two rooms, and

FIG. 5

Belts Were Tried Out Here

Coal from these eleven rooms in Moss Creek Mine No. 21, Marstellar, Pa., was brought to the entry by belt conveyors. A system of advancing two wide rooms with a narrow pillar between by the use of one main conveyor seems to be the most economical method. Belt conveyors are used in room-and-pillar work in two other mines of the Pennsylvania Coal & Coke Corporation.



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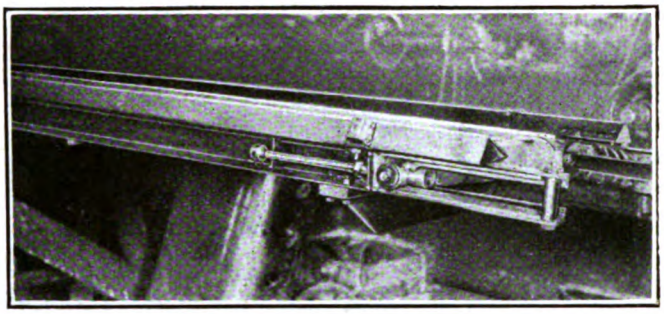


Fig. 6—Take-Up End of 20-Ft. Conveyor

A screw adjustment of 6 in. is provided for the take-up pulley. An important feature of the construction is a tail piece which is fastened to the bearing and keeps the opening between the upper and lower strands of the belt covered thus preventing the entrance of coal.

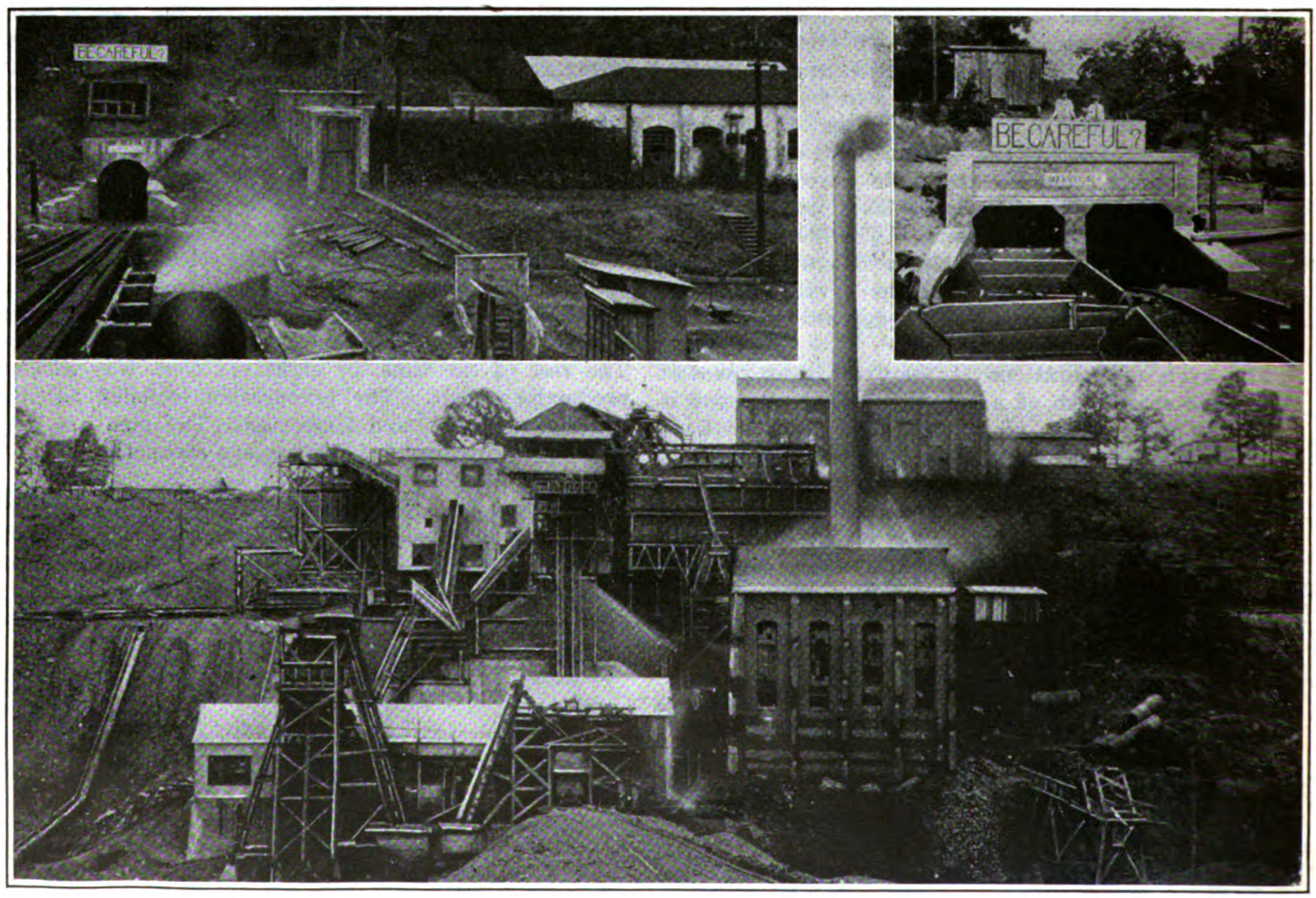
there is less trouble in keeping the faces advanced equally, than with the three-room method.

In roof where the caves normally break square across the last stump, the usual 25-ft. pillar may be drawn. In roof where the caves frequently pass the stump, as at the Moss Creek mine, a narrow pillar must be left. One of the most successful applications of the belt conveyors has been in drawing heading stumps, chain and barrier pillars.

The accomplishments of the Pennsylvania Coal & Coke Corporation with room conveyors in low coal is but another instance pointing to the final elimination of the mine car from the face in low seams.

A COMPREHENSIVE PROGRAM of standardization of drafting room practice has been launched by the American Engineering Standards Committee. Reducing diversity not only in practice but in the materials, equipment and tools used for making drawings is expected to result in a more ready understanding of drawings by anybody for whom they are intended, in great savings in the draftsman's time and efforts, and in a more efficient use of drafting materials and filing cabinets for the storage of completed drawings.

Alabama Coal Plant Handles Output of Three Slopes



Nearly 2,000 Tons a Day Is Hauled to This Tipple and Washery of the Roden Coal Co., at Marvel, Ala., by Rope and Steam Locomotive

The lower illustration shows the power plant, tipple, and washery of the Roden Coal Co., Marvel, Ala. This operation was started 18 years ago by B. F. Roden, president and general manager of the company. Improvements to the top equipment gives it a capacity of 2,000 tons per day, however the largest day's run was 1,858 tons. The mine openings, consisting of three slopes, are back across a valley from the tipple. Haulage out of slopes Nos. 1 and 2 and over a steel bridge to the tipple is by means of a 1,100-hp. double-drum steam hoist, located in the brick building on the hill. The electric generators, in the same building, have been shut down in favor of purchased power. The boiler-room smoke stack, which is of steel and of the self-supporting type, rises 150 ft. above its foundation on the upper side of the building.

At the upper left are shown slopes Nos. 1 and 2, with fan and first-aid house. The concrete portal of slope No. 2 (left foreground) was damaged by a derailed trip coming out of slope No. 1. The Marvel mine is on pick work with mule gathering and rope haulage. The Clark seam averages about 48 in. at this mine.

At the upper right is slope No. 3 known as Marvel No. 3 mine. This is located several thousand feet from the tipple. The cars are handled on the slope by an electric hoist, but a dinkey steam locomotive pulls the trips from the slope landing to the tipple.

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Machines Keep Mine Books Up-to-the-Minute

By John C. McNeil, C. P. A.
Louisville, Ky.

ALL COAL MINE operators like to know their total business down to date, as well as a distribution of the grades of coal produced, but heretofore this data could not be obtained daily, because the bookkeeper did not have sufficient time to prepare it. This article describes a system that yields it daily and without any additional effort on the part of the bookkeeper. Posting the records in the manner to be outlined gives the bookkeeper time to attend to worth-while matters and releases him from the endless detail that is ever present at the mine offices. This kind of a system is calculated to lift him out of the rut and make his services really valuable.

Most railroads require a separate bill of lading for each car and this is as it should be because it places every shipment on its own responsibility, so to speak. After the bills of lading are returned with the weights shown by the railroad and the coal is receipted for by the agent, the short-cuts provided by this system begin.

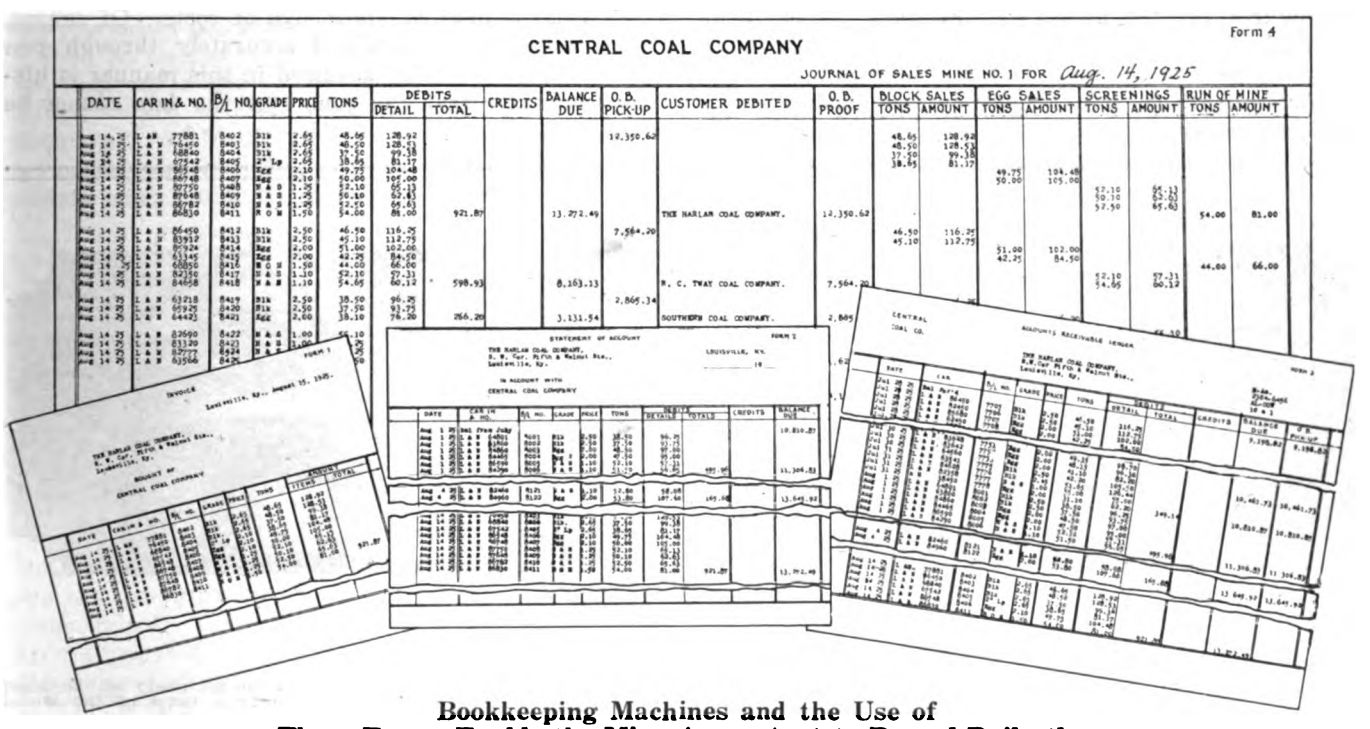
When the bills of lading are received with the weights, the file copy should be priced and extended in pencil and after these extensions have been made, the billing is ready for invoicing. The plan is to invoice the customer, write his monthly statement, post his ledger account and write and distribute the sales record in one operation. After all extensions have been made on the file copies of the bills of lading, an adding machine list should be made of the weights and amounts as shown by these bills of lading and the totals retained for proof purposes. When these totals have been obtained. Form 4, which is the Journal of Sales, is placed in the bookkeeping machine. A sheet of carbon paper the width of the ledger sheet passes over the top of this sheet and is kept in the machine, so that the operator does not have to handle the paper. The bills of lading are arranged in alphabetical order according to the customers to be charged and are then numbered. It would be preferable to arrange them in this order and number them when the coal is billed so as to determine whether or not the office is short bills of lading for any particular car.

After the sales sheet is placed in the machine, the customer's ledger sheet, Form 3, and the accompanying Statement of Account, Form 2, are taken out of the tray and placed in the machine, with another sheet of carbon passing between the Accounts Receivable Ledger and the Statement of Account. Then an invoice is taken (Form 1) and placed over the carbon which is over the Statement of Account. Since these carbons are permanently fastened to the machine, the operator does not have to handle them. The principal part of the work becomes merely that of writing.

After the forms are in the machine, the operator picks up in the Pick up O. B. column on the ledger, the last balance due by the customer as shown on the Old Balance column of the Statement of Account and then moves across the Invoice to the left side, writing in the date, car initial and number, bill of lading number, grade of coal, price, tons and amount in the item column.

Register Adds Item Column

An adding register is kept over the item column which totals the amounts of items and when all bills of lading for one customer have been entered on the Invoice, all that is necessary is to clear this amount out of the item register and write it in the Total column on the Invoice. Through a cross-totalizing mechanism on the bookkeeping machine, this amount is added to the Old Balance which has been picked up and this amount is copied out of the cross-totalizing mechanism into the New Balance column on the statement. Unless this balance is cleared out correctly, the sign of clearance cannot be made and it is necessary to correct the



Bookkeeping Machines and the Use of
These Forms Enable the Mine Accountant to Record Daily the Total Business Done and the Distribution of Each Grade of Coal Produced

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error before proceeding further. The items written on the Invoice are copied on the Statement, Ledger and part of the Journal of Sales in this operation.

As it is desirable that the distribution by grades be shown in tonnages and amounts, these items are written in the respective columns on the distribution side of the sales journal.

The machine adds vertically as well as horizontally and when the items are written, the figures in the respective columns are being added so that when the last item is written, the vertical totalizers contain the totals for each column. Inspection of Form 4 shows how these vertical totals are taken. It will be observed in the line Totals for Today the total tons and total debits are shown. These items should be in agreement with the predetermined totals as shown by the adding machine list of tonnages and amounts of bill of lading extensions. If the work has been correctly done these totals will be in agreement.

FURTHER ACCURACY ATTAINED

It will also be observed that the Balance Due and Pick-up O. B. columns have totals also. The total of the Pick-up O. B. column added to the total debits for the date should be in agreement with the Total of Balance Due. As a further aid to accuracy, the Pick-up is repeated on the sales journal and this is again picked up from the statement so that if the two Pick-up columns are in agreement, it is a further proof that the account has been correctly handled. If the two totals do not agree a simple line comparison will point out the account having the error and this can be corrected.

Attention is called to the distribution side of the sales journal, containing the distributions by grades and amounts. The totals of these respective distributions agree with the total tonnages and amounts on the debit side of the Journal of Sales.

The lines Previous Totals and Totals to Date This Month show how the figures may be made cumulative so that the line Total to Date This Month contains the figures for the month's operations. These items should be brought forward from day to day. By doing this, the posting at the end of the month of the debit to Accounts Receivable account in the general ledger and the corresponding credits to the four sales accounts.

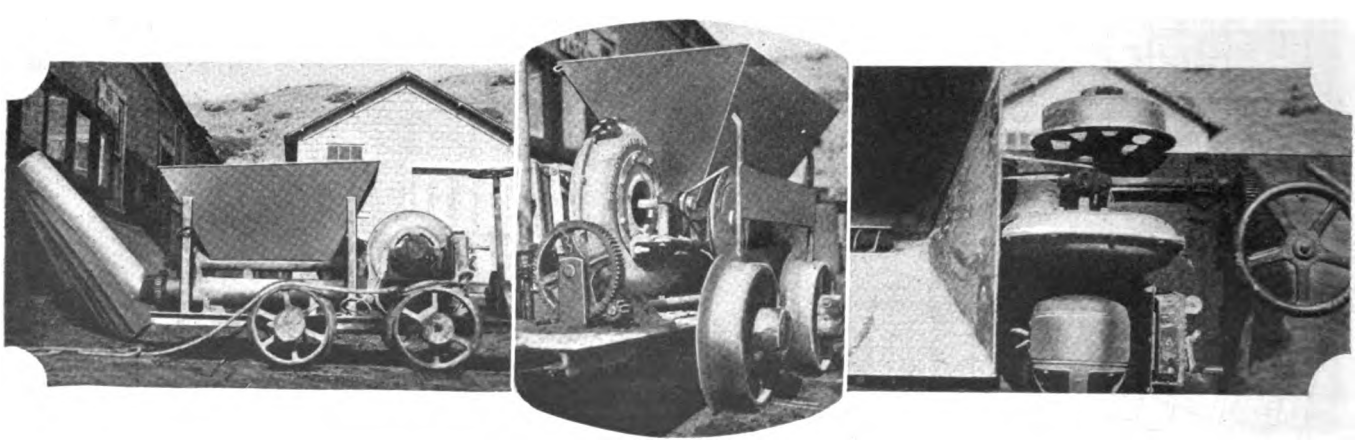
After the day's billing is over, the ledger is posted, the monthly statements against customers prepared, the sales journal entries made with proper distributions and all of this has been done in one operation with proven balances and totals. Invoices can be mailed out promptly with bills of lading attached. It is not necessary to keep copies of invoices, because the ledger account carries these copies in alphabetical order by customers and the sales journal carries these statements in chronological order. At the end of the month, there is nothing to do but mail out the statement, as everything is posted up.

For a mine loading 1,000 to 1,500 tons per day, which means 25 to 35 cars per day, about an hour per day is all that is required for the bookkeeper to extend the amounts of the invoices, make the invoice, post the ledger, write the customer's statement, write and balance his sales journal and obtain totals for the day and for the month to date.

Control of the accounts receivable is kept by a control card handled in the same manner as an individual ledger account. This is debited with all charges and credited with all credits and the card is balanced each day automatically, so that this card shows the total due by customers down to date. The balances shown by the individual ledger cards should, of course, be in agreement with the balance as shown on this card.

This system is bound to speed collections because the statements against customers, proved and balanced, can be placed in the mails just as soon as the last car is charged. There is no waiting on trial balances, etc.

No good operator desires to go back to the old expensive days of pick mining, solid shooting and mule haulage and there is no reason why the savings made for the mine through the use of modern labor-saving machinery cannot be extended with equal profit to the office. Mechanical devices in the office, properly installed, reduce office overhead, make the office more efficient and, in fact, makes the bookkeeper a producer, instead of a historian. One of the troubles of the coal trade today is lack of knowledge of costs. Of course, these costs can be obtained accurately through pen methods, but knowledge acquired in this manner is history and water that has gone over the dam cannot be saved.



With This Rock-Duster No Nozzleman Is Needed

At Reliance, Wyo., the Union Pacific Coal Co. has a rock-dusting machine with control at the front end. Thus constructed, the man who operates the nozzle is well away from the dust blast and escapes coating his lungs with the flying dust. He is also where he can attend to the operation of the hopper and the manipulation of the switch. A vertical side elevation is shown on the left and vertical quarter elevation in the center. On the right is an almost plan view showing the wheel, reducing gear and the shaft which latter at the rear end of the machine has a gear which meshes with another on the periphery of the blast pipe. Consequently a twist of the wheel changes the direction of the blast at the will of the operative. A short part of the feed screw at the bottom of the bin can be seen in the view at the right in this illustration.

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Coal Mining Engineer Is Chosen President of A.I.M.E. at 133d Meeting in New York

A COAL MAN—Samuel A. Taylor, consulting engineer of Pittsburgh, Pa.—was elected president of the American Institute of Mining & Metallurgical Engineers for 1926 and a number of facts interesting to coal men were brought out at the 133d meeting of the Institute in New York City, Monday, Feb. 15 and 16. The sessions ran through to Feb. 18. A good many engineers and operators from bituminous fields were present together with a handful of anthracite representatives.

After Tuesday's meeting the board of directors re-elected Dr. H. Foster Bain, secretary, and T. T. Read, assistant secretary. Mr. Read is now director of the safety service of the Bureau of Mines at Washington. He joins the Institute March 1. The board announced the fall meeting for Pittsburgh, Pa., Oct. 4, 1926, and a regional meeting for the Transmississippi sections in Denver, Sept. 20. The officers elected Tuesday in addition to President Taylor were: Birch O. Mahaffey of St. Louis, Mo., and Carl A. Meissner of New York vice-presidents and L. K. Armstrong of Spokane, Wash., W. Spencer Hutchinson of Boston, H. A. Guess of New York, Seeley W. Mudd of Los Angeles and Reno H. Sales of Butte, Mont., directors.

Secretary Bain, of the Institute, announced in the Tuesday business meeting that regional secretaries would be provided so as to increase the interest of the local organizations. B. F. Tillson proposed that a change be made from the present practice of leaving nominations to the nominating board. The plan he proposed would give the full membership an opportunity to express its will. At present only one name is presented for each office and what that name shall be is decided by a committee of three from the local section, one of the committee being an ex-president of the Institute.

John A. Garcia said the system of nominations was not democratic but advocated its continuance because it had worked well and resulted in the appointment of good men. R. V. Norris advocated that the proposal be voted down and "voted down hard." Mr. Tillson's motion when put to the vote was unanimously rejected.

STATUS OF COAL INDUSTRY

At the Tuesday afternoon coal meeting H. N. Eavenson reported for the coal and coke committee on the status of the coal industry, predicting that the production curve of oil would soon begin to sag and tended already in that direction, that in three or four years the production of coal would progress upward at its old rate of increase. He showed that other industries such as the production of ingots and copper were as hopelessly below capacity as coal if not more so.

Graham Bright gave the result of a questionnaire on the use of loading machines in bituminous mines showing that of 49 replies, 22 were from union and 27 non-union mines. Of 43 replies, 38 reported no opposition from employees. Six union mines reported trouble with the union and one no trouble. Of 34 answers, 15 reported decreases in the production of lump coal, 12 an increase and 7 no change.

Evaluation of coal formed the subject of an address by R. H. Sweetser who said that the relative value of coal should be determined in the same way as the relative values of iron ores. One per cent ash in coal increased the cost of pig iron 30c. per ton. One company was paying 75c. above market price to get a coal 3 to 3½ per cent better than that of the general run of the market. Mr. Sweetser pointed out that 1 per cent of ash represented nearly one shovelful of slate to a ton of coal. Mr. Garcia wanted an evaluation of coal land made on somewhat similar considerations.

Thomas Fraser's description of the air-sand process of cleaning coal was read by J. J. Rutledge.

Prof. S. W. Parr declared that the resins in coal have little or no coherence when carbonized and do not make coke. That was the function of bituminic coal. A. C. Fieldner said that Rheinhardt Theissen had noted that the attritus bands in coal would not coke satisfactorily but anthraxylon, which is made from the woody parts of coal, fuses well and cokes freely.

VENTILATION DISCUSSED

On Monday opening the first meeting of the ventilation committee George S. Rice paid a tribute to the coal industry for having taken the first and most significant steps in the science of ventilation. However, some of the other industries now have ideas and experience to offer of which coal men might with advantage avail themselves.

E. A. Holbrook said that the lack of information about cardinal facts in ventilation was well illustrated by a colloquy between an inspector and a mine manager. "What's your water gage?" queried the former. The prompt reply was "We don't need one. *Our* mine's dry." The need of the coal industry is to obtain and absorb some of the facts that manufacturers, other societies interested in ventilation and the British mining associations have discovered by diligent inquiry and experimentation. Graham Bright reported that a committee on mine fans has been formed of manufacturers and fan users including in the latter A. B. Kiser and G. E. Lyman.

A paper that received much favorable comment was presented by L. W. Huber. In brief he said that as a mine had a variable resistance due to the passage of trips and the opening of doors, a fan which did not work with a reasonably even efficiency, despite these changes in condition, was undesirable. The fan that could meet a change in pressure without an undue change in volume delivered or in horse power required for constant speed was the fan best suited for application.

Mr. Huber said that the forward and radial tip blades did not have the stability of the paddle-wheel or partial-backward curved blades and that the full backward-curved blade was the most stable of any. It appeared to him that the last-mentioned blades which were driven at high velocity had the further advantage that owing to their high speed they could be driven direct-connected. Furthermore he said, the fan with the backward-curved blades was the most efficient. Mr. Bright suggested that the fan could have its speed regulated

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to suit the resistance of the mine as that resistance changed in the course of the mine's history.

Mr. Tillson advocated a study of the propeller-blade fan that had been used recently in South Africa and had given water gages between 3 and 6 in. It was said that the manufacturer should provide a graph showing the characteristics of the fan as a protection to the client who wanted to know if the fan measured up to what might be expected should the water gage of the mine vary somewhat from what was anticipated. It was said also that it should be provided as a means of making the most economical use of a fan. Mr. Bright proposed that each fan have the characteristics on the name plate graphically portrayed. Another suggested a tabulation that would convey the same story.

PITOT TUBE RELIABLE INDICATOR

F. R. Still, of the American Blower Co., said that the backward-curved blades had to be rotated 50 to 150 per cent faster than the forward-curved blades and that the construction of the former was weaker than that of the latter. To get a 5-in. water gage with such a fan a tip speed of 7,000 ft. per min. would be necessary which would be a great strain on the fan structure. Discussing the measurement of air he said that he had found that by making the holes in pitot tubes of a diameter not larger than 0.02 in. he had been able to get the true static pressure as opposed to that of impact. He had found the pitot tube a much more reliable indication than any anemometer. At speeds of 1,500 ft. per min. the anemometer would be strained and unreliable whereas speeds of 4,000 to 5,000 ft. per min. are not unusual. He said that one reading of a pitot tube is enough to gage the quantity of air passing through a given pipe or passage when it has been properly calibrated but only so long as the speed above is changed. When the water gage is lowered or raised then the reading of the pitot tube will have to be interpreted by complete readings for every part of the section taken at that gage. Mr. Still said that the backward-curved fan of the same capacity as a forward-curved fan might cost 75 or even 100 per cent more than the latter.

G. E. McElroy, ventilating engineer of the Anaconda Copper Mining Co. and former member of the U. S. Bureau of Mines at Vincennes, Ind., read A. S. Richardson's article on the failure of operating performance to agree with the theoretical rating. Only occasionally could Mr. Richardson forecast what a fan will do when erected at any one of the Butte mines, where, it may be said, depths of 3,000 ft. and high temperatures are encountered.

Uncommonly interesting were the remarks of Ole Singstad, chief engineer of the New York-New Jersey Tunnel Commission. The tunnel when completed will be provided with a capacity of 3,761,000 cu.ft. of air per minute. That will be divided among 84 fans, three for each blower duct and three for each exhaust duct. One out of every three will be a standby unit. The air will be blown in by a duct under the roadway and liberated at distances of 10 to 15 ft. dependent on the grade. The air thus released will be sucked up into the return air duct.

The air ducts run half way from air shaft to air shaft, and the shafts are placed to accord with the grade of the tunnel and therefore in accord with the demand for air by which to neutralize the lethal gases delivered as the result of the incomplete combustion of gasoline. Fans of from 81,000 to 227,000 cu.ft. per min. capacity will be used. From experiments at Yale made by Dr. Yandall Henderson it was ascertained that with 4 parts of carbon monoxide in 10,000, the air can be breathed with safety and comfort for one hour. The design of the ventilating equipment is based on that fact. The ventilating speeds and resistances were tested at Urbana in the University of Illinois, a special concrete tunnel being built for that purpose. Further experiments at Bruceton in the experimental mine where an oval track was built and eight automobiles were allowed to circulate confirmed what had been learned at Urbana.

It was found also that a fire in the tunnel would not cause smoke to spread more than 30 ft. Instead of the fire traveling from car to car, the draft being vertical from intake to return duct will remove the flames in a manner that will cause least danger. It is easy to imagine what would happen in a tunnel if a car took fire and the air traveled from the car past the other cars to the exhaust portal and in such prodigious volume as ventilation by a single current would make necessary. The size of the installation can be understood when it is said that the largest fan to be constructed in the world, which has, by the way, radial blades with the tips turned backward, has a capacity of 900,000 cu.ft. per min. One big fan in America has a 5-in. water gage and a capacity of 750,000 cu.ft. per min. The installed horsepower of the tunnel plant in New Jersey and New York will be 6,000 but only two-thirds of that will be put in operation except perhaps in emergencies.

In the afternoon the meeting on mine ventilation was held. George S. Rice presided. The first topic discussed was the ventilation of the Liberty Tunnel in Pittsburgh, Pa.

The first problem in ventilating this thoroughfare was a determination of the content of carbon monoxide (CO) in the tunnel atmosphere produced by motor vehicles. The second was a determination of the composition of the exhaust from automobiles. Several actual tests were made on the air in this tunnel while machines were passing. In the first the calculated content of carbon monoxide was 0.04 per cent and the actual analysis showed 0.041 per cent.

ACTUAL RESULTS OF TESTS

With motor trucks 0.07 per cent was expected and analysis showed 0.05 per cent. In all cases the actual results obtained checked those calculated within fair limits. In most instances the larger discrepancies were realized on the longer tests when the air within the passage had a chance to purify itself somewhat by diffusion as well as by circulation. Air movements induced by the passage of vehicles in the longer tests carried away much of the foul gas generated.

Air drawn from this tunnel is discharged upward from comparatively high stacks at high velocity while that forced in is drawn from points near the ground. There is thus small chance of the bad air short-circuiting and being returned to the tunnel. No special provision has been made for caring for the condensation of humidity which in some tunnels, notably London subways, is at times bothersome.

An apparatus for continuously analyzing small percentages of carbon monoxide has been perfected and is being used as a part of the ventilation equipment of this tunnel. This depends for its operation on the heat generated from the oxidation of carbon monoxide to

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carbon dioxide in the presence of a catalytic agent. This instrument is sensitive to as low an admixture of CO as ten parts in a million and will easily indicate one part in 100,000. Such an apparatus could easily be connected by relays to the equipment driving the ventilating fans in such a way that the quantity of air forced into the tunnel could be increased whenever the content of carbon monoxide rose above a certain predetermined percentage.

It was then stated that the committee on mine ventilation carefully reviews the results of work done on this subject throughout the world and attempts to



Samuel A. Taylor

select and co-ordinate such material as will prove useful to American mining men. A research fund has been established and some of the revenue from this source might logically be devoted to the work of this committee.

Dr. R. R. Sayers then stated that the carbon dioxide content of mine air could not be regarded as an index of its vitiation by the respiration of men and animals, although it had long been so considered. Air vitiation in mines may arise from other causes and will take place if neither men nor animals are present. Deficiency of oxygen sometimes causes trouble. Many men become unconscious if the atmosphere contains 9 per cent or less of this element, and most men succumb to unconsciousness or coma at 5 per cent of oxygen.

Effects of Increased Oxygen

Percentages of oxygen higher than normal have no particular effect up to about 160 per cent. At a pressure of two atmospheres, making the weight of oxygen taken into the lungs approximately twice normal, animals die from lung irritation in about 48 hr. Divers using oxygen (not air) apparatus are liable to become foolish, or rather foolhardy, when the oxygen breathed becomes 125 per cent above normal.

In the atmosphere of a mine abnormal constituents are important. Methane or marsh gas has no particular physiological effect, however dangerous it may be from the standpoint of explosibility. Sulphur dioxide, although poisonous, is not particularly dangerous because its odor always gives warning of its presence. Oxides of nitrogen and hydrogen sulphide are highly toxic but not particularly dangerous except when the latter in high concentration paralyzes the sense of smell. As small a quantity as $\frac{5}{1000}$ per cent irritates the mucous membrane.

A true index of air vitiation is furnished by its content of carbon monoxide (CO). The index, or quantity that will give trouble under ordinary conditions, after 45 min. exposure, is 0.04 per cent. In 5 to 6 hr. 0.02 per cent will be felt. With 1 hr. of exercise 0.04 per cent may cause collapse. High temperature always increases the ill effects of this gas.

Because of the danger from these various gases it is highly important that every mine be well ventilated. Exposure to concentration of any poisonous gas should be avoided if possible. If necessary the gas mask may be used in poisonous atmospheres or those deficient in oxygen. Should a person be overcome he ought to be hurried into good air as quickly as possible and the prone pressure method of respiration applied. It is also highly important to keep the patient quiet.

Dr. Sayers said that in cases of carbon monoxide poisoning oxygen should be administered. A mixture of carbon dioxide and oxygen stimulates deep breathing, but authorities differ as to the advisability of using this mixture. If it is not ready at hand in case of emergency no time should be lost in procuring it, but pure oxygen should be administered at once.

Prof. A. C. Callen next outlined some of the high points in the contemplated work of the committee on mine ventilation for the ensuing year. These, among other things, include: A basis for determining mine resistance, determining a coefficient of friction along mine passages, a coefficient of friction for air in passing around bends, the effect of the use of guide vanes for conducting air around sharp corners, and the selection of suitable instruments for measuring the velocity of air as well as its static head.

American vs. British Practice

In discussing the report of the British Institution of Mining Engineers on the "Theory of Ventilation," Mr. McElroy asked, "Can a simplified formula for mine ventilation be developed?" The new formula as proposed in the report in question had been simplified only mathematically. The British Institution proposed the units of pounds pressure per square foot and cubic feet of air moving per second, whereas American engineers almost invariably employ inches of water and cubic feet per minute. The majority of mining men in this country believe that the American practice is preferable.

Mr. McElroy brought out another interesting detail concerning mine ventilation. This was to the effect that in metal mines not only are the volumes of air circulated much smaller than those employed in coal mine ventilation but the resistance offered to their flow is higher.

He then showed an interesting chart for determining the flow of air in mines. Although this chart may leave much to be desired, it nevertheless affords an excellent check on more elaborate and exact calculations.

Mr. Tillson then stated that present means of measuring air flow might prove inaccurate and inexact. He favors the use of orifices as a means for determining the flow of air and gases. In reply it was stated that much work of this nature had already been done by the American Society of Mechanical Engineers and that the results obtained by them might prove of interest to mining men.

Frank Haas stated that mine ventilation was receiv-

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ing intensive study both in this country and abroad. Costs of ventilating mines in the United States were too high, this in many cases being the result of ignorance.

An objection was then raised to the use of the Pitot tube for measuring air velocities on the ground that its manipulation was delicate and that it sometimes gave highly erroneous results. In reply Mr. McElroy stated that it was his belief that best results could be obtained with this instrument only if the volumes of the air spaces between the static and velocity nozzles and the pressure gage were made equal. Unequal volumes in the connecting tubes sometimes led to violent fluctuations in the liquid column and great difficulty in reading it accurately.

"BOOSTER" AND "BLOWER"

A study of booster and auxiliary fans was next suggested as a subject for investigation by the ventilation committee. Such fans are opposed by some engineers. On the other hand new methods of mining make them extremely convenient and almost dictate their use in some cases. In the discussion that followed a sharp line of distinction was drawn between the "booster" and the "blower." The booster was considered as an auxiliary fan of moderate size furnishing air to an entire split or section. The blower is a small fan ventilating a single heading or other passage by means of canvas or other flexible tubing.

Mr. Rice stated that in some cases boosters are used in place of brattices. He recalled an instance where two fans were thus used, both being electrically driven. The return of one became the intake of the other and a dangerous condition was thus created.

Dr. J. J. Rutledge then stated that if we are to have any improvement in present methods of mining we must have single entries. These can only be ventilated by use of a blower. In many cases where such machines are now used the air sweeping the face is purer than where ordinary crosscuts between a pair of headings are used.

Mr. Rice felt that boosters were sometimes justified in extreme cases but believed that for such places air-driven machines were safer than those connected to electric motors. Such machines are not forbidden in England. When a fan of this kind is stopped a splendid opportunity is presented for gas to collect which may be driven back upon the motor when the fan is again started.

WHAT IS A GASSY MINE?

The question was then asked: "Could not this committee define in a quantitative way exactly what is a gassy mine?" It was remarked that some time ago the Bureau of Mines had an opportunity to formulate such a definition but sidestepped the question—perhaps wisely. It was also pointed out that at present no convenient, reliable, accurate means for determining the gas content of mine air is available for use by the ordinary mine man.

It was also asked: "Should the work of the committee be limited or circumscribed by existing state laws? Should not the Institute rather point the way to better standards?" In reply Mr. Haas stated that he would treat existing statutes with all due respect and would hesitate to recommend changes unless such alterations were sorely needed. It was also stated that although there is little uniformity in the statutes of the various states it can hardly be hoped that uniform mining laws will be enacted. The Bureau of Mines once took some tentative steps in this direction but its motive and purpose were misunderstood and the matter accordingly was dropped.

The new president, Mr. Taylor, was born in what is now East McKeesport, Pa. about ten miles east of Pittsburgh, in 1863. He was educated in the public schools, the Polytechnic Institute in Old Allegheny, and at the Western University of Pennsylvania, now the University of Pittsburgh, graduating in the class of 1887 with the degree of civil engineer. He received the honorary degree of doctor of science from the University of Pittsburgh in 1919.

In July, 1887, he began work for the Carnegie Steel Co. at the Homestead plant, then under the management of Julian Kennedy, as draughtsman in the new structural steel department, where he continued until September, 1888, when he resigned to accept the position of assistant engineer of construction of branch lines of the Pennsylvania Railroad, with headquarters in Greensburg, Pa. He continued in that position until October, 1893, when, on account of the business conditions, the department was temporarily disbanded.

He then began the practice of his profession as a civil and mining engineer in Pittsburgh where he has had his offices ever since. For many years he carried on the general practice of engineering, designing and building water works and sewer systems, street and road improvements, railroads and buildings, as well as designing and building a number of coal mines and coke plants. He was for many years the engineer for about ten municipalities in the western part of the state, and was engineer for a number of coal companies. About 1900, he, with associates, became interested in the development of coal properties and opened up a number of coal mines, and from this time to the present he has devoted most of his time to coal mining and its allied industries as consulting engineer and in a managerial capacity.

HELD MANY IMPORTANT POSITIONS

Mr. Taylor has served on several national commissions pertaining to mining matters, as well as on several state commissions of public interest. He has been one of the consulting engineers of the U. S. Bureau of Mines ever since the Bureau was established. He also served as technical adviser to Dr. Harry A. Garfield, U. S. Fuel Administrator during the World War. During 1918, he was loaned to the Canadian government to assist that country in their fuel matters. He served with U. S. Coal Commission in 1919 to adjust the labor scale, also served on the board of engineers which made the valuation of coal lands and properties for the Coal Commission in 1922.

He was president of the Coal Mining Institute of America in 1911, president of the American Mining Congress in 1913, and president of the Engineers Society of Western Pennsylvania in 1914.

He is a member of those societies, and also the American Institute of Mining and Metallurgical Engineers, American Society of Civil Engineers, American Water Works Association, American Society for the Advancement of Science, American Society of Political and Social Science, National Forestry Association, International Navigation Congress, a fellow of the National Geographical Society, and a member of the chamber of commerce of Pittsburgh, Pa.

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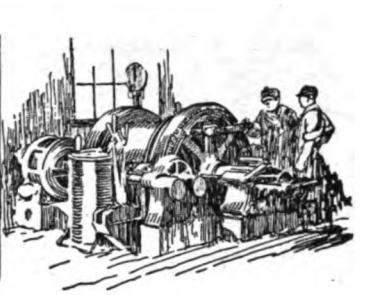
Practical Pointers For Electrical And Mechanical Men



Heavy Grating Keeps Surface Water Out of Mine Building

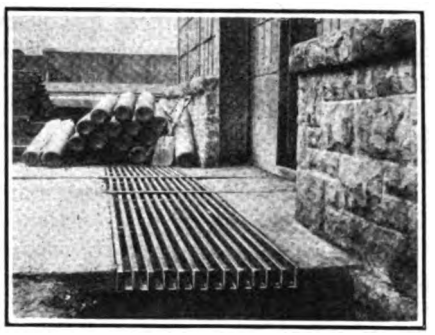
Many mine buildings are so built that their floors are at approximately the same level as the ground outside. Handy though this arrangement may be it sometimes leads to trouble because surface water may find its way into the building. A flood outside then means also a flood within.

In the accompanying illustration may be seen the heavy grating that guards the entrance to a large mine shop in Kentucky. This shop is built in a community that is generously provided with good roads and the pavement has been carried clear to the shop door, so that trucks and wagons could be driven into the building. Much time and labor is saved by this provision.

In order to prevent water on the pavement entering the building a trench was dug and concreted, immediately in front of the door. As the ground upon which the shop was built is somewhat sloping it was an easy matter to give this trench sufficient slope to carry away all the water that enters it.

The grating itself is made up of bars of strap iron each 1 x 4 in. in cross-section. These are fastened together by ¾-in. bolts or rods which are passed through ¾-in. pipe spacers about 1½ in. long. The trench is about 30 in. wide and the grating is supported by 80-lb. rails extending across it, one rail under each end of each grating section. There are three of these sections, one between the rails of the mine car track that enters the shop and one upon either side of it. The side or flank sections, which are long compared with the one in the center, are supported by transverse rails in the middle as well as upon either end.

The top of the grating is made flush with the concrete paving and slightly below the top of the track rails. By this arrangement wagons, trucks or cars may enter or leave the shop as may be desired but surface water is effectively trapped and drained off. No matter how hard may be the rain outside the shop floor is always reasonably dry. Furthermore, this grating was inexpensive and was built to suit the local conditions in the shop that it serves.



Grating Protects Shop Floor

This grating spans a drainage trench in front of the shop door. Thus while mine cars, teams or motor trucks may enter or leave this building at will, surface water is effectively trapped and drained off.

It is not intended to convey the idea that the kind of grating here described is in any sense a new scheme. Such gratings have long been used for various purposes. The application described however, is novel and in use is highly effective.

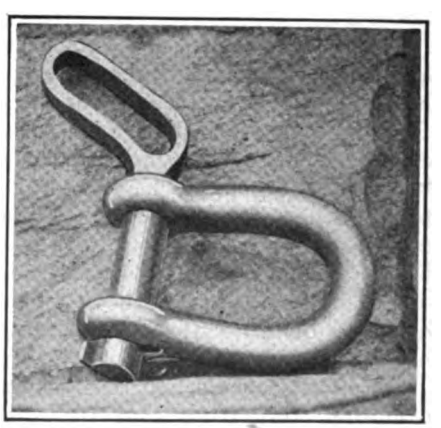
Keeps the Pin in Place

Many have been the devices employed for keeping the pin of a clevis from coming out while the clevis is under stress. Of these the old lynch pin or the later cotter pin is perhaps the most common. Both of these were effective but required some time for their withdrawal, furthermore they were liable to be lost.

An ideal fastening of this kind would be one that would hold the clevis pin in place without failure so long as the clevis is under stress but which can be withdrawn almost instantly when withdrawal is desirable without loss of time and without the use of tools. It is probable that the device here illustrated and described is not new, but it will be new to many of our readers and is here set forth for what it is worth.

The illustration shows a clevis provided with a pin that is fitted with a short tongue or feather welded onto one side of its lower end. The lower opening in the clevis body is a "keyhole," that is, it is a circular opening with a slot or rectangular opening extending from it toward the body of the clevis. This is made big enough to permit the short feather on the end of the pin to pass through it readily, yet does not weaken the clevis. The handhold or ring on the top of the pin is not circular but elliptical or flattened and extends in a direction parallel to that of the feather on the end.

When it is desired to remove the pin from the clevis it is only necessary to turn the pin until the handhold is parallel with the clevis body. In this position the feather will easily pass through the lower hole while in any other position the pin cannot be withdrawn. This device is particularly handy on the end of haulage ropes or on draft chains by which cars are hauled.



Non-Releasing, Yet Easily Released

When the pin of this clevis stands in the position here shown the feather upon its lower end prevents its withdrawal. Turning the pin through an angle of 180 deg., however, allows it to be withdrawn with ease. The handhold on the top of the pin serves as an indication of the position of the feather.

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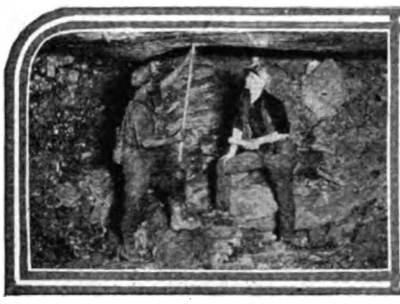
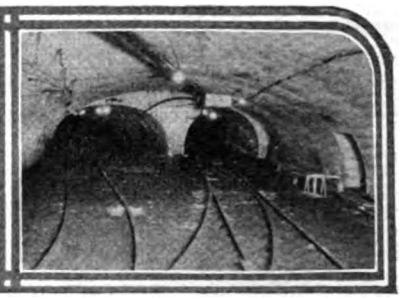


Underground Operation



Arc Believed to Have Fired Gas at Castle Shannon Mine

On Jan. 23, at about 10:30 a.m., six men were more or less severely burned in an explosion of gas at the dead end of Tenth Face entry in the No. 3 mine of the Pittsburgh Terminal Coal Corporation at Castle Shannon, near Pittsburgh, Pa. The agent of ignition is believed to have been an arc caused by the unhooking of the cable nip of a cutting machine from the trolley wire which had been extended to the last breakthrough, about 80 ft. from the face. At the time, the machine was backing out of the place after having completed a cut. The machine is of the permissible type. In this mine closed lights and permissible powder are used exclusively and the roadways are rock-dusted.

There was no lack of air in the entry for it is one of the two intakes in a triple-heading projection which has been developed to a point about 2,300 ft. from an intake air shaft. The last two crosscuts were left open except that in the outby crosscut was hung a canvas, and a chute which lay further in was not blocked by a door. It is believed that the air made a clean sweep to the return without going to the last crosscut.

On the day before the explosion, a cut had been made which exposed, but did not penetrate through, a clay vein. The assistant mine foreman, in compliance with the mining law, accompanied the loader to the place, tested for gas and, finding none, bade the latter put in a test hole. He is reported to have admitted finding gas after the test hole had been drilled. However, he must have believed the quantity being given off was insufficient to cause an explosion, forgetting that little or no air found its way to the face. When the cutting machine crew came he is said to have given orders to the men to go ahead with the cutting, which they did. In the meantime he retired to the last crosscut, where he was when the explosion occurred.

By the time the cutting had been finished a large volume of gas must have displaced the stagnant air near the roof and extended from the face to the last crosscut where the ignition apparently occurred.

When that happened only one man, the machine runner, was stationed inby of the last crosscut. He was at a point about 50 ft. from the face, sitting on the cutting machine which was then backing out from the place. Among the four men who were with the assistant foreman were the machine helper and the fireboss of the section who had arrived while the machine was in operation. He is said not to have visited the place because the assistant foreman had assumed responsibility for the operation. One of two loaders stood with the before-mentioned men in the crosscut and the other stayed on the entry at the point where the machine cable was attached to the trolley wire. It is thought that this man tampered with the cable nip causing an arc, the controller on the machine being open; otherwise no arcing would have resulted.

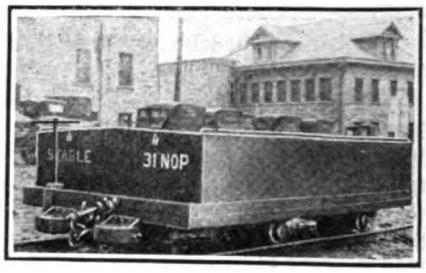
Inasmuch as the entry was being advanced into virgin territory air should have been conducted to the face by a brattice, particularly because a clay vein had been encountered. Lastly, the assistant foreman should have determined approximately the quantity of gas standing in the place by tracing the extent of its occurrence outby.

Following the explosion the following exhortations were made by the general superintendent to the mine superintendents: (1) Under no condition should two open breakthroughs be permitted on any entry; (2) Under no condition should canvas be depended upon for permanent stoppings, and (3) Under no conditions should the trolley wire be carried to within less than 150 ft. from the face or beyond an open crosscut.

Closed Feed Cars Save Grain

Taking mule feed into the mine has heretofore presented its problems. When the feed was transported underground in ordinary grain sacks there was always some spillage and wastage. Furthermore, grain thus transported would absorb moisture, and if left and stored in the sacks it might mold. Again, sacked grain is exposed to attack by mine rats, and the loss sustained from the incursions of these animals may be great.

In the accompanying illustration is shown a covered steel stable or feed car employed at one of the big mines of Kentucky. This car is constructed specially for the purpose of transporting grain and other mule feed into the mine. It amounts practically



Rat, Thief and Moisture-proof

A steel tank with sloping top covered with hinged doors which may be padlocked shut effectively protects its contents from moisture, rats, spillage and theft. This car may be hauled anywhere within the mines, and soon saves its cost in the protection it affords the feed of the mine animals.

to a covered steel tank mounted on a low car. As may be seen the covers are hinged and may be padlocked shut. Not only does a car of this kind protect its contents from moisture, but also from rats or from theft. It cannot be opened by unauthorized persons.

Two interesting details of construction appear in the photograph. One of these is the brake mechanism, which as may be seen, strongly resembles that employed upon the ordinary railroad freight car. The other is the hook on the end of the car, which is used to support the clevis of the coupling, thus preventing it from dragging along the track. Cars of this kind, save their cost.

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Book Reviews

Will New Conditions Modify The Miner's Freedom?

As interesting as a novel will the recent publication "The Miner's Freedom" be to operators of coal mines. The author, Carter Goodrich, assistant professor of economics in the University of Michigan and Amherst Memorial Fellow in Economics, 1921-22, 1923-24, knows his subject quite thoroughly having acquired his knowledge at first hand underground as well as by a diligent study of technical literature. He has seen miners working under many conditions in the bituminous regions. He has devoured at least *Coal Age*, not only its editorials and articles but its news, its blurbs on the contents page and even its advertisements also. He writes like a coal technician with a full grasp of his subject and, withal, with a clearness and conciseness which carries the reader through the book without uncertainty as to his meaning and without a moment of weariness.

He opens his book, which has as sub-title "A Study of the Working Life in a Changing Industry," with the statement, "It is often said that modern society has chosen efficiency in production rather than richness in the working life; that it has chosen the possibility of fuller and more varied living outside working hours rather than the possibility of a creative life on the job itself." He then denies that there is any "choice" made and says this is "not only a false rationalization of the past but a real hindrance to intelligent thought about the future. Society makes no choices as such."

JOBS AS DULL AS FORD'S

He adds that "the countless individual decisions out of which have come mass production as efficient as that at Ford's and jobs as dull as those at Ford's have most of them been made without the slightest reference to the quality of the working life that would result." "There's no such thing as discipline in a coal mine; the miner is his own boss," he quotes as recognized slogans. He then denies that this is entirely true and recalls the colored loader in a West Virginia mine who drifted back from the factory to coal mining as saying that in a coal mine, "They don't bother you none."

One is reminded of the story that W. J. German tells so well regarding a West Virginia loader who quit his work disgusted and disgruntled because the driver, the trackman, the shift boss and the foreman in turn cussed him out and one after another made him change the position of a prop until he had moved it from place to place no less than four times. That story doesn't suggest freedom from supervision and instruction. Nevertheless, the author is right in declaring that the miner's customs have made him extraordinarily free as to what he shall do, when he shall do it, when he shall come to work, when he shall quit his place and whether he shall put in his day in the mine or at the country fair.

WON'T HIRE MINERS

The author quotes "Industrial Management" where it says as he briefs it, "Don't hire former miners if you can avoid it. Their work has unfitted them for factory discipline. In the mines the possibility of constant supervision or of surprise tests does not exist. The coal miner is accordingly trained to do as he pleases. . . . Transplant such a man into a factory where production is speeded, and no imagination is required to picture what will happen. His 'personality' is 'so magnified' by the laxness of mine discipline that he chafes under the necessary restrictions of other employment. . . . The ex-miner resents all suggestions as to his working methods, resents all effort to compel continuous application and assumes in general a hostile attitude to all supervision."

Quoting *Coal Age*, Mr. Goodrich says, "Mining is still in a way a 'cottage' industry, only, the cottage is a room in the mines" and he adds "the miner's freedom is largely a byproduct of the very geography of the working places inside a mine." He goes on to elaborate the variety of the miner's daily work, his independent existence and his resentment of direction. As one miner he met said, "If there's anything that gives me the willies, it's a boss standing and looking down my shirt collar."

The first part of the book is on "The Miner's Freedom," the second on "The New Discipline." In the latter Mr. Goodrich shows that machines must introduce elements of factory management, though the Ford ideal can never be attained in the mine. "Surely no one," says the author, "is looking to the mines of today to see how the automobile factories are to be run but many are looking to Ford's for the mines of the future." He shows how coal mining had advanced immensely prior to the introduction of loading machines by quoting an article on the methods pursued before the Civil War, but says that the change is less than is about to take place and shows why this change is almost inevitable.

In the concluding chapter the author says, "Profits and prices, and to a less extent employment and wages and safety—it is chiefly in these terms and the others already suggested that the revolution in the mines is discussed; and certainly all these things should be considered as men weigh the gains and losses of the change and attempt to control its course. But for all these claims there are already spokesmen. . . . The purpose of the present study, on the other hand, is to place alongside these other problems an almost entirely neglected one—that of the effect of the change on the quality of the working life."

FREEDOM TO LOAF

Mr. Goodrich's plea will have few advocates. It is largely a plea for leisurely and inefficient operation and even incorrect and wasteful methods of mining, profitable in the end to none of the trinity of interests in coal mining, the public, the miner or the operator.

The miner's "freedom", as the author would define it, is a thing of no value to him or to anyone and really not worth the labor of writing and publishing a book in its defense, not entitled surely to 189 pages measuring 5 x 7½ in. Yet it is a well-written book, all the better because it has a single purpose and ideal. Too many books wander from subject to subject and do but weary without informing the reader. The publisher is Marshall Jones Co., 212 Summer St., Boston and the price $2. R. DAWSON HALL.

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News Of the Industry



Five-Year Agreement Ends Longest Strike In History of Anthracite Industry

The longest strike in the history of the anthracite industry is at an end.

Members of the joint negotiating committee of operators and miners, without advance notice to the public, returned to Philadelphia last Thursday, met secretly that day in separate sessions and the next afternoon affixed their signatures to an agreement to expire Aug. 31, 1930. This agreement had already been approved by the full scale committee of the union and was submitted to a special tri-district convention of the anthracite districts of the United Mine Workers at Scranton on Feb. 16. Ratification of the contract by that convention was accepted as a matter of course.

The principal terms of the agreement, which is printed in full on the opposite page, are:

(1) Extension of contract in effect immediately prior to Sept. 1, 1925, to Aug. 31, 1930, subject to annual readjustment after Jan. 1, 1927.

(2) Upon application of either operators or miners, modifications in the wage scale may be asked. Joint conferences to consider such modifications must start within fifteen days after the receipt of the proposals. If an agreement is not reached within thirty days after joint negotiations have been started, points in issue shall be submitted to a board of two men.

(3) This board will be allowed ninety days in which to reach a decision. In order to avoid a deadlock, it may enlarge its membership to an odd number, in which event a majority vote shall be binding.

(4) The demands of both sides on questions of efficiency and co-operation shall be submitted to the Board of Conciliation, exclusive of the umpire, to work out a reciprocal program of co-operation and efficiency.

Grant Brings Factions Together

Credit for bringing the warring factions together after all attempts to effect an amicable *rapprochement* appeared to have failed is given to Richard F. Grant, vice-president of M. A. Hanna & Co. and president of the Susquehanna Collieries Co. Mr. Grant, who is a past president of the Chamber of Commerce of the United States, did not enter the picture until Feb. 6. As he explained later, he waited until the political atmosphere had been cleared by the refusal of President Coolidge to take any action on the Copeland resolution requesting the President to invite the operators and the miners to resume negotiations.

On the date named, while the operators were pressing their campaign to appeal over the heads of John L. Lewis, international president of the United Mine Workers, and his fellow officers to the rank and file of the anthracite workers, Mr. Grant journeyed from Cleveland, Ohio, to Scranton, Pa., to lay his program before Major William W. Inglis, chairman of the operators' negotiating committee. From Scranton he moved on to Wilkes-Barre, where he talked for hours with Mr. Lewis.

Mr. Grant next went to Philadelphia to see S. D. Warriner, chairman of the Anthracite Operators' Conference, and William J. Richards, president of the Philadelphia & Reading Coal & Iron Corporation. He persuaded the operators to call a conference in Philadelphia on Thursday. He persuaded Mr. Lewis to abandon his speech-making tour of the mining region and return to the temporary headquarters at the Bellevue-Stratford Hotel, to which Mr. Lewis summoned the district presidents and the full scale committee of the miners.

All day Thursday Mr. Grant acted as intermediary between the operators, holding secret conferences at the Ritz-Carlton Hotel, and the union representatives, closeted across the street at the Bellevue-Stratford. Mr. Grant made a suggestion here, argued for a concession there, insisted upon this point, ironed out misunderstanding over that and finally whipped the agreement into a form acceptable to both parties. It



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Joint Committee That Signed the Peace Agreement

Seated, left to right: Richard F. Grant, John L. Lewis, Alvan Markle, W. W. Inglis and James A. Gorman. Standing: Andrew Mattey, Philip Murray, Thomas Thomas, A. M. Fine, Rinaldo Cappellini, George B. Hadesty, E. H. Suender, Thomas Kennedy, Jesse B. Warriner and Christ J. Golden.

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was submitted to the full scale committee of the miners on Friday morning and indorsed without change.

At 1 o'clock that afternoon the operators' delegation crossed the street and went into joint session with the miners. In less than an hour the announcement was made that an agreement had been reached. Word was flashed to the mining region and scenes duplicating the armistice day celebrations of 1918 were repeated from Forest City to Minersville.

Grant Pricks Some Bubbles

It was only after spokesmen for various state and federal officials had begun to claim credit for the settlement that Mr. Grant consented to talk for publication. He then made the following statement:

"When a coal strike develops, many champions of the people with political hopes start to develop ways and means to capitalize the situation for their own benefit. The first thing to do is to convince the people of their general love for humanity.

"There is no publicity value in being a private lover, and so their love is proclaimed loudly. The next thing is to have a plan or to offer their good offices. This is done, so that later, when the strike is settled, they can point with pride to their helpfulness.

"Hundreds of plans have been submitted. Generally they follow the plan of the Ten Commandments, the Episcopal marriage ceremony or Mrs. Rorer's cook book.



Richard F. Grant

"These champions of the people accomplish nothing except to confuse everything and everybody and prolong the strike.

"For three days I have been the sole contact between operators and miners. Right at the start it seemed sure that a formula could be written to end the strike. My only fear was that some great friend of the people would have a heart-break and start loving out loud and spoil the party.

"I call attention to the great common sense and wisdom of President Coolidge. It is my firm conviction that if he had yielded to the great pressure upon him and had tried to intervene, this contract would not be signed today. The American people are entitled to know this solemn conviction of mine and to honor this great President of ours who has shortened the strike by his wisdom.

"I would like to paste across the sky in eternal letters a warning to look out for these great lovers of America who want to do their loving out loud and who would capitalize the distress of our people for personal reasons."

Follows Hanna Tradition

Mr. Grant's successful mediation was in line with the traditions of the House of Hanna. The relations of that institution with labor always have been such that a Hanna man could command a real hearing from the union leaders. The founder of the firm was one of the first bituminous operators to hold out the hand of friendship to struggling organized labor more than a half century ago.

The late Senator Hanna also was a prominent figure in the anthracite controversies between the anthracite operators and the United Mine Workers in the early years of the presidency of John Mitchell. It was largely through his influence that the 1900 basis was continued until the big strike of 1902. And in 1922 Michael Gallagher labored to end the disastrous bituminous suspension of that year.

Major Inglis declined to make any

Complete Text of the Agreement Signed at Philadelphia

This agreement, made this twelfth day of February, 1926, between Districts 1, 7 and 9, United Mine Workers of America, parties of the first part, and the anthracite operators, parties of the second part, covering wages and conditions of employment in the anthracite coal fields of Pennsylvania, witnesseth:

1—Work shall be resumed at once under the terms of the expired contract, which, subject to modification as hereinafter provided shall be in force and effect until Aug. 31, 1930.

2—At any time after Jan. 1, 1927, but not oftener than once in any year, either party may, in writing, propose modifications in the wage scales of said contract. The parties agree within fifteen days after receipt of such written proposals to start conferences in the usual manner in an effort to agree upon such modifications.

3—If within thirty days after starting such negotiations the parties have not agreed, all issues in controversy shall be referred to a board of two men with full power and without reservation or restrictions, and the parties agree to abide by any decision or decisions of such board, either on the merits of the controversy or as to procedure to be followed. Such board shall be appointed as follows:

The operators shall name three men and the miners shall name three men. The operators shall select one man from the miners' list and the miners shall select one man from the operators' list, and the two men so approved shall constitute said board. Unless agreed, the men named by the parties shall not be connected with the United Mine Workers of America or the business of mining coal. The board shall be obligated, within ninety days after appointment, to arrive at a decision on all issues in controversy, and to that end shall formulate their own rules and methods of procedure and may enlarge the board to an odd number, in which event a majority vote shall be binding.

4—The demands of the operators and the mine workers on the question of co-operation and efficiency are referred to the Board of Conciliation, exclusive of the umpire, which shall work out a reciprocal program of co-operation and efficiency.

5—The Board of Conciliation shall proceed to equalize wages, etc., in accordance with Clause 12 of the agreement, dated Sept. 19, 1923.

6—Except as modified herein the terms and provisions of the award of the Anthracite Coal Strike Commission and subsequent agreements made in modification thereof or supplemental thereto, as well as the rulings and decisions of the Board of Conciliation, are hereby ratified, confirmed and continued during the term of this contract, ending Aug. 31, 1930.

In witness whereof, the parties hereto, through their accredited representatives, have caused this agreement to be properly executed, the day and year first above written:

On behalf of the anthracite operators:
W. W. INGLIS,
GEORGE HADESTY,
J. B. WARRINER,
E. H. SUENDER,
THOMAS THOMAS,
ANDREW M. FINE.

On behalf of Districts 1, 7 and 9, United Mine Workers of America:
JOHN L. LEWIS,
PHILIP MURRAY,
THOMAS KENNEDY,
C. J. GOLDEN,
RINALDO CAPPELLINI,
ANDREW MATTEY.

Attest:
JAMES A. GORMAN, Secretary.

ALVAN MARKLE, Chairman.

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comment upon the settlement before leaving Philadelphia. On his arrival at his home in Scranton, however, he issued the following statement:

"This time I am glad to return home with a contract that means the resumption of mining. The public's disappointment over earlier failures was not nearly so great as mine.

"I am confident that the agreement signed on Lincoln's Birthday will carry with it a long period of peace and prosperity. This prosperity will be shared not alone by the coal companies. If it is as good a peace as I think it is, the mine workers and every one in the region will benefit. No contract, in fact, that was not good for everybody would be worth signing.

"The past has shown that pulling in different directions gets us all into a lot of trouble. In place of that, what I should like to see established is a rule of co-operation and good feeling that includes the public, the mine workers and ourselves, all pulling together for the general good.

"That the industry which means so much to every one here has suffered severely is undeniable. With co-operation all round we can more quickly regain our markets and make this region again prosperous and happy.

"The thing that makes me most glad is that the strike is ended with honor to all concerned—all except the self-seekers who sought to make of it an opportunity to glorify themselves. They, of course, prolonged the strike. But to the earnest men who, without self-advertisement, sought to be really helpful in bringing about a settlement I am sincerely grateful."

Constructive Peace, Says Lewis

Mr. Lewis, in a statement issued soon after the signing of the agreement, said:

"The settlement is satisfactory and constructive. It assures stability and continuous operation for a five-year period, which is the longest agreement ever made in the coal industry.

"It does not contain the principle of arbitration, for which the operators have been contending, but it does provide machinery for the exercise of reason in the industry.

"The wage schedules of the expired contract are continued for five years unless changed by mutual consent of the representatives of both parties; both sides are thus given full protection.

"Under the agreement the Board of Conciliation is given broad powers as a stabilizing agency and is instructed to work out a reciprocal program of co-operation and efficiency which will restore a greater degree of confidence and harmony between the operators and the mine workers, which should result in substantial economies and reduced operating costs.

"Such a result will be a contribution to the industry which has been sadly needed, and if both parties work in good faith toward the attainment of the desired objective it will result in the industry being placed upon a higher plane that will command the respect of the coal-consuming public.

"It is the dawn of a new era in the anthracite industry, and both operators and miners should make the most of the opportunity which is given them.

"The agreement has met with the unanimous approval of the members of the scale committee of Districts 1, 7 and 9, United Mine Workers of America, and I anticipate will be overwhelmingly indorsed when presented for ratification by the mine workers throughout the anthracite region.

"The high courage and unselfish devotion to public interest which has been demonstrated by the Hon. Gifford Pinchot, Governor of Pennsylvania, throughout the course of the strike deserves the commendation of the mine workers and all throughtful citizens who have suffered inconvenience and paid exorbitant prices for substitute fuel.

"From the first Governor Pinchot, acting as a faithful public servant, has utilized the influence of his high office to crystallize public sentiment into an instrumentality that would end the strike.

"The present happy ending is in a large measure due to his untiring efforts to accomplish this result, and I am sure that his earnest spirit will receive ample reward in the gratification that comes from the knowledge that public necessity will now be relieved.

"The Federal Conciliation Service, under the personal direction of the Hon. James J. Davis, Secretary of Labor, has also rendered marked service in the controversy. The Secretary and his personal representatives have at all times exercised tact and wisdom in dealing with the problem and are justly deserving of credit."

Operators Are Gratified

Later in the day, Mr. Warriner said:

"The operators are intensely gratified that the strike is at an end.

"If it has engendered any bitterness we hope it will soon pass away. We shall make the utmost effort to that end. The next step is to rebuild what the stoppage of production for five and a half months has torn down.

"Out of the strife and misunderstanding there has been obtained an assurance of five years of peace. During that time the public is guaranteed a regular, dependable supply of anthracite.

"Production will be resumed at the earliest possible date. With the return of the men this can be done quickly because our properties have been kept up throughout the strike and within a few days coal should be rolling to market.

"In a period of scarcity caused by the loss of some 35,000,000 tons of production it is inevitable that prices soar. The effects of such conditions have been plainly seen in the mounting prices of substitutes.

"So far as the recognized producers of anthracite are concerned, since the strike began they sold the stocks they had at the prices prevailing at the time of the strike. After production is resumed it is expected they will maintain normal Winter prices for domestic sizes. It is also expected that the retail trade will maintain normal margins, so that our customers may not suffer from profiteering."

Strike Establishes Duration Record

The 1925-26 anthracite strike breaks all records for duration. Heretofore first place had been held by the 1902 suspension of 164 days, followed by the 1922 suspension of 163 days. On the day on which the agreement to end the 1925-26 strike was signed, the struggle was in its 165th day. About 150,000 workers (excluding maintenance men) were involved and the average loss in wages was over $1,000,000 per day. The total cost of the strike, including wages, profits and curtailed general business in the anthracite region may reach $1,000,000,000.

The record of preceding strikes in the last twenty-five years follows:

1900: Sept. 12 to Oct. 29.
1902: May 12 to Oct. 23.
1906: April 1 to May 7.
1912: April 1 to May 20.
1920: The vacation strikes of varying length at different mines.
1922: April 1 to Sept. 11.
1923: Sept. 1 to Sept. 19.

Congress Harps on Coal Despite Strike's End

By Paul Wooton
Washington Correspondent of *Coal Age*

Even though the anthracite strike has been settled Congress apparently is determined to devote some time to coal legislation. Chairman Parker, of the Committee of Foreign and Domestic Commerce of the House, has announced his intention to hold hearings on the recommendations of the Coal Commission. As this is written, no date has been fixed.

Senator Borah has announced his intention to urge coal legislation. The Oddie bill has been introduced in the House and active steps on behalf of this bill may be expected in the Senate.

When Secretary Hoover was asked about the charge, made on the floor of the Senate, that he had been delinquent in not having reported on the Oddie bill, he replied naïvely that the department could do little else if he had to write essays on each of the 5,000 bills introduced at each Congress which come within the purview of his department.

The District of Columbia Committee at last has brought about an arrangement whereby an audit of the books of certain retailers will be made by accountants from the office of the Comptroller General.

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Advisory Committee Report Made Public; Reynders Out of Range of Protests

The report of the Bureau of Mines Advisory Committee, of which J. V. W. Reynders is chairman, was made public Feb. 18 at the Department of Commerce, in Washington, D. C. Secretary Hoover is withholding comment until he has had an opportunity to study the report in detail.

The report, which was submitted to Secretary Hoover on Jan. 5, contains the following recommendations:

"Transfer to the Bureau of Mines of the Division of Mineral Resources, which as a part of the Geological Survey has long maintained an important statistical service for the mineral industries, and placing the whole in the Department of Commerce, where the economics of industry and trade are under constant review, affords an excellent opportunity for developing the further usefulness of the Bureau of Mines in an important direction. It will not be satisfactory to attempt to segregate economic studies entirely from the technologic and engineering aspects of these industries. Economic policy relating to minerals must be based on a wide knowledge of technical and engineering facts, and, conversely, the direction and intensity of technical studies must be related to the economic situation in the industry.

Recommends New Branch

"Your committee believes that the interests of the several mining industries concerned can be best served by the Department of Commerce by a consolidation of relationships within the Bureau of Mines and therefore recommends the incorporation of a branch of industry or economics within the Bureau of Mines and the transfer to the Bureau of the Coal, Minerals and Petroleum divisions' work of the Bureau of Foreign and Domestic Commerce, with any others involved, to the extent that the officials of the department may deem it wise or necessary for the accomplishment of this purpose.

"Because of the limitations placed upon federal safety service by our dual form of government, the object of the Safety Division should be the development of a public opinion within the various states for the creation of such standards of mine inspection and accident prevention and of such adequate facilities as will enable this Bureau to turn over gradually to the individual states the work which properly belongs to them, in the meantime maintaining a high standard in its personnel and continuing unfalteringly its missionary endeavor toward the prevention of accidents, its encouragement of an increasingly higher standard of safety, and the actual rescue work in cases of emergency.

"It is recommended that the work of the small stations be consolidated into three units, located at Pittsburgh, Salt Lake City, and one at a point where the oil industry could be well served. Three stations so situated could be built up into efficient units where brains and apparatus could be consolidated under more efficient leadership and supervision than is possible with many small struggling units.

"The Bureau of Mines . . . depends on the co-operation and good will of the industries in collecting data. It is most important that this good will be not lost and that the confidential character of individual returns be respected in the fullest degree. Accordingly, it is recommended that neither the Bureau nor the members of its staff be used in connection with prosecutions by the government or the states, for infraction of laws, or in determining damages in civil suits.

"It is recommended that the collection of statistics be transferred to the proposed economic branch of the Bureau and that the method of collection and form of publication of these statistics be carefully revised to make these figures more accurate and in consequence of greater value to the industry.

"We believe that, subject to the limitations imposed by appropriations available for this work, the Bureau should collect current figures showing production, sales, distribution, stocks and consumption, also costs, selling prices, realizations, etc., if desired by the industry concerned, and that such information should be tabulated and promptly distributed to all interested parties.

Seeks Advice and Criticism

"The point of view of the Bureau staff, essentially that of a field engineer, has led to a feeling that the work was not complete until the results had been put into practice. Such a result is greatly facilitated through co-operative agreements at the same time that a proper part of the expense is assessed to those first and more immediately benefited. . . . It is highly desirable that the staff of the Bureau have at all times the advice and criticism of the industry, and the system of advisory committees already in being may, we think, be extended to advantage to cover the initiation of various studies, the methods of their conduct, and the partial and final results."

It is recognized in Washington that the report is certain to arouse many protests. Some are wondering if Chairman Reynders chose this time to make his trip to Soviet Georgia so as to be beyond reach when the report was made public.

Caught in Coal Slide, Turns Up Safe in Tender

A sudden slide of coal in a big bin of the Louisville & Nashville R.R. at Lebanon Junction, Ky., last week came near being disastrous to W. Metcalf. Mr. Metcalf and other employees of the L. & N. were engaged in digging coal down when the slide occurred. Seeing Mr. Metcalf's perilous position, his companions ordered an engine under the slide, and as the coal was released, filled the tender.

Mr. Metcalf was forced through the chute, carrying down with him several tons of coal.

Lawton Guilty of Contempt; Sentence Withheld

Tyler G. Lawton, of Terre Haute, Ind., president of District No. 11, United Mine Workers, was found guilty of contempt of court by Judge Edgar S. Durre, of the Superior Court of Vanderburgh County, as a result of an order issued by Lawton, giving miners working in the Green Mound Coal Co. mine at Washington, Ind., the alternative of quitting work at their present scale or losing their membership in the United Mine Workers. The order was part of a unionization movement under way in the southern part of the Indiana field.

The mine was operating under a receivership by order of Judge Durre's court and it was held that Lawton's order interfered with the discharge of his duties by the receiver. Lawton pled ignorance of the receivership.

Judge Durre withheld sentence until May 1 with the advice that Lawton attempt to get the men to return to work. However, the miners were not working under the Terre Haute agreement and if the district president orders them to return to work, he will be violating his obligations to the union. If he does not order them to return to work, he faces the probability of invoking a sentence from the court. The maximum penalty on this charge is a fine of $100 and 90 days in jail.

1 Dead, 19 Hurt, 600 Escape In Ohio Mine Blast

An explosion at about 8 a.m. Feb. 15 in the Powhatan Mine, 16 miles south of Bellaire, Ohio, caused the death of one miner and injuries to nineteen others, one of whom may die. Six hundred other miners escaped without injury. The men escaped through the main airshaft, located 300 ft. from the scene of the explosion. The airshaft was undamaged, though the interior of the main shaft was wrecked. The cause of the blast is not known. It is believed that the mine will be cleaned up so that operations can be resumed within a few days.

The mine is owned by the Powhatan Mining Co., which recently figured in a merger with the North American Coal Corp., of which Frank E. Taplin is president.

Defers Filling Read's Place

No successor to T. T. Read will be named at this time, it is stated by Director Turner of the Bureau of Mines. Mr. Read, who was in immediate charge of the Bureau's safety work, recently resigned to undertake a membership drive for the American Institute of Mining and Metallurgical Engineers.

As some reorganization of the safety work is in prospect, Director Turner in the meantime expects to give considerable personal attention to that branch of the work. With the assistance of those within the Bureau who are familiar with the Bureau's safety activities, the work will be looked after carefully while the reorganization studies are in progress.

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Kernohan Named Manager Of Houston Coal Co.

W. R. Kernohan, of Chicago, is the new general manager of the Houston Coal Co., having taken charge on Feb. 15, with headquarters in Cincinnati, Ohio. Since the death of Kuper Hood, about two years ago, the position was held for short periods by Harry Olmstead, who died suddenly from pneumonia, and by Leo Lewellyn, who returned to a washery manufacturing company with which he had formerly been connected. Mr. Kernohan, who is 46 years old, has spent his entire business life in the coal trade, having been associated at various times with S. P. Kineon, the Kanawha Fuel Co., the Carbon Fuel Co., the Zeigler Coal Co. (in full charge of sales), the Pocahontas Coal Sales Co. and the M. A. Hanna Co. In 1924, with George M. Cain, he organized the Kernohan Coal Co., of Chicago, and this company will continue to do business under its present name, but on an independent basis.

Scale of 1922 for Two Years In Nova Scotia

The convention of District No. 26, United Mine Workers, held at Sydney, N. S., during the week ending Jan. 30, adopted by a vote of 57 to 38 the report of the Royal Commission as a basis for negotiations with the operators for the establishment of a new wage schedule. The report recommends a long-term contract at the wages of 1922, which in some cases are rather below those fixed by the last contract in 1925.

The basis recommended by the report is a minimum wage, and a sliding scale, with the establishment of an accounting system giving the accountants of the union access to the company's books to ascertain what share the men may demand in the profits as wage increase.

It was agreed that the policy of the district shall be directed toward the nationalization of the mines with compensation to the owners to the extent of the value of their operating plants and equipment. A contract running until 1928 is favored.

To Extend Co-operative Study of Explosions

Co-operative research on coal-mine explosions by the governments of Great Britain and of the United States has been so successful that plans are being made for its extension to the field of metallurgy. The coal work also may be enlarged so as to include research on fuels.

Dorsey A. Lyon, assistant director of the Bureau of Mines, in charge of its research branch, and George S. Rice, the Bureau's chief mining engineer, will go to London in the spring to discuss the matter with the British authorities.

The work, if undertaken, will be confined to fundamental research. By working together duplication of effort can be avoided and plans made so that more can be accomplished than would be the case were the work conducted independently.

In addition to the exchange of information as to the progress of work on mine-explosion problems, Dr. H. F. Coward, a British specialist, is working at the Pittsburgh station of the Bureau of Mines with the group engaged in this study. In the same way Dr. Reinhardt Thiessen, of the Bureau of Mines staff, is working in the British laboratory at Eskmeals.

Spurr Nominated Chairman New York Group A.I.M.E.

Ballots are being circulated for the election of the New York Section of the American Institute of Mining and Metallurgical Engineers. The ballots must be received on or before Feb. 25 to be counted in the election. J. E. Spurr, editor, *Engineering & Mining Journal-Press*, is nominated for chairman. Nominees for vice-chairman are Sidney Rolle and A. D. Brokaw, and for committeemen M. F. Chase and Karl Hoffman. M. H. Merriss is nominated for treasurer. Two vice-chairmen and two committeemen are to be elected.

Rocky Mountain Institute Plans Live Meeting

The program for next week's meeting of the Rocky Mountain Coal Mining Institute, in Denver, Colo., includes a paper by Dan Harrington, of Salt Lake City, Utah, on electrical dangers in coal mines. This already has elicited several hot replies from manufacturing companies, all of which will be read at the meetings, which run through Feb. 23, 24 and 25. G. A. Murphy, of Storrs, Utah, will read a paper on spiralizing coal; Edward Bottomley, of Kleenburn, Wyo., will describe the loader operations in his properties; E. C. Horne has a paper on ventilation; Jack King is to display moving pictures telling the story of wire rope, and George B. Pryde, of Rock Springs, Wyo., has the completed report of the safety committee ready to offer.

National Council to Study Spanish Fuel Problem

A national council of combustibles (fuels) recently was authorized in Spain by a royal decree to study and propose to the government the proper procedure for the solution of the national fuel problem—production, distribution and consumption—according to a report by Commercial Attaché Charles H. Cunningham, Madrid, to the Department of Commerce.

The commission is to consist of 25 members, 13 to be appointed from the government departments most concerned with the fuel problem and others representing the department of mines, the Consejo de Economia Nacional, the army and navy and the ministries of commerce, labor, finance and public works. The commission is to have jurisdiction over coal and petroleum problems and in addition to handle questions of the commercial classification of coal, its transportation, distribution, floating and free deposits. It is also to have jurisdiction over taxes, customs, duties, and financial problems concerned with coal production, including subsidies by the state, loans to the coal industry, and labor problems such as the regulation of salaries and the solution of labor disputes.

Coal Produced in Kansas, Maryland and Michigan in 1924[a]

(Exclusive of Product of Wagon Mines)

State and County	Net Tons: Loaded at Mines for Shipment	Net Tons: Sold to Local Trade and Used by Employees	Net Tons: Used at Mines for Steam and Heat	Net Tons: Total Quantity	Value: Total	Value: Average Per Ton	Number of Employees: Underground: Miners b	Number of Employees: Underground: All Others	Number of Employees: Surface	Number of Employees: Total	Average Number of Days Worked	Average Tons Per Man Per Day
Kansas												
Cherokee	729,718	80,765	16,735	827,218	$2,257,000	$2.73	683	119	320	1,122	150	4.93
Crawford	3,013,345	160,335	49,069	3,222,749	9,830,000	3.05	4,730	965	729	6,424	149	3.37
Leavenworth and Osage	104,501	65,219	998	170,718	687,000	4.02	683	146	60	889	174	1.10
Linn	23,561	3,487	.....	27,048	80,000	2.96	86	20	20	126	94	2.28
Total	3,871,125	309,806	66,802	4,247,733	$12,854,000	$3.03	6,182	1,250	1,129	8,561	151	3.29
Maryland												
Allegany	1,304,452	157,214	8,200	1,469,866	$3,522,000	$2.40	1,818	639	401	2,858	169	3.04
Garrett	640,807	14,711	8,319	663,837	1,107,000	1.67	555	217	146	918	185	3.90
Total	1,945,259	171,925	16,519	2,133,703	$4,629,000	$2.17	2,373	856	547	3,776	173	3.27
Michigan												
Bay	243,218	3,833	11,692	258,743	$1,159,000	$4.48	460	199	74	733	139	2.53
Saginaw	524,141	2,600	45,536	572,277	2,443,000	4.27	556	191	71	818	212	3.30
Total	767,359	6,433	57,228	831,020	$3,602,000	$4.33	1,016	390	145	1,551	178	3.00

(a) Note that the coal statistics of the Geological Survey for a given year include only the mines that had an output in that year. Many mines that operated n 1923 produced no coal in 1924; moreover, many of the mines that did produce in 1924 worked for a short time only. The number of active mines of commercial size in Kansas was 222 in 1923 and 228 in 1924; in Maryland, 105 in 1923 and 93 in 1924; in Michigan, 13 in 1923 and 9 in 1924.
(b) Includes also loaders and shotfirers.
Statistics issued by U. S. Bureau of Mines.

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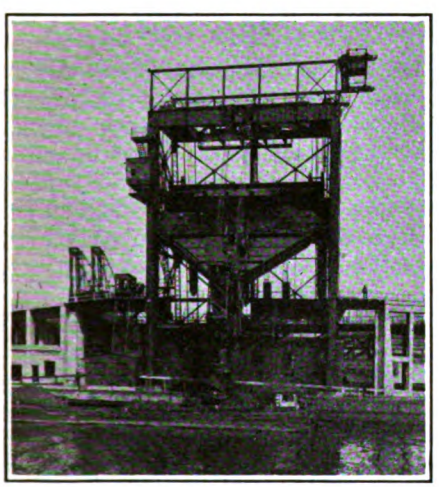
Philadelphia Has World's Largest Coal Dumper

An important addition to the facilities of the Reading Company's 3,800-mile railway system at Port Richmond, its Philadelphia Harbor terminal, was made during the past year with the installation of the world's largest coal-car dumper. This piece of machinery is capable of handling 40 100-ton coal cars each hour, is to a great extent electrically operated, and all control apparatus is electrically actuated.

The huge new dumper loads freighters with export coal, barges for coastwise trade, and smaller craft for direct delivery to the industries of the Port of Philadelphia.

Cars to be dumped are pulled up a 12 per cent grade onto the dumper cradle, and are hoisted vertically to the hopper. The main operator, stationed in a cab near the top of the machine, which gives him a clear view of the car as well as the ship into which it is to be emptied, controls the raising of the car as well as the height of the pan into which the coal is to be



Reading Co.'s Coal Dumper at Philadelphia

dumped. The hoisting machinery is operated by steam, while the pan is governed by a 150-hp. Westinghouse electric motor.

At the end of the pan into which the coal is dumped there is a telescopic chute, with an operator to control its movement stationed in a cab directly over the ship's hatch, so that proper direction of the flow of coal can be obtained. The entire operation is controlled electrically and with surprising flexibility, which assures even distribution of the coal. The pan and telescope mechanism is hoisted clear of receiving ships before and after docking by a 275-hp. motor, protected with limit relays and full magnetic dynamic breaking controller.

In connection with the car hoist, a large thawing house for use in winter is maintained on the dock. A temperature of 200 deg. F. is maintained in extreme weather, which quickly thaws the coal for dumping into waiting barges or ships. Four tracks pass through the building, having a total capacity of 48 cars.



© Keystone View Co.

Lord Londonderry

British political and industrial circles were much interested in the statement last week by this eminent operator that "there need be no lowering of wages and no lengthened hours in the pits" and his previous statement at Seahan that the coal owners do not believe that the prosperity of the industry depends upon the reducing of the wages or lengthening of hours.

N. Y. Coal Exports Decline

During the twelve months ended Dec. 31, 1925, shipments of fuel to foreign countries through the Port of New York included 71,533 tons of anthracite, 14,028 tons of bituminous coal and 5,140 tons of coke, as compared with 98,645 tons of anthracite, 29,941 tons of bituminous and 25,334 tons of coke during the preceding year.

Of this tonnage Canada in 1925 received 62,683 tons of anthracite and 5,108 tons of bituminous coal as compared with 84,668 tons of anthracite and 1,409 tons of bituminous in 1924.

The average price per ton for the anthracite exported in 1925 was $11.17, while in 1924 it was $11.45. Bituminous coal brought $7.44 per ton last year as compared with $6.86 in 1924 and coke $17.04 per ton in 1925 as compared with $12.11 the preceding year.

Coal Company to Make Own Liquid Oxygen Explosive

Erection of a plant for the manufacture of liquid oxygen has been started by the Enos Coal Mining Co., which operates the largest stripping mine in the United States, near Oakland City, Ind. The liquid oxygen will be used in the manufacture of an explosive which will be used by the company in its own workings and which will also be placed on the market commercially. Cartridges of cheesecloth filled with lamp black will be soaked in the liquid oxygen and then allowed to dry to form the explosive, it is said. It is fired by the use of the ordinary dynamite cap and electric battery.

Mail Order Coal Company In Financial Straits

The Boylston Co., Chicago's well known mail order coal house, has become insolvent, a recent meeting of the company's creditors revealed. The concern is believed to owe about $185,000, the creditors including approximately 100 country banks and a number of coal companies. The Franklin County Mining Co., it is said, has a claim for $80,000. Plans are being studied whereby creditors may realize on the available assets.

The officers of the Boylston Co. are Simon Levy, president and treasurer; Arthur Levy, vice-president, and Charles B. Levy, secretary and general manager. The Boylston Co. was organized in April, 1922, and owned and operated the Popular Coal Co., the Washington Coal Co., the Faultless Fuel Co. and the Red Seal Coal Co.

C. & O. Plans Connection With Virginian Ry.

Unconfirmed reports are in circulation in southern West Virginia to the effect that the Chesapeake & Ohio Ry. proposes to take over the railroad interests of the Glade Creek Coal & Lumber Co., of Raleigh County, and construct a line through the Richmond, Flat Top and Camp Creek districts, connecting with the Virginian Ry. at Kegley, near Princeton, on condition that the Chesapeake & Ohio be merged with the Virginian.

The Glade Creek Coal & Lumber Co. has built a line from the main line of the Chesapeake & Ohio, about ten miles east of Prince, through Raleigh County for a number of miles to its extensive holdings and a large bridge has been built over the New River at one point near the C. & O. Coal companies owning property near the rumored extension include the New River Co., Flat Top Mining Co., the Prince heirs, Raleigh Lumber Co., Rolfe Coal Mining Co. and the Camp Creek Coal & Lumber Co.

Use of Permissibles Gains

A total of 58,380,217 lb. of permissible explosives was consumed in the United States in 1925, an increase of about 6 per cent as compared with 1924, according to a preliminary report by the Bureau of Mines. Ninety per cent of the total amount sold in 1925 was for use in coal mining.

Sales of black blasting powder during 1925 were approximately 6,307,184 kegs of 25 lb. each, a decrease of 6 per cent in comparison with 1924. Of the total reported sales of black powder during 1925 coal mines used 84 per cent.

Sales of other high explosives in 1925 totaled approximately 285,295,097 lb., an increase of 4 per cent. Of the total amount used, 10 per cent was for coal mining.

Plants manufacturing permissibles and other high explosives operated in 1925 at the rate of 62 per cent of capacity, which is the same rate as prevailed in 1924.

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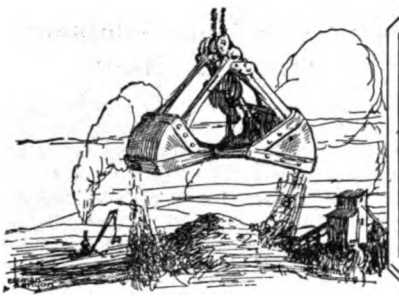
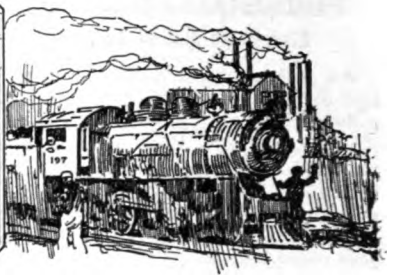


Production And the Market



Agreement to End Hard Coal Strike Causes Many Shifts in Market Conditions

The agreement to end the prolonged anthracite strike was easily the outstanding feature of the market situation last week. Coming practically unheralded and almost at the close of the week, the full effect of the settlement could not be measured. There were enough changes in Atlantic seaboard markets, however, to show that prices on bituminous coal and coke for household consumption will undergo a sharp liquidation. A flood of cancellations has already set in and many shippers find that business booked has vanished.

The effect of the resumption of anthracite mining upon the steam bituminous market promises to be beneficial. The pressure to expand production of soft coal to take advantage of high prices bid for the so-called domestic sizes in recent weeks has resulted in surfeiting the market with an undigestible surplus of fine sizes. Some of this tonnage has been sold at prices which yielded little more than the freight charges. With the restriction in bituminous operations which will naturally follow shipment of hard coal to the anthracite-consuming territory, the accumulation of screenings will diminish. There also will be more interest displayed in the situation by the industrial buyer.

Weather Acts as Depressant

In those markets where the settlement of the anthracite strike did not start prices on prepared bituminous coal on the downward path, milder weather proved an effective depressant of demand. Middle Western, Kentucky and West Virginia coals suffered in this slump. Unfortunately for the shipper, there was, except under unusual circumstances, no offsetting gain in prices realized on the steam sizes.

The general level of spot prices again declined. The *Coal Age* Index for Feb. 15 was 173 and the corresponding price was $2.10. For Feb. 8 the index number was 177 and the price was $2.14.

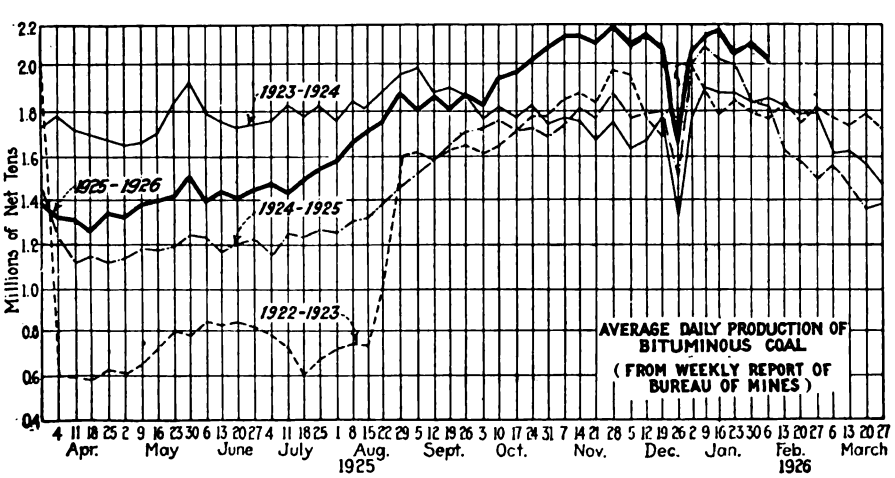
Dumpings at Hampton Roads during the week ended Feb. 11 totaled 448,634 net tons, as compared with 388,265 tons the week preceding. Increased foreign demand and heavy shipments of slack to New York and Boston helped to swell the total.

Production Still at High Rate

There has been some decline in the rate of production in the bituminous fields since the beginning of the month, but the curtailment has not been drastic enough to clean up "no-bills," which are to be found on mine tracks from Colorado to the eastern seaboard. Output the first week in February approximated 12,134,000 net tons, according to estimates of the Bureau of Mines. Cumulative production for the coal year on Feb. 6 was 460,149,000 tons—an increase of nearly 45,000,000 tons over the corresponding figure for 1924-25.

Nowhere has the settlement of the anthracite strike hit harder than in the Connellsville region. Within a few hours after the word flashed over the wires, cancellations began to pour in and prices began to tumble. New York quotations on beehive coke slid off $3 and further reductions were anticipated. Nevertheless the strike brought undreamed of profits to the ovens in the Connellsville region. It is estimated that since the first of the year the field has been shipping 90,000 to 100,000 tons weekly to eastern consumers for domestic use.

Anthracite production starts this week, but it will be several days before the movement reaches normal proportions. This will give the retail trade some chance to liquidate stocks of substitutes.



Estimates of Production

(Net Tons)

BUTIMINOUS

	1925	1926
Jan. 23	11,588,000	12,431,000
Jan. 30 (a)	11,073,000	12,563,000
Feb. 6 (b)	10,910,000	12,134,000
Daily average	1,818,000	2,022,000
Coal yr. to date (c)	405,429,000	460,149,000
Daily av. to date	1,549,000	1,754,000

ANTHRACITE

Jan. 23	1,740,000	47,000
Jan. 30	1,730,000	34,000
Feb. 6	1,909,000	34,000
Coal yr. to date	73,896,000	40,688,000

COKE

Jan. 30 (a)	250,000	339,000
Feb. 6 (b)	276,000	367,000
Cal. yr. to date (c)	1,404,000	1,747,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

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Middle Western Prices Break

Plans to keep Middle Western prices stabilized came a cropper in the Chicago market last week. Saline County was the first to break with a reduction of 25c. from the $3.50 basis on 6-in. lump. Franklin County met this challenge by cutting to $3. Neither action brought any influx of orders and there was some resentment in the retail trade, which had been assured that the $3.50 price would be maintained throughout the month. Carterville also is weaker.

Southern Illinois, however, feels that the reductions place that field in a better position to withstand the inroads of non-union coal from Kentucky and West Virginia. Some high-grade 4-in. block from the last-named state has been offered as low as $2 and there is 6-in. Kentucky coal which can be bought by wholesalers for $2.25. Even smokeless mine-run is down to $2@$2.25 and good lump from the low-volatile districts is available at $4.25@$4.75. Smokeless nut and egg, on the other hand, are scarce and prices are stiff.

The slump in domestic demand, of course, has curtailed the output of fine coal from the Illinois and Indiana fields. Nevertheless the steam market still drags. Purchasing agents are drawing upon storage piles and ignore solicitation except at bargain-counter prices.

Duquoin and Jackson County have not been behind the southern Illinois field in the matter of price-cutting. Reductions have put quotations 25@35c. under the ruling figures in the Carterville district. Neither the Mt. Olive nor the Standard field is immune from the general monotony. Mines in those districts are averaging three days a week.

Domestic business in the St. Louis local market is only fair, with the cheaper coals moving better than higher priced Illinois tonnage. Steam trade is featureless. Country domestic and steam demand is quiet.

Kentucky Fights Steam Coal Slump

Kentucky operators are trying to check the slump in steam-coal prices, but neither the curtailment in production brought about by an easier domestic demand nor the refusal on the part of some shippers to flood the market with consignment coal has been wholly effective. The better grades of Kentucky screenings, both eastern and western, are selling at 60@95c. Lower grades and distress tonnage have been sold down to 15@20c.

This weakness has been reflected in prices on wagon-mine mine-run. Some coal from those operations has been offered as low as 90c. Steam buyers are taking full advantage of the situation, apparently content to let the future take care of itself.

Although some shippers are asking $3.25 for choice eastern Kentucky block, the general run of prices is $2.50@$3. Lump and egg bring $2@$2.25, and mine-run, $1.35@$1.75. Western Kentucky block is quoted at $1.85@$2.15;

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	Feb. 16 1925	Feb. 1 1926	Feb. 8 1926	Feb. 15 1926†
Smokeless lump	Columbus	$3.85	$4.35	$4.35	**$4.50@$4.75**
Smokeless mine run	Columbus	1.90	2.85	2.55	2.40@ 2.75
Smokeless screenings	Columbus	1.20	1.60	1.85	1.75@ 2.00
Smokeless lump	Chicago	3.60	4.35	4.60	*4.25@ 4.75*
Smokeless mine run	Chicago	1.60	2.35	2.35	*2.00@ 2.25*
Smokeless lump	Cincinnati	3.85	4.10	4.60	*4.00@ 4.50*
Smokeless mine run	Cincinnati	1.85	2.50	2.50	*2.25@ 2.50*
Smokeless screenings	Cincinnati	1.35	1.35	1.25	1.00@ 1.50
*Smokeless mine run	Boston	4.45	4.85	4.85	**4.90@ 5.10**
Clearfield mine run	Boston	1.95	2.05	2.05	**1.90@ 2.40**
Cambria mine run	Boston	2.30	2.40	2.35	**2.15@ 2.75**
Somerset mine run	Boston	2.10	2.20	2.15	**2.00@ 2.60**
Pool 1 (Navy Standard)	New York	2.70	3.05	3.05	2.90@ 3.25
Pool 1 (Navy Standard)	Philadelphia	2.80	2.95	3.05	**2.95@ 3.45**
Pool 1 (Navy Standard)	Baltimore	2.25	2.30	2.30	2.25@ 2.35
Pool 9 (Super. Low Vol.)	New York	2.05	2.55	2.55	**2.40@ 2.80**
Pool 9 (Super. Low Vol.)	Philadelphia	2.20	2.60	2.60	**2.55@ 2.85**
Pool 9 (Super. Low Vol.)	Baltimore	1.85	2.15	2.15	2.10@ 2.20
Pool 10 (H.Gr.Low Vol.)	New York	1.75	2.25	2.25	**2.20@ 2.45**
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.85	2.35	2.35	**2.30@ 2.55**
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.70	1.95	1.95	1.90@ 2.00
Pool 11 (Low Vol.)	New York	1.55	2.10	2.10	2.00@ 2.25
Pool 11 (Low Vol.)	Philadelphia	1.65	2.10	2.20	**2.20@ 2.35**
Pool 11 (Low Vol.)	Baltimore	1.50	1.70	1.70	1.70@ 1.75
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.50	1.60	1.60	1.50@ 1.70
Pool 54-64 (Gas and St.)	Philadelphia	1.50	1.60	1.60	**1.55@ 1.75**
Pool 54-64 (Gas and St.)	Baltimore	1.65	1.65	1.65	1.65@ 1.70
Pittsburgh se'd gas	Pittsburgh	2.50	2.65	2.65	2.60@ 2.75
Pittsburgh gas mine run	Pittsburgh	2.25	2.10	2.10	2.00@ 2.25
Pittsburgh mine run (St.)	Pittsburgh	1.95	2.05	2.05	2.00@ 2.10
Pittsburgh slack (Gas)	Pittsburgh	1.30	1.25	1.20	1.15@ 1.25
Kanawha lump	Columbus	2.50	2.25	2.25	2.00@ 2.50
Kanawha mine run	Columbus	1.60	1.70	1.60	*1.40@ 1.75*
Kanawha screenings	Columbus	.75	.65	.65	.50@ .80
W. Va. lump	Cincinnati	2.05	2.75	2.75	*2.25@ 2.75*
W. Va. gas mine run	Cincinnati	1.40	1.50	1.50	*1.35@ 1.60*
W. Va. steam mine run	Cincinnati	1.30	1.35	1.30	*1.15@ 1.40*
W. Va. screenings	Cincinnati	.75	.80	.80	*.50@ 1.00*
Hocking lump	Columbus	2.50	2.45	2.50	2.25@ 2.75
Hocking mine run	Columbus	1.60	1.75	1.65	1.50@ 1.85
Hocking screenings	Columbus	1.10	1.15	1.05	1.00@ 1.15
Pitts. No. 8 lump	Cleveland	2.30	2.30	2.30	1.90@ 2.75
Pitts. No. 8 mine run	Cleveland	1.85	1.80	1.85	1.85@ 1.90
Pitts. No. 8 screenings	Cleveland	1.30	1.15	1.10	*1.00@ 1.05*

Midwest	Market Quoted	Feb. 16 1925	Feb. 1 1926	Feb. 8 1926	Feb. 15 1926†
Franklin, Ill. lump	Chicago	$3.10	$3.50	$3.50	*$3.00*
Franklin, Ill. mine run	Chicago	2.35	2.50	2.50	2.35@ 2.65
Franklin, Ill. screenings	Chicago	1.85	1.60	1.55	1.40@ 1.75
Central, Ill. lump	Chicago	2.85	3.10	2.85	*2.50@ 2.75*
Central, Ill. mine run	Chicago	2.20	2.30	2.10	2.00@ 2.25
Central, Ill. screenings	Chicago	1.75	1.25	1.10	1.00@ 1.25
Ind. 4th Vein lump	Chicago	2.85	3.00	3.00	*2.75@ 3.00*
Ind. 4th Vein mine run	Chicago	2.35	2.30	2.30	2.25@ 2.35
Ind. 4th Vein screenings	Chicago	1.70	1.70	1.70	1.65@ 1.75
Ind. 5th Vein lump	Chicago	2.50	2.55	2.55	*2.25@ 2.50*
Ind. 5th Vein mine run	Chicago	2.10	1.95	1.95	1.85@ 2.10
Ind. 5th Vein screenings	Chicago	1.45	1.25	1.10	1.00@ 1.25
Mt. Olive lump	St. Louis	2.85	2.85	2.85	*2.75*
Mt. Olive mine run	St. Louis	2.35	2.00	2.05	**2.15**
Mt. Olive screenings	St. Louis	1.50	1.75	1.75	*1.40*
Standard lump	St. Louis	2.35	2.45	2.45	**2.50**
Standard mine run	St. Louis	1.80	1.80	1.80	1.75@ 1.85
Standard screenings	St. Louis	1.25	1.05	1.05	*.75@ .90*
West Ky. block	Louisville	2.25	2.00	2.00	1.85@ 2.15
West Ky. mine run	Louisville	1.35	1.35	1.30	*1.00@ 1.50*
West Ky. screenings	Louisville	.90	.90	.65	**.60@ .90**
West Ky. block	Chicago	2.35	2.35	2.35	2.25@ 2.50
West Ky. mine run	Chicago	1.35	1.50	1.50	1.25@ 1.75
South and Southwest					
Big Seam lump	Birmingham	2.85	2.75	2.75	2.50@ 3.00
Big Seam mine run	Birmingham	1.75	2.10	2.00	*1.75@ 2.00*
Big Seam (washed)	Birmingham	1.75	2.30	2.25	*2.00@ 2.25*
S. E. Ky. block	Chicago	2.75	2.85	2.85	*2.25@ 3.00*
S. E. Ky. mine run	Chicago	1.50	1.85	1.85	1.75@ 2.00
S. E. Ky. block	Louisville	2.35	2.75	2.75	2.50@ 3.00
S. E. Ky. mine run	Louisville	1.35	1.55	1.55	1.35@ 1.75
S. E. Ky. screenings	Louisville	.75	1.00	.55	**.60@ .95**
S. E. Ky. block	Cincinnati	2.50	3.00	3.00	*2.25@ 2.75*
S. E. Ky. mine run	Cincinnati	1.40	1.50	1.45	*1.00@ 1.75*
S. E. Ky. screenings	Cincinnati	.85	.80	.80	*.40@ 1.10*
Kansas lump	Kansas City	4.85	5.00	5.00	*4.50@ 5.00*
Kansas mine run	Kansas City	3.35	3.10	3.10	3.00@ 3.25
Kansas screenings	Kansas City	2.50	2.30	2.35	*2.25@ 2.35*

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**; declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Feb. 16, 1925 Independent	Feb. 16, 1925 Company	Feb. 8, 1926 Independent	Feb. 8, 1926 Company	Feb. 15, 1926 Independent	Feb. 15, 1926 Company
Broken	New York	$2.34	.....	$8.00@$9.25				
Broken	Philadelphia	2.39	.....	9.15				
Egg	New York	2.34	$8.50@$9.25	8.75@ 9.25				
Egg	Philadelphia	2.39	9.45@ 9.75	8.80@ 9.25				
Egg	Chicago*	5.06	8.17@ 8.40	8.08				
Stove	New York	2.34	9.25@10.00	9.00@ 9.50				
Stove	Philadelphia	2.39	10.10@10.75	9.15@ 9.50				
Stove	Chicago*	5.06	8.80@ 9.00	8.53@ 8.65				
Chestnut	New York	2.34	9.50@10.25	8.75@ 9.40				
Chestnut	Philadelphia	2.39	10.00@10.75	9.25@ 9.40				
Chestnut	Chicago*	5.06	8.61@ 9.00	8.40@ 8.41				
Pea	New York	2.22	4.50@ 5.50	5.50@ 6.00				
Pea	Philadelphia	2.14	5.75@ 6.00	6.00				
Pea	Chicago*	4.79	5.36@ 5.75	5.36@ 5.95				
Buckwheat No. 1	New York	2.22	2.25@ 2.85	3.00@ 3.15				
Buckwheat No. 1	Philadelphia	2.14	2.50@ 3.00	3.00				
Rice	New York	2.22	1.90@ 2.25	2.00@ 2.25				
Rice	Philadelphia	2.14	2.00@ 2.25	2.25				
Barley	New York	2.22	1.40@ 1.65	1.50				
Barley	Philadelphia	2.14	1.50	1.50				
Birdseye	New York	2.22	1.40@ 1.65	1.60				

*Net tons, f.o.b. mines.

Due to suspension of mining in hard-coal fields and practical stoppage of shipments, quotations are only nominal and are not printed. *Coal Age* quotations on anthracite will be resumed next week.

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lump and egg, $1.60@$2, and mine-run, $1.25@$1.50, with little desirable tonnage under the lower figure.

Dock Shipments Decline

The weather has taken its toll of the domestic business of the docks at the Head of the Lakes this month. The industrial outlook, however, is encouraging. Iron and steel plants are taking larger tonnages than a year ago. Mining companies on the Minnesota iron ranges also are in the market for more coal. Dock quotations are unchanged.

Coal shipments from the Duluth-Superior docks last month, according to the Western Railway Weighing & Inspection Bureau, totaled 23,990 cars, as compared with 25,735 cars in December and 27,693 cars in January, 1925. Supplies of bituminous coal on the commercial docks on Feb. 1 approximated 3,600,000 tons. Operators hope that the carry-over can be materially reduced before the opening of navigation.

Outside of a slight decrease in business due to milder weather conditions, the Milwaukee situation is unchanged. Domestic demand has been well taken care of with coke, smokeless coal and high-grade bituminous so that former anthracite consumers have had no cause for complaint. During January, Milwaukee received 10,327 tons of anthracite and 36,741 tons of bituminous coal via car ferry and 4,450 tons of anthracite and 46,163 tons of bituminous via all-rail routes.

Southwestern Outlook Drab

The "no-bill" report of Feb. 10 showed 399 unbilled loads at the Kansas mines. Of this number, 190 cars were lump, 40 were nut and 169 were screenings. The accumulation of fine coal, however, is causing little worry, as operators feel that the falling off in domestic demand will soon correct that situation. In an effort to clean up lump tonnage, many producers have cut their price to $4.50 and some will take orders at $4.25.

The Arkansas outlook is even more depressing. The late winter demand was below normal. All mines have been checking up idle time and some have closed down completely.

Mild weather throughout Nebraska and Kansas has cut down shipments of domestic coal from the Colorado mines. Production is slowing up, but prices are unchanged. Last week there were approximately 500 unbilled loads in the southern Colorado field.

The bottom has dropped out of the market for domestic coal in Salt Lake City territory. Steam demand, however, continues normal for the season of the year. No new contracts have been signed, but early activity in that direction is expected. The weak domestic demand threatens to create a shortage of slack in Utah.

Cancellations Burn Cincinnati Wires

The Cincinnati market was not left long in doubt as to the effect the settlement of the anthracite strike was to have. Friday afternoon (Feb. 12) messenger boys wore a steady path to low-volatile offices with telegrams canceling or suspending orders. Coming on top of a weaker market for high-volatile coals, smokeless producers immediately decided that the better part of merchandising was discretion. Plans already are in the making for a renewed drive on western trade. What further steps will be taken in the eastern sales campaign is a question of the future.

At the present time the market is glutted with low-priced fuel. Slack at 40@60c. is common. Some Hazard shippers are offering block at reductions which have not been approached in months—and other districts threaten to meet these price cutters on their own ground. Harlan prices, too, are slipping. Logan County quotations also are on a low basis.

The principal worry is what to do with coal already on wheels. The latest interchange report of the American Railway Association shows 13,353 cars passing through the Cincinnati gateways—an increase of 1,873 cars over the preceding week. Louisville & Nashville loads were 1,174 cars heavier and Chesapeake & Ohio movement increased 677 cars.

Retail business in the Cincinnati district has been helped by wintry weather. Prices to the consumer are unchanged, but an early revision is in prospect.

Cold Wave Helps Central Ohio

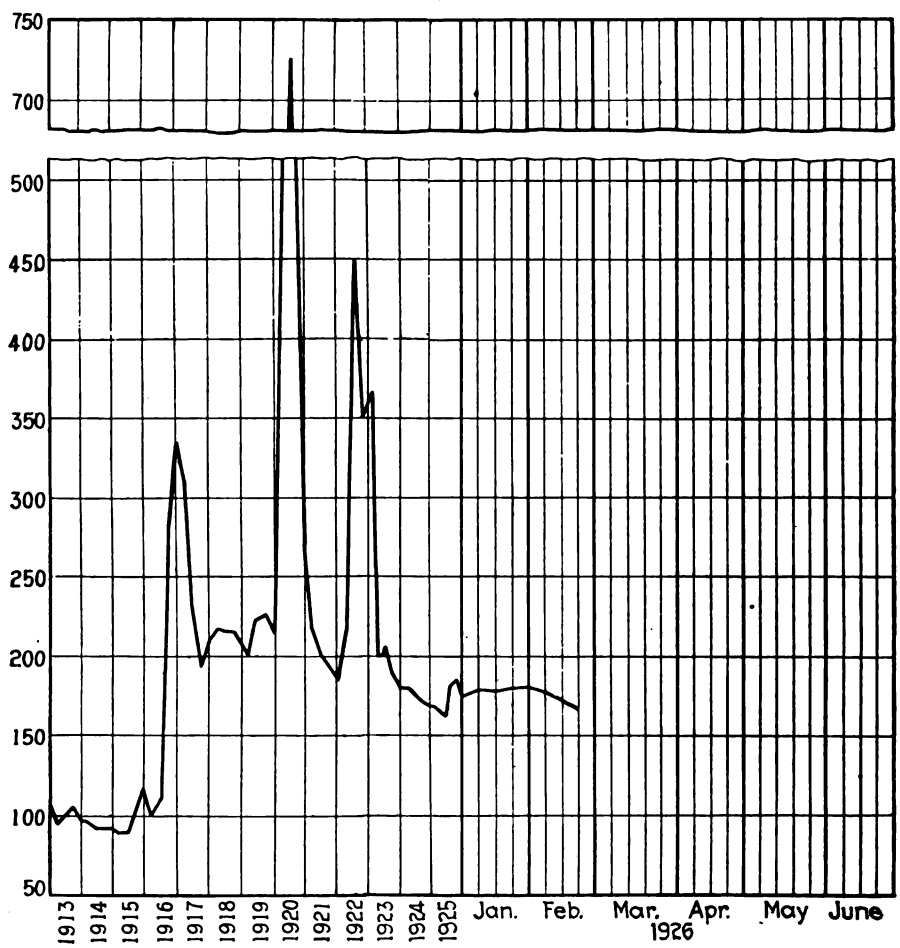
A cold wave last week quickened domestic demand in central Ohio and somewhat toned up a flabby market. The fact that many retailers are still carrying liberal stocks, however, robbed the situation of real intensity. Demand favors the smokeless coals; splints and Kentucky block are a close second, but Ohio coals make a poor third. Consumer buying is in small lots.

There is no animation in steam-coal trading. Shipments of West Virginia slack at 50@75c. keep prices on Ohio screenings close to the dollar mark. Many large industries are stocked up for 60 to 90 days. The steadiest buyers are the utilities and the steel plants. Railroad consumption has tapered off since the close of navigation. There is some distress tonnage, but not enough to embarrass the market.

Output from the southern Ohio field as a whole does not exceed 20 per cent of capacity. Pomeroy Bend is doing much better than Hocking Valley and other southern districts.

Distress Coal Crowds Cleveland

Distress coal depressed the Cleveland market last week. Slack and nut-and-slack were quoted down to $1 and con-



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926				1925	1924
	Feb. 15	Feb. 8	Feb. 1	Jan. 25	Feb. 16	Feb. 18
Index	173	177	178	178	168	186
Weighted average price	$2.10	$2.14	$2.16	$2.16	$2.04	$2.25

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.

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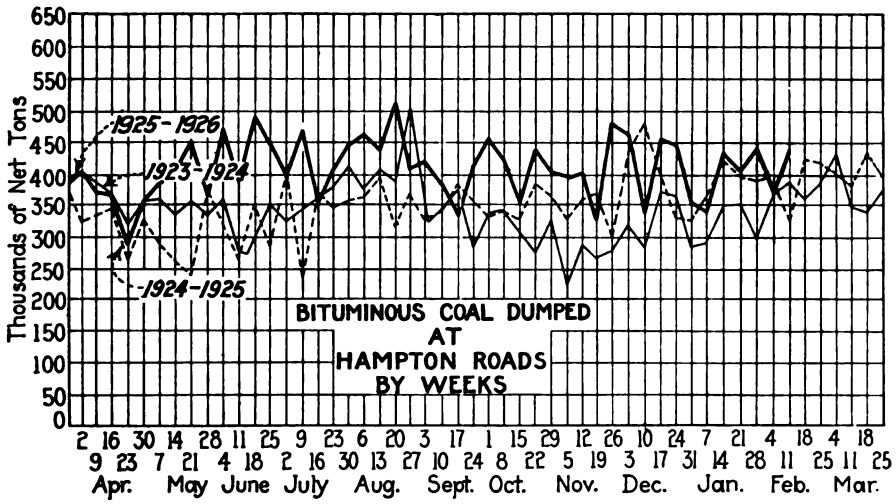


cessions were offered from list prices also on other grades of eastern Ohio coals for steam consumption. The retail trade, on the other hand, has been reasonably active because of cold weather, but this demand has been centered upon West Virginia smokeless, not Ohio coals.

During the week ended Feb. 6 the No. 8 field produced 296,000 tons, or approximately 42 per cent of potential capacity. This was an increase of 37,000 tons over the preceding week and 1,000 tons more than a year ago.

Gloom Still Shrouds Pittsburgh

Aside from the steady eastern demand for nut and egg coal at $2.75@$3.25, there is no life to the Pittsburgh market. The outlook for the future is dark. Presumably the demand from the East will disappear as soon as the anthracite mines go into operation and the competition of non-union coals in Pittsburgh's normal markets will increase. Moreover, at the present time there seems little disposition to follow the lead of the Pittsburgh Coal Co. in reverting to the 1917 wage scale.

Central Pennsylvania also foresees dark days ahead with the end of the anthracite strike. Output the past week was hampered by the heavy snows and resultant railroad congestion. Pool 1 coal is quoted at $3.35@$3.80; pool 71, $3.10@$3.55; pool 9, $2.85@$3; pool 10, $2.60@$2.65; pool 11, $2.25@$2.35. Lump is offered at $5; egg and nut, $5.50; slack, $2.20. Run of oven coke was held at $8.50 and sized coke at $10 last week.

The Buffalo bituminous trade wallows in a slough of despond. Slack is going begging, with good coal seeking a market at $1@$1.05. Prepared sizes are doing only a little better, relatively. Fairmont lump is nominally $1.60@$1.75; mine-run, $1.40@$1.50; slack, $1.25@$1.40. Youghiogheny gas lump is held at $2.25@$2.50; No. 8 steam lump, $2@$2.25. Allegheny mine-run is $1.75@$2.

New England Feels Reaction

The reaction following the settlement of the anthracite strike has set in in the New England market. While buyers realize that it will be several weeks before shipments of hard coal are moving in normal volume, life has gone out of the demand for substitute fuels. Middle houses already have received cancellations of orders for prepared sizes of bituminous coal and more cancellations are expected despite the efforts the soft-coal trade will make to hold part of the tonnage won during the suspension of anthracite production. Trade interests not directly concerned with the sale of bituminous are inclined to discount the success of such efforts.

F.o.b. vessel at Hampton Roads, the spot market on pool 1 coal was somewhat firmer last week, although this week probably will see a mild reaction. Owing to heavy weather along the coast, an extra demand to clear ships developed, but accumulations were still the rule. Less frequent arrivals boosted prices on cars at Boston and Providence to a $7 basis.

All-rail bituminous egg, stove and nut last week commanded $6.50@$8.25. Lump was offered at 50c.@75c. less or in combination with egg and stove orders. High-grade central Pennsylvania low-volatile brought prices which compared favorably with the New River-Pocahontas range.

Strike Settlement Hits New York

The end of the anthracite strike comes as a sad blow to the New York bituminous market. Cancellations of orders for prepared sizes of coal and coke began to flow in as soon as the report of an anthracite agreement was confirmed. Prices, which early last week were on the upgrade, began to slip back and this week probably will see further declines.

West Virginia smokeless coals withstood the shock the best. Prepared sizes of Pocahontas and New River were snapped up at $7.50@$8.25. Central Pennsylvania low- and medium-volatiles were quoted at $5@$7, and high-volatile prepared at $3.50@$4. West Virginia splints ranged $4.25@$5.75.

As was the case in New York, bituminous demand at Philadelphia was active the early part of the past week, but went to pieces when the news was flashed that the hard-coal struggle was over. Until cancellations began to appear, prepared West Virginia and central Pennsylvania low-volatiles commanded in the neighborhood of $8.50 for prepared sizes. Prices on high-volatiles—Fairmont and Westmoreland—advanced to $4.50 under increased buying demand and a slowing up in movement.

Transportation congestion was a factor in maintaining prices, which had not broken up to the Lincoln holiday. The only exception was slack, which has been very weak. Stocks of coal in retail yards are dangerously low.

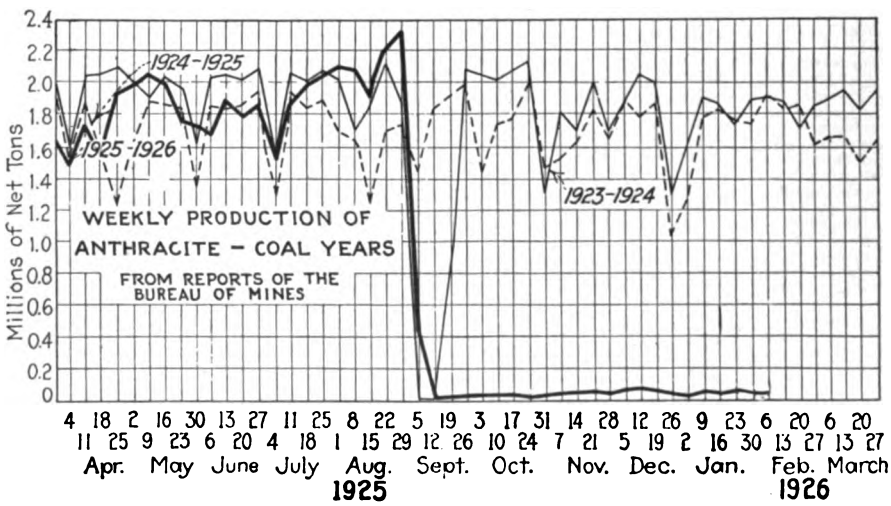
Baltimore on Hand-to-Mouth Basis

The Baltimore bituminous trade has been living on a hand-to-mouth basis. Retail stocks of low-volatile coals, which have come into favor as substitutes for anthracite, have been so depleted that many dealers have been making their deliveries to the householder direct from the cars. The steam trade is featureless. Accumulations of slack at the mines have impeded prompt shipment of the prepared sizes to the retail distributors.

Activity marked business at Hampton Roads the second week of the month. There was an increase in foreign demand and heavy shipments of slack to New York and Boston. This latter movement was at the expense of the Pennsylvania producers.

The Shipping Board paid $4.81 for a cargo of pool 2 coal. Coastwise business generally has been hampered by bad weather, but inland trade has been brisk. Retail prices were unchanged.

There has been no improvement in demand for medium grade coals in the



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Car Loadings and Supply

	Cars Loaded All Cars	Coal Cars
Week ended Jan. 30, 1926	925,263	183,071
Preceding week	921,734	180,923
Week ended Jan. 31, 1925	896,055	192,339

	Surplus Cars All Cars	Coal Cars	Car Shortages All Cars	Coal Cars
Jan. 30, 1926	250,935	92,040	.....	.....
Jan. 22, 1926	264,781	96,255	.....	.....
Jan. 31, 1925	213,921	69,736	.....	.....

Birmingham steam market. The better grades, however, are moving freely and Cahaba and Warrior field operators experience little difficulty in keeping production sold ahead. Coke ovens are taking liberal quantities of washed coals, pushing demand ahead of supply. The domestic market has settled down to a weather proposition.

Coke from the Birmingham district ovens is still in active demand. Egg and nut are quoted at $6.50@$7 and foundry and gas coke bring $7.

The settlement of the anthracite strike took the wind out of the sails of the coke interests shipping to the New York market. Quotations on sized coke, which went to $15 the beginning of last week, dropped to $12@$12.50; reclaimed coke fell from $13@$13.50 to $10@$10.50 Cancellations probably will force further radical cuts.

High prices for coke have increased the demand for low-volatile coal in the Philadelphia domestic market. The scarcity of prepared sizes has swung considerable business to mine-run, which has been retailing at $9.50@$14. Culm, sold at $1.50 f.o.b. banks, also has been in good demand from steam consumers, who mix it with the rice and barley they still have on hand.

Cancellations Crowd Coke

Connellsville's brief reign in the high-dollar domestic-fuel market is over. Within two hours after the anthracite strike settlement was announced on Feb. 12, cancellations began to pour in on the ovens and their Pittsburgh representatives. Prior to that time run-of-oven coke was held at $11@$11.50 and yard crushed coke at $13@$13.50. Optimists still expect to receive more business from eastern retailers, but they are resigned to the fact that buying will be on a lower price basis.

The greater part of the production blown in when eastern buyers began to turn to coke for domestic consumption will be discontinued. Most of this tonnage would not be acceptable to the blast furnaces and the regular sources of supply for that trade undoubtedly will be able to hold the industrial business they now have. Contracts for the current quarter, averaging about $4, will not be disturbed.

The Connellsville *Courier* reports coke output in the Connellsville and Lower Connellsville regions for the week ended Feb. 6 at 124,200 tons from the furnace ovens and 126,640 tons from the merchant ovens. Compared with the preceding week, furnace oven production increased 16,500 tons; merchant oven, 1,460 tons.

Kitchen on Wheels Carries Cause of Smokeless Coal

The New England soft-coal campaign was placed upon wheels recently when Eugene C. Hultman, Massachusetts Fuel Administrator, gave the official send-off to the traveling kitchen of the Smokeless Coal Operators' Association of West Virginia. The unique outfit will tour cities in Massachusetts and New England. Experienced demonstrators will explain to householders how to burn the coal to get the best results. Samples of coal in various sizes from the New River and Pocahontas fields in West Virginia will be used in the demonstrations.

Freight Loadings in 1925 Break All Records

The greatest freight traffic on record, measured by the number of cars loaded with revenue freight, was handled by the railroads of this country during the year 1925, according to the American Railway Association. Loading of revenue freight for the year totaled 51,177,962 cars. This was an increase of 2,643,529 cars, or 5.4 per cent, over 1924; 1,365,849 cars, or 2.7 per cent, over 1923, and 6,059,490 cars, or 13.4 per cent, over 1920.

The record traffic of 1925 was handled without transportation difficulties by the railroads and with practically no car shortage. Instead, the rail carriers have had at all times during the year no less than 103,000 surplus freight cars in serviceable condition, while they have also had at all times not less than 4,200 surplus serviceable locomotives.

In 20 separate weeks in 1925, beginning about the middle of July, loading of revenue freight has exceeded one million cars, the peak week being that ended on Aug. 29, when 1,124,436 cars were loaded, the greatest number for any one week on record. This exceeded by 12,091 cars, or 1.1 per cent, the previous high record made during the week of Oct. 24, 1924.

U. S. Gets More British Coal

Lieut. Col. G. R. Lane-Fox, British Secretary for Mines, replying to a question in the House of Commons Feb. 9, said that 424,474 tons of coal had been exported from Great Britain to the United States during the four months which ended Jan. 31 at an average price of £1.17.7½ ($9.09) a ton, f.o.b. In the corresponding period a year ago, he said, Great Britain exported to America 44,002 tons at an average price of £1.12.1½ ($7.75) a ton, f.o.b.

Estimated Monthly Output of Soft Coal in United States By States, 1925

(In Thousands of Net Tons)

State	January	February	March	April	May	June	July	August	September	October	November	December	Total
Alabama	2,013	1,590	1,516	1,451	1,477	1,513	1,656	1,863	1,931	2,051	1,976	2,120	21,157
Arkansas	173	107	86	74	79	82	106	121	129	149	152	152	1,410
Colorado *a*	1,217	828	621	564	604	599	602	761	931	1,145	1,168	1,250	10,290
Illinois	8,120	5,172	5,071	4,000	4,153	4,198	4,622	5,731	5,834	7,272	6,911	7,711	68,795
Indiana	2,666	1,700	1,721	1,413	1,401	1,438	1,509	1,748	1,859	2,182	2,076	2,354	22,067
Iowa	616	396	370	283	299	300	309	380	379	490	477	504	4,803
Kansas	485	327	278	252	250	245	286	339	350	422	419	439	4,092
Kentucky:													
Eastern	3,614	2,820	2,601	2,746	3,178	3,319	3,504	3,773	3,808	3,925	3,564	3,725	40,577
Western	1,165	768	769	682	676	783	879	1,199	1,200	1,335	1,412	1,556	12,424
Maryland *a*	235	189	170	148	155	164	210	230	236	242	258	277	2,514
Michigan	87	67	57	44	30	28	44	53	63	78	76	99	726
Missouri *a*	299	191	169	150	150	151	175	200	212	269	263	278	2,507
Montana	320	190	191	140	137	142	155	213	239	339	322	267	2,655
New Mexico	285	199	185	163	177	178	175	185	200	242	235	249	2,473
North Dakota	131	87	87	58	54	57	58	68	92	152	152	108	1,104
Ohio	2,854	2,308	2,329	1,984	2,156	2,284	2,415	2,715	2,869	3,297	3,160	3,191	31,562
Oklahoma *a*	292	168	150	133	139	141	166	188	185	218	231	228	2,239
Pennsylvania *a*	13,507	11,230	10,917	9,348	9,105	9,516	9,912	11,042	11,715	13,560	13,087	13,809	136,748
Tennessee	543	478	430	408	410	428	479	535	556	571	550	592	5,980
Texas	90	65	55	58	60	64	72	83	81	82	78	85	873
Utah	595	301	290	277	251	287	303	403	489	524	458	452	4,630
Virginia *a*	1,117	902	943	895	931	1,003	1,025	1,098	1,144	1,178	1,108	1,111	12,455
Washington	256	173	195	166	157	155	155	189	209	261	264	235	2,415
West Virginia *a*	10,449	8,217	7,917	7,890	9,063	9,701	10,355	11,226	11,421	12,345	11,621	11,283	121,488
Wyoming	793	507	501	367	375	383	401	531	676	865	754	734	6,887
Other States *b*	8	7	7	8	7	8	9	9	9	9	8	7	96
Total bituminous production	51,930	38,987	37,626	33,702	35,474	37,167	39,582	44,883	46,817	53,203	50,780	52,816	522,967

a Revised.
b Includes California, Georgia, Idaho, North Carolina, Oregon and South Dakota.
Issued by U. S. Bureau of Mines.

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Foreign Market And Export News

British Demand Shows No Signs of Weakening; Prices on the Upgrade

A good tone prevails on the British steam coal market, and February prospects are bright. Demand proceeds steadily from all directions, and order books are in a healthy condition for the next two or three weeks. Consumers are not inquiring too far ahead, but up to the end of the new month there is a ready disposition to enter into business.

France is buying better than for months past, due to the comparative shortage of native coal and decline in reparation deliveries. Admiralty large coals are firm. Graded sized coals are a scarce and firm feature. Smalls are strongly held. Patent fuel inquiry is a little more active.

The first week of February opened on a very strong basis in the Newcastle market and the increased prices of the preceding week were easily maintained, with, in the case of best quality steams, a tendency to still further improvement. The contract and inquiry work has been on a good scale, 30,000 tons of gas coal and 30,000 tons of steam coal having been sold at current f.o.b. prices over the next three months in two contracts alone. There is a forward inquiry for February and March, which indicates that trade will be steady for the next two months.

Output by British collieries during the week ended Jan. 30, according to a special cable to *Coal Age*, totaled 5,495,000 gross tons, compared with 5,450,000 tons in the preceding week.

Belgian Market Stronger

The Belgian market is strengthening very slowly, but surely. Domestic coals are still firm. In industrial sorts, there is a general improvement. Foreign competition is less effective from the Nord and Pas de Calais mines, because of the increase in French prices at the collieries. Scandinavian demands are clearing Dutch fuel out of the Belgian selling zone and British shipments are steadily declining.

In the Borinage district, stocks are drawn from and prices are strengthening. Screened coals are almost unprocurable, the more so as the French producers are no longer supplying those sizes. Semi-bituminous, quarter-bituminous and lean coals enjoy a good demand. Charleroi stocks are rapidly decreasing. The rubbly culms used for lime and brick making hold at 66 fr.

There are coke contracts frequently made at 120 fr. per ton.

The briquet market seems to have recovered from the dullness which weighed upon it so long. An arrangement has been made between the producers and the State Railways fixing a price of 100 fr. on all first quarter consumption this year. For the last quarter the producers are asking for 97 fr., which is less than prices on the open market during the last quarter of 1925.

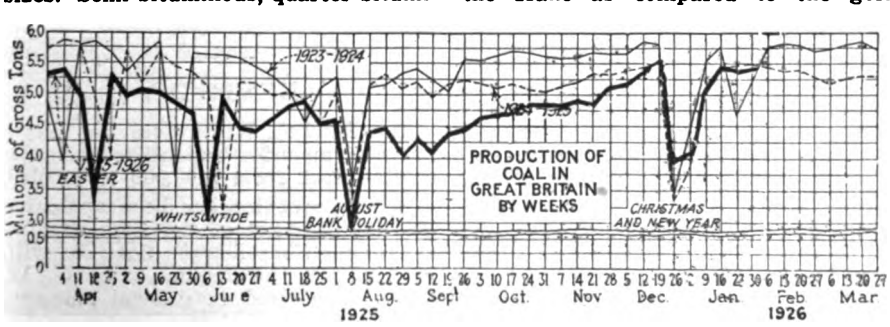
French Coal Market in Strong Position; Coke Prices Up

Paris, France, Jan. 27—There is a satisfactory demand for French industrial coals. The production of domestic fuels is not sufficient to cover requirements, compelling merchants in the Parisian districts to buy from Great Britain in order to make up the deficiency in flaming screened from Marles and Bruay, at delivered prices 10@15 fr. higher than on the French coal.

There is some improvement as far as transports are concerned.

At the present time there are 37,000 tons of Russian anthracite stored at Rouen. Of this only 10,000 tons have been sold. The commercial representatives of the Soviets in France indicate the following prices per ton for that anthracie, c.i.f. Rouen; 1 to 2 (French nuts). 52s. 9d. (343 French fr.) 2 to 3 (cobbles) 50s. (325 fr.); 2 to 5 (cobbles) 48s. 9d. (318 fr.); large and lumps 37s. (240 fr.). To the above prices must be added 20 fr. per ton for delivery on quay or loading into river barges, and 20 fr. per ton for the river freight to Paris. Russian nuts and cobbles from crusher are quoted by the French sellers 360 to 370 francs per ton at Rouen. That Russian anthracite contains about 4 per cent volatile matters, 3 to 4 per cent ash and 4 per cent moisture.

During the first twenty-six days of January, 217,310 tons of reparation coke have been received from the Ruhr. As a result of the two successive increases applied upon the Nord and Pas de Calais coke prices, and the fall of the franc as compared to the gold mark, the O.H.S. has informed the O.R.C.A. that the reparation coke price will be increased 7.15 for the first fortnight of January, and 6 francs from Jan. 16. Reparation coke priced at 144 fr. in December, is now 157.15 fr. However, the 2.50 fr. return allowed for big tonnages is to be deducted from the above price. On the other hand, the O.R.C.A. surcharges on the reparation coke price, makes the rate 158.30 fr. (the 2.50 return not included).



Figures obtained by Assistant Commercial Attaché Evans from the Geological Survey of China, which are reported to be accurate, show that China's production of coal amounted to 23,711,103 tons in 1924. This is an increase over production for the previous year of slightly over 150,000 tons. In obtaining these figures the output of the small mines from which no returns are received is estimated as being the same for both years or 6,000,000 tons.

Export Clearances, Week Ended Feb. 13, 1926

FROM HAMPTON ROADS

	Tons
For Italy:	
Br. Str. Torr Head, for Venice	496
Ital. Str. Concordia, for Porto Ferrajo	9,145
Ital. Str. Fortunato, for Genoa	5,838
Ital. Str. Hermada, for Savona	6,499
Ital. Str. Brenta, for Genoa	2,885
For French West Indies:	
Nor. Str. Sverre, for Fort de France	5,202
For Cuba:	
Br. Str. Tafna, for Havana	6,572
Nor. Str. Lalla, for Havana	2,604
Dan. Str. Sarmatia, for Antilla	1,329
For New Brunswick:	
Br. Str. Emperor of St. John, for St. John	2,674
For Canal Zone:	
Amer. Str. Chilore, for Cristobal	19,962
For Argentine:	
Ital. Str. Ello, for Buenos Aires	6,985

Hampton Roads Coal Dumpings*

(In Gross Tons)

	Feb. 4	Feb. 11
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week	158,403	188,175
Virginia Piers, Sewalls Pt.:		
Tons dumped for week	76,690	90,181
C. & O Piers, Newport News:		
Tons dumped for week	111,572	122,210

*Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shipper's protest.

Pier and Bunker Prices, Gross Tons

PIERS	Feb. 6	Feb. 13†
Pool 1, New York	$6.00@$6.35	$6.00@$6.25
Pool 9, New York	5.50@ 5.75	5.50@ 5.75
Pool 10, New York	5.25@ 5.50	5.25@ 5.50
Pool 11, New York	4.85@ 5.25	4.85@ 5.25
Pool 9, Philadelphia	5.50@ 5.80	5.55@ 5.85
Pool 10, Philadelphia	5.30@ 5.50	5.35@ 5.50
Pool 11, Philadelphia	4.90@ 5.20	5.00@ 5.25
Pool 1, Hamp. Roads	5.00@ 5.10	5.00@ 5.10
Pool 2, Hamp. Roads	4.65@ 4.75	4.90@ 4.90
Pools 5-6-7, Hamp. Rds.	4.40@ 4.50	4.40@ 4.50
BUNKERS		
Pool 1, New York	$6.25@$6.50	$6.25@$6.50
Pool 9, New York	5.75@ 6.00	5.75@ 6.00
Pool 10, New York	5.50@ 5.75	5.50@ 5.75
Pool 11, New York	5.10@ 5.50	5.10@ 5.50
Pool 9, Philadelphia	5.75@ 6.00	5.90@ 6.25
Pool 10, Philadelphia	5.55@ 5.75	5.60@ 5.75
Pool 11, Philadelphia	5.15@ 5.45	5.25@ 5.50
Pool 1, Hamp. Roads	5.10	5.10
Pool 2, Hamp. Roads	4.75	4.90
Pools 5-6-7, Hamp. Rds.	4.50	4.50

Current Quotations, British Coal, f.o.b. Port, Gross Tons

Quotations by Cable to *Coal Age*

Cardiff:	Feb. 6	Feb. 13†
Admiralty, large	23s.3d.	23s.@24s.
Steam smalls	14s.6d.	14s.6d.
Newcastle:		
Best steams	16s.7d.@19s.	17s.
Best gas	16s.7d.@18s.	17s.6d.
Best bunkers	16s.6d.	17s.@18s.

†Advances over previous week shown in **heavy** type; declines in *italics*.

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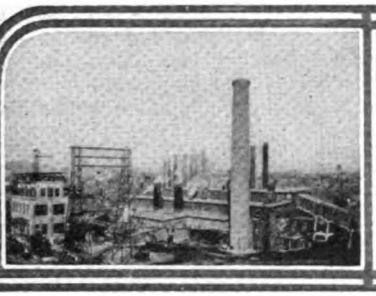
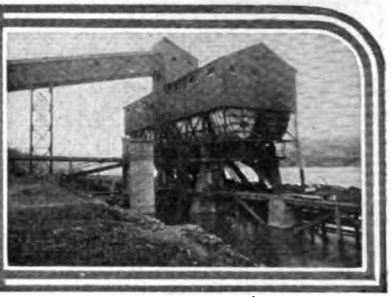


News Items From Field and Trade



ALABAMA

The Birmingham Coal & Iron Co. has to clear the ground and repair tenant houses and mine structures at the old Inland No. 1 mine, near Inland, Blount County, which has been idle since 1920, when it was operated by the Inland Coal & Iron Co. This is a drift opening on the Jagger seam of coal and is served by the Birmingham Mineral branch of the Louisville & Nashville R.R. It is understood that the mines will be developed up to a daily output of 1,000 tons as soon as practicable. I. E. Boyette is president of the company, the operating office being located at Inland, near Oneonta.

The first work of organizing in convict operations chapters of the Joseph A. Holmes Safety Association was inaugurated recently at the Aldrich mines of the Montevallo Coal Mining Co., when four chapters were instituted from the membership of the mine workers, one each for colored and white convicts and one each for the colored and white free employees.

The Pratt Fuel Corporation is reported to be making preparations for greatly increasing its output at Cedron No. 1 mine, near Carbon Hill, which was purchased from the Kershaw Mining Co. last year. This is a stripping operation on the Jagger seam and a large steam shovel recently was authorized to be purchased for this mine. It is understood that consideration also is being given to the building of a large washery.

ARKANSAS

Representative Hearstill Ragon of Arkansas introduced a bill in the House at Washington to authorize the Secretary of the Interior to establish a mine-rescue station at Spadra, Johnson County, in the heart of the Arkansas coal district. The measure also directs that suitable equipment and suitable quarters be provided for the proposed station. It was referred to the Committee on Mines and Mining, where favorable action is expected. A similar bill will be introduced in the Senate by Senator Robinson. The House committee will begin hearings on Ragon's and other measures of similar purport Feb. 19.

COLORADO

The explosion in the mine No. 3 of the Bear Canon Coal Co., at Bear Canon, on Jan. 29, which resulted in the death of four coal miners, was caused by a set-off of gas in some old abandoned workings where men were engaged in drawing rails, according to the findings of the coroner's inquest held at Bear Canon Feb. 6. The verdict of the coroner's jury further found that the company was at fault in not making examinations for gas on the morning the men entered the mine, the last inspection prior to the explosion having taken place two days earlier, on Jan. 27. It was not determined what set off the gas. The mine itself was a non-gaseous mine and miners worked with open lights.

The Radiant mine of the Victor-American Fuel Co. was closed down at the end of January. The Chandler mine of the same company, however, has been working every day. Several mines in this district have cut down their work to two or three days a week, because of a lack of orders. Wagon mines, however, as a rule are working steadily.

ILLINOIS

Frank W. Collins, of East St. Louis, has been appointed county mine inspector of St. Clair County by the Board of Supervisors. There were 11 applicants for the vacancy created by the resignation of W. A. Wilson who has accepted a position as manager of the Randall mine at Freeburg.

Saline County coal mine No. 4, about four miles west of Carrier Mills, has closed down, making the third mine that has closed recently in the vicinity of Carrier Mills.

Posting of suspension notices in mines No. 9, at West Frankfort, and No. 12, at Christopher, operated by the Old Ben Coal Corp. is regarded as marking the first step in a general slowing down of production in the southern Illinois fields. An indefinite suspension is contemplated. The West Frankfort shaft employs about 800 men and No. 12 about 600. The Old Ben corporation has four other mines in that section which are working.

INDIANA

A report from Evansville states that the Korff mines, Possum Ridge Mine and Sargeant mine in the Evansville district have resumed on a non-union basis, and others out toward Rockport will start soon. While these mines are working short forces, the report indicates that more men are reporting, and in view of smaller demand for coal, indications are that they will soon have a waiting list.

Articles of incorporation for the A. D. Spears Coal Co., which will take over the business and property of the Vermillion Coal Co., have been filed in Terre Haute. The incorporators and directors of the new company are: Archibald D. Spears and Ira J. Church, of Clinton, and Thomas H. Cochran, of Chicago. The property to be taken over by the company is located in the Terre Haute field and is valued at approximately $550,000, exclusive of the good will.

The East Chicago Coal Co., East Chicago, has filed a final certificate of dissolution.

William L. Williamson, Indiana coal operator, has disposed of his interest in the Neutral Coal Producing Co. and the Sanford Mining Co. and has opened offices in the Rea Building, Terre Haute, under the name of W. L. Williamson & Co. He will do a jobbing business in all grades of Indiana coal and expects to organize a coal mining company of his own.

The Parke County Coal Co. of Terre Haute, has filed a final certificate of dissolution.

KANSAS

Authorization by the receiver of the Joplin & Pittsburg Railroad Co. for the construction of a track from Pittsburg one and one-half miles west to the site of the Lone Star Coal Co.'s mine, was announced Feb. 8. J. J. Nesch and R. G. Nesch, owners of the Lone Star company, recently purchased 135 acres of coal land, on which they expect to have a shovel in operation soon. Bruce Cameron, general manager for the J. & P., says easements for the track have been obtained and construction will start soon.

Plans are being discussed for the eighth annual state first-aid and mine-rescue meet, which, James Sherwood, state mine inspector, and Harry W. Burr, secretary-treasurer of District 14, United Mine Workers, recently announced, will be held either late in May or early in June. Eighteen teams competed in the contest last year, but because of the greater interest in first-aid and mine-rescue work displayed this year by the organization of many classes in the southeastern Kansas field, Mr. Sherwood expects a greater enrolment for the 1926 meet.

KENTUCKY

The Mitchell Willis Coal Co., Typo, has filed amended articles reducing its capital stock from $100,000 to $10,000.

H. S. Carpenter has been appointed general manager of the Elkhorn division of the Consolidation Coal Co., with headquarters at Jenkins, vice G. W. Hay, transferred to general manager

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of operations, Fairmont, W. Va.; J. F. Daniel has been appointed general superintendent of the Elkhorn division with headquarters at McRoberts, vice H. S. Carpenter, promoted; M. H. Foerster has been appointed assistant general superintendent of the Elkhorn division with office at Jenkins, vice J. F. Daniel, promoted.

The Black Diamond Mining Co., Drakesboro, recently donated a day's run of coal and the miners donated a day's pay to the four churches at Drakesboro, two of which have colored congregations, to aid their finances, which got behind during the strike of 1924.

NEW YORK

Maurice Bloch, Democrat, minority leader, on Feb. 11 introduced in the Assembly a bill amending the Public Service Commission law empowering public service commission to investigate concerning coal supply, source, storage and price of coal and other facts relating thereto.

OHIO

The United Mine Workers was made defendant in two damage suits totaling $600,000 in Common Pleas Court at St. Clairsville Feb. 10. The suits were brought by Scott Story and Mrs. Clyde Majors as the result of a strike riot at New Lafferty, Belmont County, June 27, 1922. The New Lafferty riot was the result of a demonstration by union men against Majors and Scott, who had gone to work in a non-union stripping mine near the village. John Majors was shot and killed and two other men were shot and badly beaten.

Erection of a pier on the Kentucky side of the Ohio river, opposite Cincinnati, to cost approximately $110,000, to provide a harbor for steamers and coal barges was favored by a number of officials of coal companies and steamship lines at a public hearing held in the office of Major A. K. B. Lyman, U. S. District Engineer at Cincinnati, Feb. 10. Among those who spoke were: R. P. Gilham, F. E. Hall, James P. Reilly, F. J. Bramlage, F. P. Nowell and A. L. Kirchner.

Major E. S. Helburn was appointed and has qualified as receiver for the Kentucky Fuel Co., of Cincinnati, Ohio, which asked for receivership in the U. S. Court in Covington, Ky., on Feb. 9. This is a selling corporation but also is financially interested in Clay County Coal Co.'s Nos. 1 and 2, the Willis Harlan Coal Co. and the Turner Jellico Coal Co., of Kentucky, and the Coaldale Products Co., of Ohio. According to John Hoffman, principal stockholder, it is hoped through this method to clear up the financial entanglements of all five companies.

OKLAHOMA

A report from the Henryetta field, District 21, United Mine Workers, where a strike was called Sept. 1, 1925, showed that in the week ending Feb. 6 more than 13,000 tons of coal was mined. Of this, nine open-shop mines, paying the 1917 scale, produced 10,265 tons; eight co-operative mines produced 1,460 tons and three union mines, paying the 1924 scale, produced 1,470 tons. Three mines, nominally open, one in each class, were idle through the week. Those working are experiencing difficulty marketing their product. And the Crowe Coal Co. has announced it soon will close down one of the two mines it has in the field operating on the 1917 scale.

PENNSYLVANIA

Hearings are to be resumed in Scranton, Feb. 28 in a $5,000,000 suit against the Glen Alden Coal Co. for alleged breaches of contracts, involving leases of 800 acres of coal land. Both actions are based on leases entered into in 1864 and 1868 by relatives of the plaintiffs and agents for the defendants. In addition to money damages, the plaintiffs ask for complete termination of the coal company's operations on their property. Hearings are expected to continue through the spring before former Judge Frank C. McLaughlin, who was appointed referee by the Supreme Court of Broome County, New York. Complaints by the lessors of what are known as the Central and Luzerne leases were first made by Helen B. Millard and Charles P. Bennett, owners and lessors of the property in 1921, and amended complaints were filed in September, 1922, both drawn against the Delaware, Lackawanna & Western R.R., whose liability in the action is admitted to have passed to the Glen Alden Coal Co. upon segregation of the anthracite mining company.

Dynamite enough to blow Rush township clear out of Centre County was found under the tipple of the DuShan mine, near Osceola Mills, on the night of Feb. 11. The dynamiters bungled the job and the charge failed to go off. The DuShan mine is owned and operated by James Dugan, of Osceola Mills, and John F. Short, of Clearfield, and has been working for some time. State, railroad and county detectives are working on clews.

Output at the Pittsburgh Coal Co.'s seven mines now working at the 1917 scale in the Pittsburgh district set a new high record in the week ended Feb. 6, when 32,387 tons was produced. The company reports that the number of miners working in the Pittsburgh district under the 1917 wage scale reached a new high record on Feb. 11 with 1,717 men at work in seven mines, distributed as follows: Banning No. 1, near West Newton, 295; Banning No. 2, 276; Midland, near Canonsburg, in Washington county, 374; Montour No. 10, 333; Warden, 284; Mansfield, 67, and Dickson, near Imperial, 88.

UTAH

H. F. Fernstrom, manager of the Western Fuel Co. and well known in Salt Lake City retail coal circles for several years past, has been elected president of the Associated Retail Credit Men.

Fire caused about $10,000 damage recently to the material house of the Independent Coal & Coke Co. near the tipple at Kenilworth. The fire brigade saved the slack conveyor from destruction. Work is about finished on the new material shops of the company, and for this reason the old building may not be repaired.

WEST VIRGINIA

Because of the absence of Robert M. Lambie, chief of the State Department of Mines, the inquest to determine the cause of an explosion in Jamison mine No. 8 of the Jamison Coal & Coke Co., at Farmington, was again postponed, this time until Feb. 26. The inquiry will be held in Fairmont.

Announcement has been made here that 45.62 acres of Sewickley or Mapletown coal and 32.94 acres of surface, besides a leasehold on three acres of surface, and all mining machinery and equipment now upon the property owned by the Stone & Scott Coal Co., known as Betty mine, will be sold at public auction at a special commissioners' sale at the Marion County Court House Feb. 20. Besides the above-named property, which is located in Grant District, Marion County, on the Baltimore & Ohio R.R., the sale also will include all of the real and personal property of E. B. Stone and T. M. Scott, conveyed to them by the Hudson Coal Co. in 1920, situated in Harrison County.

Work of rock-dusting Mine No. 86 of the Consolidation Coal Co., at Carolina, has been started, and will be completed in a week or 10 days, it is said. This is the first of the Consolidation mines in this region to receive the rock-dust treatment. Work probably will be started soon on rock-dusting Federal mine No. 3 of the New England Fuel & Transportation Co., at Everettsville.

G. A. Richardson, manager of the technical publicity department of the Bethlehem Steel Corporation, with headquarters in Bethlehem, Pa., was the principal speaker at a safety meeting recently held by the Bethlehem Mines Corporation at its Barrackville mine No. 41.

The U. S. Court of Appeals has set aside the motion of the West Virginia-Pittsburgh Coal Co. for a writ of error in its case against Van A. Bittner, chief international representative of the United Mine Workers, and others, according to information received at the Fairmont office of the Mine Workers from Thomas C. Townsend, chief counsel of the organization. By this action Mr. Bittner is purged of the contempt charges that have been pending in federal court. The remarks made by Mr. Bittner in an address at Farmington, Marion County, early last year resulted in the charges of infringing upon an injunction granted to the coal company in the Panhandle section. Federal Judge W. G. Baker dismissed the proceeding which was later appealed by the coal company.

William Anderson Staab has been appointed assistant professor of mining engineering at West Virginia University to fill the vacancy caused by the

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resignation of Thomas Fraser. Mr. Staab is a graduate of Lehigh University, class of 1910. Since graduating he has spent ten years in mining engineering work at Morenci, Ariz., one year teaching at Lehigh University, and for the past four years has been a mining engineer for the Lehigh Coal & Navigation Co. at Lansford, Pa.

A total of approximately $100,000 will be paid by the State Compensation Department to the widows and orphans of the men who lost their lives in the recent mine explosion at Farmington. Within less than 24 hours after the explosion at Farmington, representatives of the compensation department had set the machinery in motion for making payments.

One hundred coke ovens of the Houston Collieries Co. at Maitland, will be fired as soon as they can be put in condition. Men have been put to work repairing them.

The Crozer Coal & Coke Co. recently completed the installation of a preparation plant having a capacity of about 3,000 tons a day. The new plant, which is at Elkhorn, is similar in design to the one completed about five years ago at Pageton, but a number of improvements have been made. A similar but larger plant is to be built at the Upland mine of the Crozer company.

The Blue Ridge Coal Corporation, operating at Brush Creek, on Coal River, is building two large tipples which will be completed within a comparatively short time.

Plans are being drawn for a large tipple for the Guyan Eagle Coal Co. at Amherstdale, in Logan County, to handle coal from the company's Chilton mine. This tipple will replace one destroyed by fire about two weeks ago. Long leaf pine is being used for the reconstruction.

In the interest of the bondholders of the Sullivan Pocahontas Coal Co., having a number of operations in West Virginia, Howard N. Eavenson, consulting mining engineer, Union Trust Building, Pittsburgh, Pa., who has been acting in the above capacity for the company, has been made president and general manager, and H. W. Frey, of New York, has been made vice-president and treasurer; succeeding J. C. Sullivan, of Tralee, who had been president, treasurer and general manager.

Rock-dusting at the No. 9 mine of the Jamison Coal & Coke Co. will be completed within a few days, according to W. Clark Dobbie, superintendent, who also reports that the work has speeded up in the last few days.

WYOMING

The Union Pacific Coal Co. produced 2,779,061 tons of coal in its 17 mines in 1925. In an effort to further reduce all classes of accidents, the company has instituted a new system of daily inspection of all mines for gas and loose top before each shift goes on duty. In addition to this, a joint committee representing the United Mine Workers locals and the company makes an inspection of general committees each quarter. Among the safety moves instituted during the past year were continuous rock-dusting of all mines, improved ventilation, Edison safety lamps for all miners, prohibition of smoking tobacco or matches in the mines, electric shotfiring by specialized shotfirers after all men have left the mines.

P. J. Quealy, president of the Kemmerer Coal Co. and of the Gunn-Quealy Coal Co., has been named as one of the Wyoming members of the advisory council for the sesquicentennial celebration to be held in Philadelphia this year.

The Union Pacific Coal Co. recently formed a safety association among its employees. Men of all occupations connected with the company's mines are eligible for membership. This company regularly sends out bulletins of all serious accidents showing how the accident occurred and how it could have been avoided.

CANADA

Premier E. N. Rhodes, of Nova Scotia, has promised District 26, United Mine Workers, that the provincial government will advance a loan of $13,000 to be devoted to relief purposes in the colliery district of Cape Breton. The British Empire Steel Corporation has promised to make a similar donation provided the union will supply funds for the relief of distress.

G. H. Kirkpatrick, chairman of the Vancouver Harbor Board, announced on Feb. 8 that options had been taken on sites on the harbor front at North Vancouver for the erection of a coal pier of about 10,000 tons capacity for bunkering steamships, which now have to cross over to Vancouver Island to bunker. Recently the Blue Funnel Line, which had been in the habit of bunkering its ships at Vancouver Island coal ports, let a contract for the bunkering of its ships to the Pacific Coast Coal Co., of Seattle, in order to avoid crossing the strait. It is proposed that the bunkers be operated under a system whereby ships will purchase coal directly from the mine operators in various parts of British Columbia and Alberta, and the Harbor Commission will collect a commission from the operators for handling the business.

Personal

There is an opening on the editorial staff of *Coal Age*. Please address J. E. Spurr, *Coal Age*, 10th Ave. and 36th St., New York, giving such information as would be of interest.

Traffic

Proposed Midwest Rate Cuts Cancelled by I. C. C.

The Interstate Commerce Commission, in I. & S. Docket 2483, finds certain proposed reduced rates on coal over the Missouri Pacific, Burlington, Illinois Central, Chicago & Eastern Illinois and Mobile & Ohio railroads from points in the southern Illinois, Murphysboro, Centralia and Duquoin districts to St. Louis, Mo., and nearby points not justified, cancels the suspended schedules and discontinues the proceeding.

The respondents sought to reduce the present rate of $1.385 (applying from southern Illinois group to St. Louis) to $1.35. The reductions to St. Louis proposed from the Duquoin, Centralia and Murphysboro groups were 0.5c., 1c. and 3c. respectively.

Voluntary attempt of three Western railroads to reduce coal haulage rates from Illinois mines to points further west has been halted by the Commerce Commission.

The new schedules, which were to have become effective Feb. 7, were suspended until June 7, to await the result of an investigation. The commission did not explain the action.

The Wabash, Big Four and Chicago & Alton published schedules to apply on shipments from the mines along their lines. The commission said that from Springfield, Ill., the rate to Keokuk, Iowa, on lump coal is $1.89 per ton, and that it would have become $1.75 under the new schedule. To Hannibal, Mo., the rate on slack, which is now $1.60, would have become $1.50. On run-of-mine coal the changes were less noticeable and the rates were not changed in many cases.

Protest Illinois-Indiana Rates To Chicago and Wisconsin

Six petitions relative to coal freight rates from the Indiana and Illinois fields to Chicago territory and points in Wisconsin have been filed by Indiana and Illinois operators with the Interstate Commerce Commission, the Indiana Public Service Commission and the Illinois Commerce Commission.

The traffic departments of the two state operators' organizations each filed two interstate complaints, asking a hearing on the reasonableness of the rates from their respective fields to Chicago territory and consuming points in Wisconsin and also on the relation of such rates to those in effect between the same points of destination and the Kentucky-West Virginia fields. The two intrastate complaints involve the reasonableness of the rates from the two producing fields to points in the Chicago territory within their respective states.

A joint hearing on all of the complaints will be held Tuesday, March 23, in Chicago, before the three commissions with which the petitions were filed.

Obituary

Death removed one of the well known figures in the coal industry of southern West Virginia on Feb. 6, when **James Clark**, who for more than twenty years had been identified with the industry, passed away at the Chesapeake & Ohio Hospital in Huntington. Death was due to pneumonia. Mr. Clark was born in Renfrew, Scotland, in 1850, and came to this country in 1903. At that time he became superintendent of the White Oak Coal Co., a position he held until appointed a member of the Chesapeake & Ohio Car Allotment Commission. After serving for five years on that commission Mr. Clark organized a company of his own in the Coal River and Elk River mining fields and continued to give his attention to the management of his properties until about three years ago, when he retired from business owing to failing health.

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Coming Meetings

The Rocky Mountain Mining Institute. Winter meeting, Feb. 23-25, 1926, at Albany Hotel, Denver, Colo. Secretary, Benedict Shubart, Boston Building, Denver, Colo.

Canadian Institute of Mining and Metallurgy. Twenty-eighth annual and general meeting, March 3-5, at the Windsor Hotel, Montreal, Quebec, Canada. Secretary, G. C. Mackenzie, 603 Drummond Bldg., Montreal, Que., Canada.

New England Coal Dealers' Association. Annual meeting at the State Armory, Worcester, Mass, April 7 and 8. Secretary, E. I. Clark, 141 Milk St., Boston, Mass.

The American Mining Congress. Annual Exposition of Coal Mining Equipment, May 24-28, at Cincinnati, Ohio, in conjunction with the annual meeting of practical operating officials. Assistant secretary, E. R. Coombes, Washington, D. C.

International Geological Congress. The fourteenth congress will be held in Madrid, Spain, commencing May 24, 1926. From May 5 to 22 excursions of interest to the visiting delegates will be arranged. Information concerning the congress can be obtained from the secretary of the organizing committee, Enrique Dupuy de Lome, Plaza de los Mostenses, 2, Madrid, Spain.

Western Canada Fuel Association. Annual meeting at Winnipeg, Manitoba, Can., May 27 and 28. Secretary, W. H. Morrison, Winnipeg.

American Wholesale Coal Association. Annual meeting, June 7-9, at Toledo, Ohio, Treasurer, R. B. Starek, Union Fuel Bldg., Chicago, Ill.

Association of Iron & Steel Electrical Engineers. Exposition and convention at Hotel Sherman, Chicago, Ill., June 7-10. Secretary, J. F. Kelly, 1007 Empire Bldg., Pittsburgh, Pa.

American Society of Mechanical Engineers. Spring convention at San Francisco, Calif., June 28-30. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

New Companies

The Etter Coal Co., Cleveland, Ohio, has been incorporated with a capital of 500 shares of stock, no par value, to operate coal mines and do a jobbing business in coal and coke. Incorporators are: George S. Etter, Dorothy Dean, J. W. Gooch, M. A. Moran and A. W. Young.

The Garland Coal & Mining Co. was recently incorporated in McAlester, Okla., with a capital stock of $200,000, by J. G. Puterbaugh, E. P. Joyner and others.

Publications Received

Analyses of Alabama Coals. Bureau of Mines, Washington, D. C. Technical Paper 347. Pp. 111; 6 x 9 in.; tables. Price 15c.

Value of Bituminous Coal and Coke for Generating Steam in a Low-Pressure Cast-Iron Boiler, by C. E. Augustine, James Neil and William M. Myler, Jr. Bureau of Mines, Washington, D. C. Technical Paper 367. Price 10c. Pp. 45; 6 x 9 in.; illustrated. This is the second in a series of reports dealing with combustion, at low rates, of various typical fuels in boilers and furnaces suitable for heating large buildings.

Mine Timber Used Underground, compiled in co-operation with the Forest Service, Department of Agriculture, and the Geological Survey, Bureau of the Census, Department of the Interior, Washington, D. C. Price 5c. Pp. 17; 6 x 9 in.; tables. Devoted chiefly to statistics received from principal classes of timber-using mines in the United States, including anthracite and bituminous coal mines.

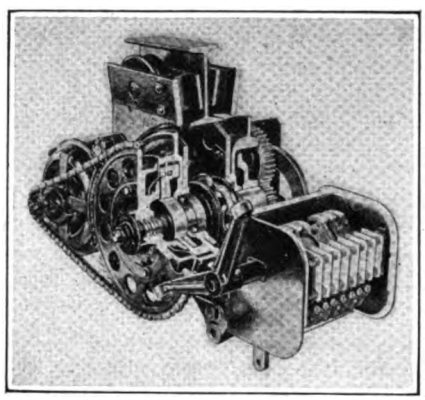
The Miner's Freedom, by Carter Goodrich. Marshall Jones Co., Boston, Mass. Pp. 189; 5 x 7¼ in.; illustrated.

Methods and Costs of Rock-Dusting Bituminous Coal Mines, by C. W. Owings and C. H. Dodge. Coal Mining Investigations under the auspices of Carnegie Institute of Technology, U. S. Bureau of Mines and Advisory Board of Coal-Mine Operators and Engineers. Price $1.50. Carnegie Institute of Technology, Pittsburgh, Pa. Bulletin 18. Pp. 192; 6 x 9 in.; illustrated.

New Equipment

Electric Chain Hoist Is Strong and Efficient

A new ball-bearing electric chain hoist known as Model 20B recently has been developed and placed on the market by the Yale & Towne Mfg. Co., of Stamford, Conn. This hoist is the result of many years' experience in developing and building electric machines of this variety ranging from ½- to 2-ton capacity. It embodies such features as close headroom, long lift, high speed, automatic top and bottom limit stops,



Part Sectional View of New Hoist

Low head room and high lifts as well as careful construction and efficiency are distinguishing characteristics of this hoist. Ball bearings and alloy steel together with careful design do much toward attaining the desired results.

and greater over-all strength. This hoist has been built with unusual factors of safety in the load-supporting members and is designed to withstand the shocks common to this class of equipment. All suspension members are made of the highest quality steel.

The model 20B can be quickly adapted to any overhead system. The side plates of the trolley carriage can be spaced to fit any desired beam flange. Electrically welded steel chain can be furnished for varying lengths of lift. The centralized steel suspension means a constantly balanced load on the trolley wheels and hoisting unit irrespective of load position.

The mechanism is fully inclosed in oil-tight chambers. It is compact yet easily accessible for inspection without expert service. The ball-bearing load sheave, which is a late development, adds a big factor for low current consumption and general all-around hoisting efficiency.

Large chrome vanadium steel ball bearings surrounding the substantial steel load sheave reduce friction and make this hoist highly efficient, requiring minimum power and assuring increased life. The heavy one-piece steel load sheave, ground on an arbor to give perfect concentricity for the ball races, is bronze-bushed for the driving pinion. Splash lubrication provides a continuous flow of oil over all gears, pinions and bearings.

The driving pinion, the shaft of which passes through the load sheave, is machined from a single drop forging, after which it is heat-treated. The bearing surfaces on the shaft are accurately ground.

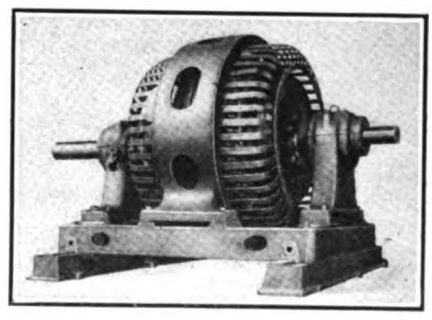
Steel chain containers can be furnished to hold any length of slack chain up to 60 ft. for ½-, ¾- and 1-ton, and 30 ft. for the 2-ton hoists. These containers are secured to the under frame of the hoist and do not affect the headroom.

Magnetic Clutch Built Into Standard Synchronous Motor

A new type of synchronous motor recently has been developed to meet the need for a machine having extra high starting torque, a low starting current, and the recognized high efficiency and unity power-factor characteristics of the synchronous type. The new motor, available in standard ratings from 60 to 600 hp., with larger ratings as special machines, is being manufactured by the Westinghouse Electric & Manufacturing Co., of East Pittsburgh, Pa. It consists of a combination of two pieces of apparatus each of which has established its utility in the electrical power field.

This combination embodies a standard synchronous motor combined with a magnetic clutch. It forms a compact unit, the over-all dimensions being practically the same as those of the hitherto standard synchronous motors of the same ratings, with the exception of the length, which is from 4 to 10 in. greater. It combines in the one machine the high starting torque of the wound-rotor induction motor with the desirable operating characteristics peculiar to the synchronous machine.

This synchronous motor is started in the same manner and with the same equipment that is employed with the standard synchronous type brought into action under light load conditions. It is particularly adapted for driving loads requiring high starting effort. The starting torque of this clutch-type motor is the same as its maximum run-



Synchronous Motor with Built-in Clutch

Heretofore despite its manifold advantages the synchronous motor has suffered the handicap of low starting torque. Building in a magnetic clutch obviates this difficulty and renders this type of machine available for uses to which, in the past, it has been but ill adapted.

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ning torque, since the machine is brought to synchronous speed and fully excited before the load is applied. Thus it can exert any required turning effort up to its pullout torque during starting periods. This is accomplished without shock and at an acceleration rate that may be varied by adjusting the clutch excitation current by means of a rheostat control. The clutch cannot be excited during the starting period, and as a result the rotor quickly reaches full speed.

The rotor section of the clutch is faced with asbestos lining, riveted to a steel ring and made in halves to facilitate easy removal. The armature member of the clutch has a smooth surface where it comes in contact with the brake lining. Steel shims may be inserted between the asbestos lining and the ring to compensate for wear.

Ample clearance between the clutch faces is provided by spring-plate construction. The armature member is mounted on a steel disc which has sufficient flexibility to allow the clutch faces to come into contact when the clutch coil is excited. When excitation is removed, the flexible member springs back into its normal position which provides sufficient clearance between the friction surfaces to prevent contact.

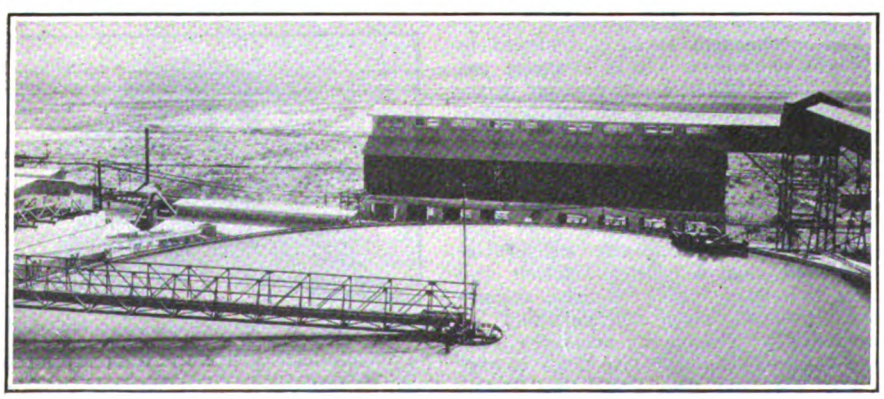
The motor shown in the illustration, rated at 575 hp. at 180 r.p.m. and with 100 per cent power-factor, occupies but 2½ in. more space than would a standard machine of the same rating. The new single unit motor is 49 in. shorter than a standard machine fitted with separate magnetic clutch and outboard bearing. A corresponding reduction in floor space may be realized with other sizes of this type of machine.

Small Diameter Traction Thickener Saves Space

Recovery of sludge or fine material from the wash water is becoming an important process at many coal preparation plants. In the past, traction thickeners of large diameter have thoroughly demonstrated their utility, but during the past year the Dorr Co., of New York, has developed a machine of this kind which is now available in as small a diameter as 20-ft.

This traction type of thickener is of the peripheral drive type, and embodies several advantages over the older machines of the central drive variety. Chief among these is the saving effected in the height or headroom necessary.

A machine of this variety may be seen in the accompanying illustration.



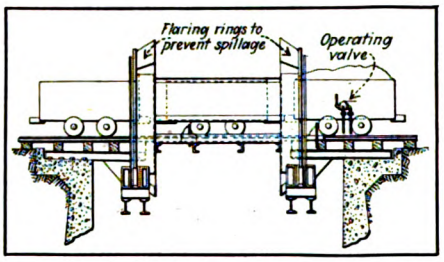
Small Thickeners of This Type Are Now Available

Thickeners of this type possess several advantages over those of the center drive variety. Chief among them, however, is the lessened headroom required by this machine.

Improvements in Rotary Dump Save Spillage

Rotary car dumps possess many advantages over those of the ordinary crossover or kick-back varieties. In general these are well known to mining men and need no further comment here. In fact most mines nowadays, aiming to attain high capacity, use this type of dump.

As heretofore constructed dumps of this kind possess the drawback that more or less coal has been spilled through the end rings; although this could be caught and guided into the coal hopper it was subject to decided degradation. The improved rotary car dump, shown in the accompanying illustration and manufactured by the Car Dumper Equipment Co., of Chicago, Ill., and Pittsburgh, Pa., is designed to overcome this difficulty.



Coal Cannot Spill

Improvements in this dump are embodied in two important details. The end rings and rollers are cast of an extremely hard metal which affords a perfect rolling surface. Furthermore, the end rings are flared inward greatly decreasing the spillage.

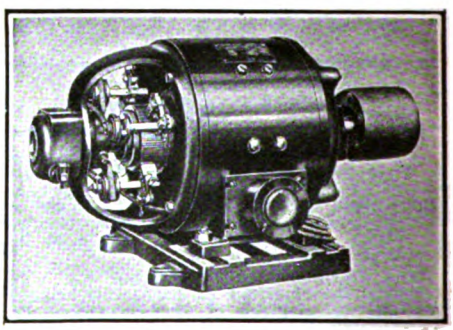
In this improved dump the end rings are really frustums of hollow cones with flaring ends facing each other. This construction of end rings not only obviates spillage but makes a much more rigid cage or dumper frame. The end rings are cast from alloy steel which is so hard that it cannot be machined, and must be ground to shape. The treads of these end rings are, therefore, ground on a specially designed machine giving an extremely smooth running surface, harder than has been obtained heretofore upon any equipment of this kind. This not only assures long wear but also reduces appreciably the power required to operate the dump. The supporting wheels are also made of the same alloy steel and ground to practically a perfect tread.

Sturdy, All-Purpose Motor Can Handle Overloads

A new direct current motor, known as the type N.A. and intended to carry heavy overloads has been developed and placed on the market by the Louis Allis Co., of Milwaukee, Wis. This is a 40 deg., general purpose machine and coincides in essential dimensions, rating for rating, with the polyphase motors built by this manufacturer.

Improved design and ventilation insures uniform cooling throughout the windings and makes an unusually cool motor under operation. The bearing chamber is designed to hold an extra large quantity of oil, making frequent renewals or replenishments of lubricant unnecessary. The bearing inspection opening is closed by a removable cover. This, while permitting easy access, gives, in effect, a dust tight bearing chamber.

An entire elimination of oil trouble is claimed by virtue of the new design incorporated in the bearing. Difficulty experienced in the past, arising from oil soaked windings as the result of oil throwing, creepage, and the like, is made impossible in the present design.



General View of Sturdy New Motor

Details of construction have been given careful attention in the design of this machine. Note the staggered position of the brushes on the commutator. Oil slinging and creepage have been eliminated thus obviating all possibility of trouble from this source.

Industrial Note

A. F. Case has been appointed manager of the coal and ore division of the **Welman-Seaver-Morgan Co.**, Cleveland, Ohio; **P. H. Douglas**, manager, general equipment division; **J. F. Rogers**, manager, gas producer division; **J. B. Shaub**, manager, engineering production; **J. H. Stratton** and **Miss J. L. Krotz**, assistant purchasing agents.

Association Activities

The twelfth annual business session of the **Logan Coal Operators Association** was held Feb. 4 at the offices of the association in Logan County, West Virginia. Matters discussed and acted upon were not made public. New officers were not elected and the officers elected last year will continue their duties temporarily. These are: M. E. Kent, president; C. W. Jones, vice-president; H. A. McCallister, treasurer. J. W. Colley is the secretary of the association. Members of the executive committee are: A. R. Beisel, J. H. Ford, C. H. Jenkins, H. E. Jones, A. J. King, J. A. Kelley, J. R. Thurmond, T. F. Downing and R. R. Smith.

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"Jigging" Conveyor Does Good Work in Virginia—Page 287

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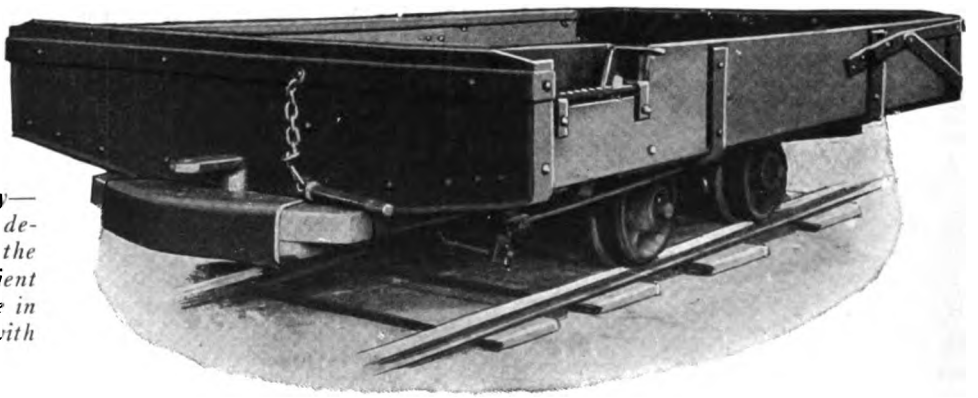

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 29 — New York, February 25, 1926 — *Number* 8

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Jigging Conveyor Reduces Coal-Mining Costs 287
BY FRANK H. KNEELAND.

Surface Damage and Coal Betterment Waken Much Interest at A.I.M.E. 292

Bureau Offers "Graduate" Course in Mine Rescue 297
BY J. J. FORBES AND G. W. GROVE.

Modified Hand Firing Cuts Mine Fuel Consumption 296
BY J. H. EDWARDS.

Victory of Public in Coal Strike Causes Chagrin to Some Senators Who Voted for Copeland Resolution 304
BY PAUL WOOTON.

Local Strikes Reflect Return to Normalcy in Hard-Coal Fields; See Trouble in Interpreting Pact 307

Kentucky Power and Mining Companies in Merger 304
Committee Votes Against Confirming Woodlock 305
Commonwealth Fuel Co. Sold for $3,000,000 305
John A. Bell Properties Sold at Auction 305
Resume Work at Euclid Mine 305
D. L. Wing Dead, Was Noted As an Economist 306
Big Muddy Dredging Project To Get Further Study 306
Dust Code Wins A. E. S. C. Vote; Other Plans Afoot 306
Seven Die as Result of Kentucky Mine Blast 307
New Anthracite Prices Out 307
Delay Horning Report 307

Editorials 285
Viewpoints of Our Readers 299
Underground Operation 300
Practical Pointers 302
Weekly Review and the Market 308
Foreign Market and Exports News 313
News Items from Field and Trade 314
Traffic 316
New Equipment 317

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The New Idea in Pumping

PUMPING IN MINES is so important a factor in coal production, especially of anthracite, that small economies have large significance. It costs money to keep pumps running 24 hours a day. Power costs, maintenance costs and attendance charges for pumping are always high, primarily because they are continuous, or nearly so. A few years ago automatic pumping apparatus effected considerable savings by cutting down attendance charges. Other improvements followed.

Today electrical control is further revolutionizing pumping. When the automatic features were developed and applied to pumps the apparatus was so nearly perfect in its operation that there wasn't much room for improvement; however some advances have been made in the co-ordination of electrical control. These will be discussed in next week's issue of *Coal Age* by R. S. Sage.

* * *

ROCKY MOUNTAIN coal mining will be at the fore in next week's issue also. The engineering institute of that region is in session Feb. 23, 24 and 25 in Denver. Even though the sessions take place 1,700 miles from the publishing offices of the magazine, the air mail and the telegraph will be counted on to put a full report of the meeting before the readers of *Coal Age* while the discussion is still hot.

* * *

AIR-SAND CLEANING of coal will be further treated in these pages next week. This scheme of separating rock and dirt from good coal by passing the output of a mine through sand "boiled" by air will grasp the interest of mining men everywhere.

Advertising Index—Alphabetical, 42; Classified, 39; Consulting Engineers, 34; Searchlight Section, 36 and 37

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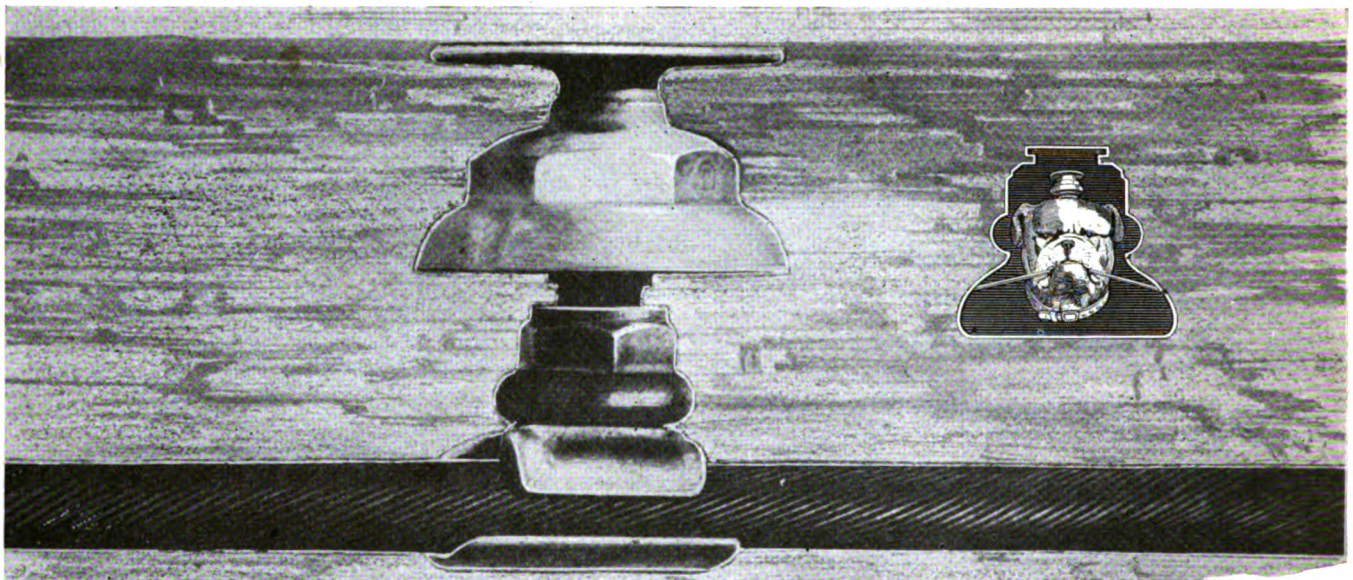

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 29 | NEW YORK, FEBRUARY 25, 1926 | Number 8

Support Your Association

JUDGING by appearances, the National Coal Association is strongest when the industry is flourishing and weakest when it is suffering. It is beginning to grow again with the advent of better times. But surely when the industry is in trouble the need for active co-operation to avoid unfair practices and to improve business is greatest. In prosperous times taxes can be shouldered even if with a shrug, but in perilous years taxes that might be borne without great hardship become an increased burden. When, moreover, open consignment of coal is most rampant and harmful, activity to lessen it is nothing less than a vital necessity. Furthermore, when industry uses less and less coal, the need for a more active extension of uses of coal is of paramount importance.

Haslam and Russel in their recently published book "Fuels and Their Combustion" say that "an increase in efficiency [in the use of coal] of 1 per cent (from 10 to 11 per cent) would mean a yearly saving of approximately $1,000,000,000." Is this a matter the industry can afford to pass over without notice? If that billion dollars is saved to the public, it is by the same sign lost to the coal industry. One would be disposed to expect that the industry would be hustling to see if that billion dollars saved could be replaced by a billion dollars expended. Instead only the National Coal Association seems to sense the danger and is making efforts to meet it. To this end there is refrigeration and the increase in the use of furnaces instead of stoves which give only local heating; there is the use of heat for removing snow from the streets and sidewalks; there is the increased use of heat for garages; there are possibilities in farming such as greater use of electric power for services now performed by hand and the introduction of dry season irrigation and sprinkling where now crops are allowed to wither and die. There are chemical uses for coal that will materially aid in swelling the production.

The National Coal Association also can foster in the public a better sentiment to coal mining and create in the industry itself a better understanding of the public and a clearer knowledge of recognized and tested public relations.

The work of the association in the collection of trade data, in standardizing them so that they will be comparable, one with another, and in fighting assigned cars, if that prove to be necessary, are all parts of a program in which all should assist. Other industries have learned that though there are competitive matters in which their associations cannot partake, there are also matters that are only competitive with rival industries, and these conditions can be greatly bettered by combined action. After all, a common feeling of general need will make for a final result favorable to all in the industry.

The individual operators tend to pull against one another, and the boat in which they are all embarked drifts helplessly. Let them organize, let their oars dip as one and all move in the same direction, and then as a result they will find that they will all arrive at the haven they are seeking. Alas, when the waves are highest and winds strongest they leave the boat uncaptained; each determines to follow his own behests, and the result is that there is no progress, nothing but clamor and bewailing. An association is necessary or the boat will founder in the depths of the rage for economy in the use of coal that still threatens the industry.

A co-operation with the wholesale and retail associations which distribute the product and can influence the consumer to use more coal for his greater profit and comfort is greatly to be desired. The men in these associations still seem to think that business is best promoted by energy in competition rather than by selling new ideas to the public, which, by the way, shows no inventiveness in applying the marvelous possibilities of coal to the many uses to which that fuel can be put. Every village and city wholesaler and retailer should be busy popularizing the possibilities of coal. Today the best minds in the advertising field are seeking ways to widen the market rather than to steal the business of a competitor. Let the coal men thrive together rather than at one another's expense.

Pigs Is Pigs

THE famous story of Ellis Parker Butler throws some doubts as to whether pigs is necessarily pigs; and something of the same doubt comes up as to whether coal is coal, without such finer distinctions as modern taste demands.

At the Coal and Coke Committee session in connection with the recent annual meeting of the American Institute of Mining and Metallurgical Engineers R. H. Sweetser protested that to say coal was not sufficient—any more than to say iron ore was sufficient—that as iron ore was sold on its contents of iron, phosphorus and the rest, so the value of coal varied enormously according to its content of fixed carbon, ash, volatile matter and so forth. He believed that some of these things at least should be determined in marketing coal, and that the consumer should know what he was buying. How important is a low-ash content for metallurgical coke he demonstrated, and as to domestic anthracite, he remarked that the New Englanders were objecting strenuously to buying an indeterminate mixture of ash and combustible matter for their domestic fuel consumption. Considerable interest was taken in this matter, both from progressive and stand-pat sides; but a motion to request the Coal and Coke Committee to consider this subject was ruled out of order by the chairman.

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There is no question, however, that the objection to buying a pig in a poke, in the shape of a ton of coal containing no one knows how much waste, is a growing one. There is no question but from time to time some coal has been unloaded into the consumer's cellar at the standard price which has refused to ignite at all, and that a widespread objection to this crudity has gradually grown up. The majority of companies who are shipping carefully prepared and good quality coal could protect themselves against these occasional buccaneers, who discredit the industry, and whom the public is given no means to differentiate, by advertising the quality of their product—of the output of their respective mines. Whether a general statement of the average quantity of ash is practicable is another problem—but it would seem to be one which should be attentively considered. Mines producing a low-ash anthracite, to take a specific example, should be able to command a premium for their product. In these days no one will submit to buying a ready-made suit of clothes without trying it on, and no merchant will decline to discuss material and fit. Indeed in the mineral world it is doubtful if anything except coal is ever marketed without analytical specifications.

Mark Danger Line

PROBABLY nine-tenths of all the loss of life sustained at the working face in coal mines is due to falls of roof and coal. Records show also that the first three feet of height above the top of the rail to all intents and purposes, is absolutely safe. That is, in order to be dangerous a fall must start at a point on face or rib that is more than 3 ft. above the top of the rail. Thus those working at the face of a room, heading, breakthrough, crosscut, tunnel or other mine passage need pay no attention to that portion of the face or rib which lies below this 3-ft. line but should concentrate all of their safety efforts on the upper, not the lower portion of the working place.

In order to impress the importance of watching the top and higher areas of face and ribs upon all those engaged in underground work, one large company has painted a white line along both ribs of all workings with the words "Safety Zone" stenciled in bold letters at intervals below it. These lines are carried forward with the workings and each foreman and assistant foreman is instructed to see to it that this detail is not neglected. Inasmuch as this company awards bonuses to its foremen and assistants on a merit and demerit system and he who does not have his "safety line" up to the required point is given an appropriate number of demerits it is easy to enforce this ruling.

Safety within the mines has passed the guesswork stage. In order to keep a mine safe today it is necessary to know facts and act accordingly. Marking the "Safety Zone" is merely another way of impressing upon the underground worker the importance of taking no chances whatever that human knowledge and foresight can discern as possibilities. The course taken by this company is one that may well be carefully considered and adopted by others engaged in the same or a like business. It is a perfectly logical, albeit an indirect, means of strengthening and stiffening safety morale. It is a sort of "faith cure" in that it tends to focus the workers thoughts. And in mining he who thinks safety is safe.

The Coal Industry as a Battle Ground

THAT active economic belligerency has recently been exhibited by the coal miners toward the owners and operators of mines, both in Great Britain and in the United States, can hardly be fortuitous; it must be the result of common underlying causes. To be sure, conditions are not similar. In Great Britain the pre-war export coal trade was the foundation of her commercial expansion—she shipped coal and imported raw materials for her factories. The economic upheavals which succeeded the war, in part due to increased living costs, in part to the demand of British coal miners for a higher standard of living and less labor, have led to far more effective competition of continental European coal, from the Rhenish and Westphalian fields; and the consequent lack of work in the English fields. Now the miners' unions demand that the government take over the mines, manufacture cheap electric power, encourage the development of industries using power, and the rest of a beautiful but visionary plan of state socialism; always, however, retaining the right to strike.

One point where the case of the American miners seems to resemble that of their less fortunate British brethren is that there appears to be an element among the miners, and elsewhere in America, that demands government operation—a government operation, to be sure, which the labor element will control; and this government operation will fix the prices at which the public is to buy coal, fix the profits of the operators, and similar economic nonsense; in fact it will fix everything but the miners' pay. To be sure, the published utterances of the leader of the miners, Mr. Lewis, are definitely against government operation; but at least the strategy of the recent coal strike would appear to have been pressing in that general direction.

This idea of government control, in Great Britain or the United States, represents an impracticability of vision, a demand of labor to rule and not to co-operate, a more than socialistic aim, a suggestion of the doctrine of the rule of the so-called proletariat which has ruined Russia. Why the organized labor of coal mines should take an extreme stand is not clear, but it is probable that it is due to the fact that the coal industry is a key industry, capable of being used to bludgeon the public and the government, and that therefore it has been selected in former years by the propagandists of the doctrines mentioned above as a strategic ground whereupon to give battle. And it has been found to be a good vantage ground, because many of the miners, formerly underpaid and recruited from the impoverished peasantry of Europe, are still not so far advanced and educated as to recognize all the fundamental flaws in the conception. The coal barons of a generation ago, then, are responsible for the militant miners' unions of today. If there be any baronial temper left among the operators—and that accusation is often heard—now is the time to forswear it for all future time.

The struggle of the exponents of mine-labor domination without regard to the rights of others has been, in the present instance, in the United States, a losing battle. That American capital and labor are far more enlightened and advanced than the leaders of mine labor realize is evident since both have abandoned their former contempt for and exploitation of the public and are striving to render service to the public in order that each may profit by the resultant prosperity.

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Jigging Conveyor Reduces Coal-Mining Costs

Eickhoff Machine Built in Sections That Are Easily Moved—It Follows Faces Closely and Continuously—Miners Have Low Lift and Short Shoveling Distance

By Frank H. Kneeland
Associate Editor

IN THE CONTINUOUS quest of lower production costs American operators in large numbers are trying conveyors. Many different types and makes of these machines have been and are being experimented with. Probably the simplest and lightest of the varieties thus far tested is the oscillating or swinging trough type. Several kinds of these machines are being tried out in the various coal fields of the country from Alabama to Wyoming on pitches ranging all the way from just below the critical angle for coal on sheet iron to 7 or 8 deg. adverse inclination—that is, up hill.

One of the simplest oscillating or jigging conveyors so far tried is known as the Eickhoff. As may be readily suspected from the name, this is an importation from Germany, built to metric dimensions, but this fact does not deter it from successfully moving American coal. It is at present in daily operation in mines located in several states, including Virginia, Pennsylvania and Wyoming. Although it is especially adapted to use in low beds, it may be employed in measures of fair thickness if desired.

This conveyor is built in sections of varying widths and lengths to suit local conditions. An installation of this machine which might in many respects be considered as typical is in daily operation in the Kentucky No. 2 mine of the Virginia Iron, Coal & Coke Co. at Toms Creek, Va.

Some of the details of this machine as here installed may be seen in the accompanying illustrations. Although it is now being used in drawing pillars, it may be employed with equal facility for driving rooms. About 600 ft. of conveyor trough can be driven from one shaker engine, but only approximately 300 ft. is in use at this mine. This length will enable rooms 260 ft. long on, say, 50-ft. centers to be driven and the room pillar to be robbed back immediately.

In this mine the coal bed is approximately 40 in. thick and the total headroom is about 4 ft. A considerable amount of waste material is separated from the coal at the face. This is thrown into the gob and largely fills it. The roof here encountered is more or less uncertain in quality and requires the use of a fair amount of timber in its support. Inasmuch as the total length of props is only about 4 ft., however, this timbering is not heavy. It consists almost entirely of simple posts with cogs employed only infrequently.

Operation of the conveyor and its application to room driving and pillar extraction are extremely simple. A loading point is first established on the heading. In order to secure sufficient headroom for the conveyor discharge the roof must here be brushed. The room proper is driven narrow, 10 to 12 ft. being sufficient. After the first few cuts have been made in this room the shaking engine may be set up, temporarily if desired, and thereafter the conveyor be employed for loading out all the coal.

Two sections of chute is about the least that can be used successfully. In starting a room, therefore, only the drive and discharge sections would at first be employed. The drive section carries a double fin or keel on its lower side which furnishes a means of attachment to the shaking engine. The discharge section differs from the standard pan in that it is supported at or near either end instead of at one end only. As the room advances section after section of chute is added until full room depth has been attained. Under the conditions here assumed this would be at a depth of 260 ft.

The headpiece accompanying this article is a view looking along the cross or transverse conveyor toward the main conveyor. As may be seen, the headroom is low and the miners for the most part shovel on their knees. It is in low mines that conveyors are particularly useful.

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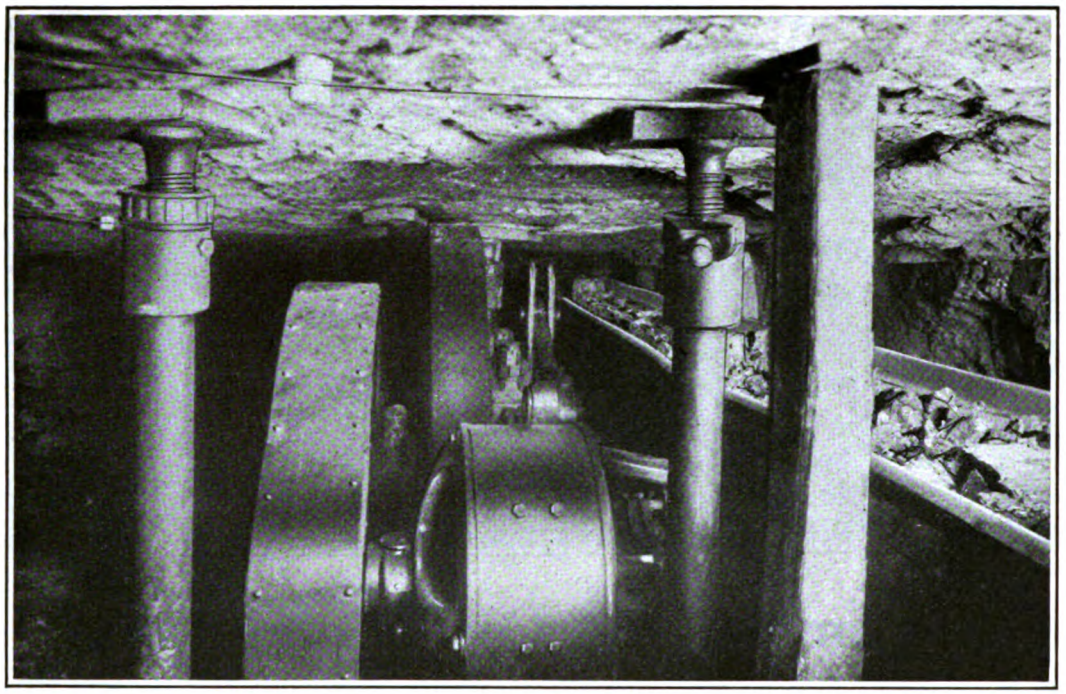

Moving Along

This shows a rear view of the shaker engine with the loaded conveyor beside it in the Kentucky No. 2 mine at Toms Creek, Va. The quantity of coal that this conveyor is called upon to transport is not equal to the full capacity of the machine, so the connecting rod joining the crank to the triangular rocker is shown in this picture pinned into the second or intermediate set of holes.

After the room has attained its full depth a passage or breakthrough is turned from its end and driven through the pillar either right or left as may be desired. The cross or feeder chute serving this breakthrough is driven from the main conveyor in the manner shown in Fig. 1. When this breakthrough has been completed the pillar is brought back by successive cuts taken across the face served by the cross conveyor. During this process section after section is removed from the main conveyor as the pillar face retreats.

This conveyor transports the coal by a combination of a differential oscillation and a vertical movement. The sectional pan carries upon its bottom a vertically curved track made of angle iron within which the supporting rollers travel. On the floor or mounted on blocking depending upon the desired height similar but reversed tracks are placed. The rollers which operate between these two trackways or raceways are wheels about 8 in. in diameter with ¾-in. faces. These are fastened together and held to gage by a 1-in. shaft or axle extending between them. Each pair of wheels therefore constitutes a single rigid roller of light weight that allows the conveyor trough to move back and forth with only a small amount of friction and effort.

As may be seen in the drawing, Fig. 4, the shaking engine is an ingenious mechanical device that imparts a differential oscillation to the conveyor by a combination of an eccentric crank and a toggle joint. This gives a strong mechanism that is positive in its action. The trough moves forward, slowly carrying the coal with it, but is jerked backward quickly. The tracks in which the supporting rollers operate are so curved as both to assist in the movement of the coal and to take advantage of gravity, thus aiding the shaking engine and decreasing its consumption of power. Thus the entire conveyor trough rises as either extremity of the stroke is approached. Upon recession from either end of the stroke the conveyor falls.

Coal upon a conveyor of this kind moves forward in a series of steps or shuffles. The length of oscillation of the chute as well as its speed may be varied by changing the position of the connecting rod in the triangular rocker on the shaking engine, three pairs

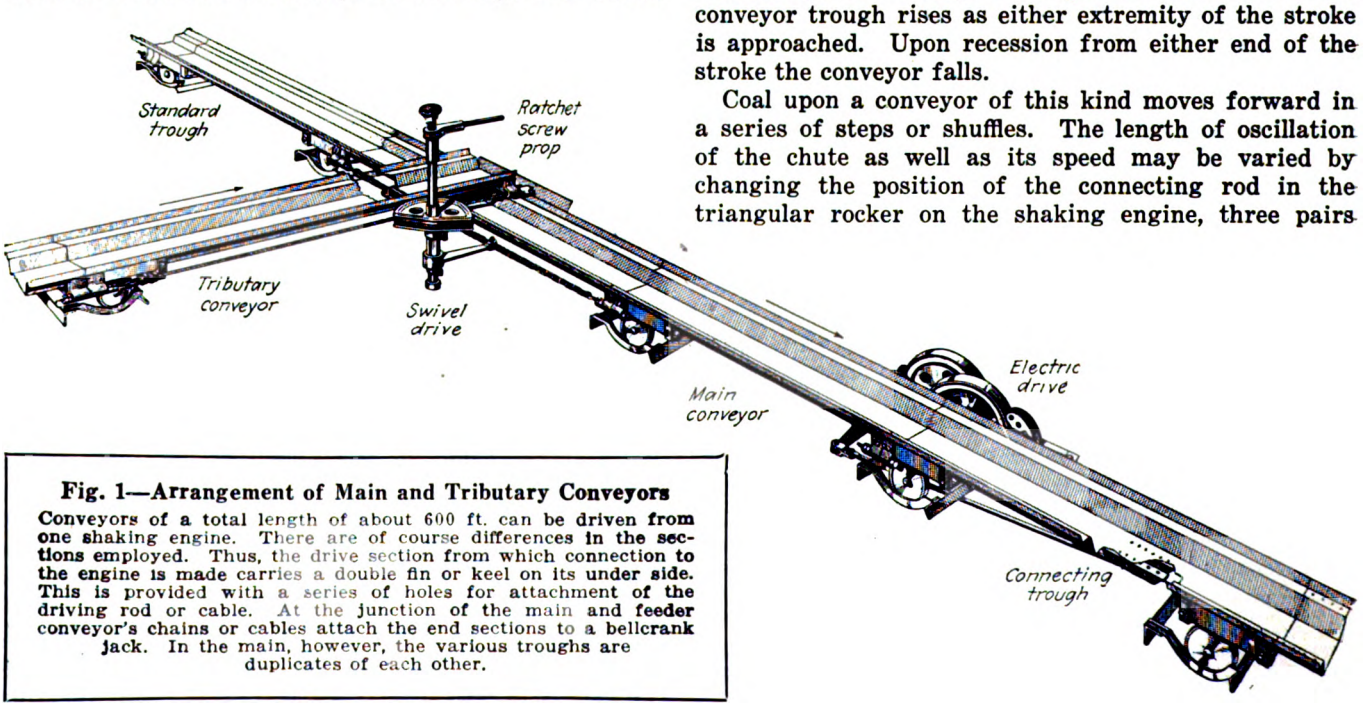

Fig. 1—Arrangement of Main and Tributary Conveyors

Conveyors of a total length of about 600 ft. can be driven from one shaking engine. There are of course differences in the sections employed. Thus, the drive section from which connection to the engine is made carries a double fin or keel on its under side. This is provided with a series of holes for attachment of the driving rod or cable. At the junction of the main and feeder conveyor's chains or cables attach the end sections to a bellcrank jack. In the main, however, the various troughs are duplicates of each other.

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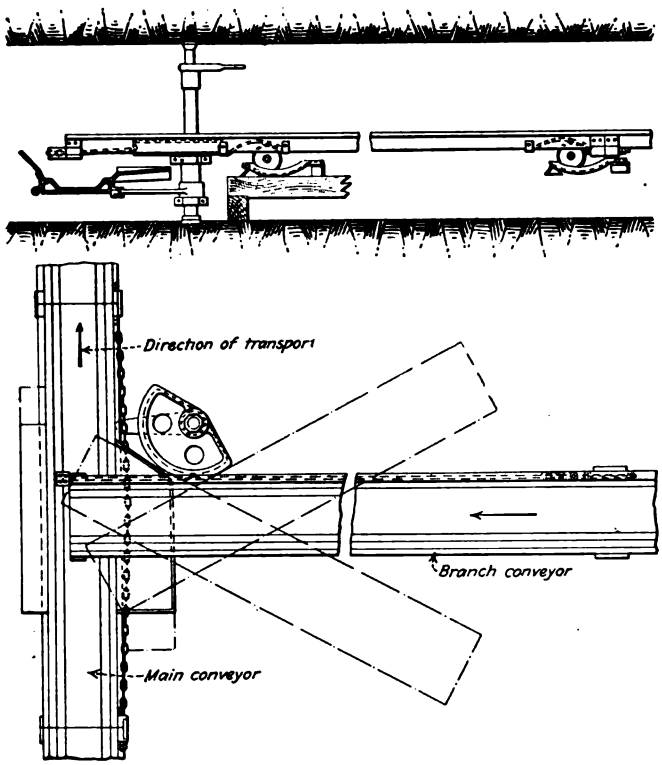


Fig. 2—Cross Conveyor Drive

This shows a quadrant drive which is particularly useful if either conveyor must be slewed from a right angle position. Practically the same result can be accomplished, however, by substituting a second lever for the quadrant here shown, making a true bellcrank. This also reduces the weight somewhat.

of holes being provided for this purpose. When the connecting rod pin is placed in the lower set of holes the operation of the chute is most violent and the steps or movements of the coal are longest. Power consumption likewise is greatest. When set in the opposite extreme position the movement of the coal per stroke is the least, as is also the consumption of power. Accordingly the rod will be connected to the set of holes that will give the desired capacity with the least power consumption. In any case the conveyor makes about one complete oscillation, forward and backward movement per second, or 60 "shakes" per minute.

As shown in Fig. 1, the feeder chute is driven from the main conveyor by means of a lever and quadrant. This device is mounted on a post jack that may be readily taken down and moved as the conveyor is lengthened or shortened. On the last section of the main conveyor a chain is stretched between the deadeyes at either end that serve to join adjacent sections together. This chain passes through and is bolted fast to the end of a slotted lever attached to the quadrant. A cable is stretched tight around the quadrant and is fastened securely to the deadeyes at either end of the delivery section of the feeder chute. Lever and quadrant are free to revolve and slide up or down on the tube of the post jack placed in the angle between the two conveyors.

By this means practically the same motion that is given the main conveyor by the shaker engine is imparted to the feeder chute. At Toms Creek the cable quadrant, as shown in Fig. 1, has been supplanted by a second lever and chain, transforming the motion-transmitting device into a true bellcrank. This both simplifies and lightens the equipment somewhat.

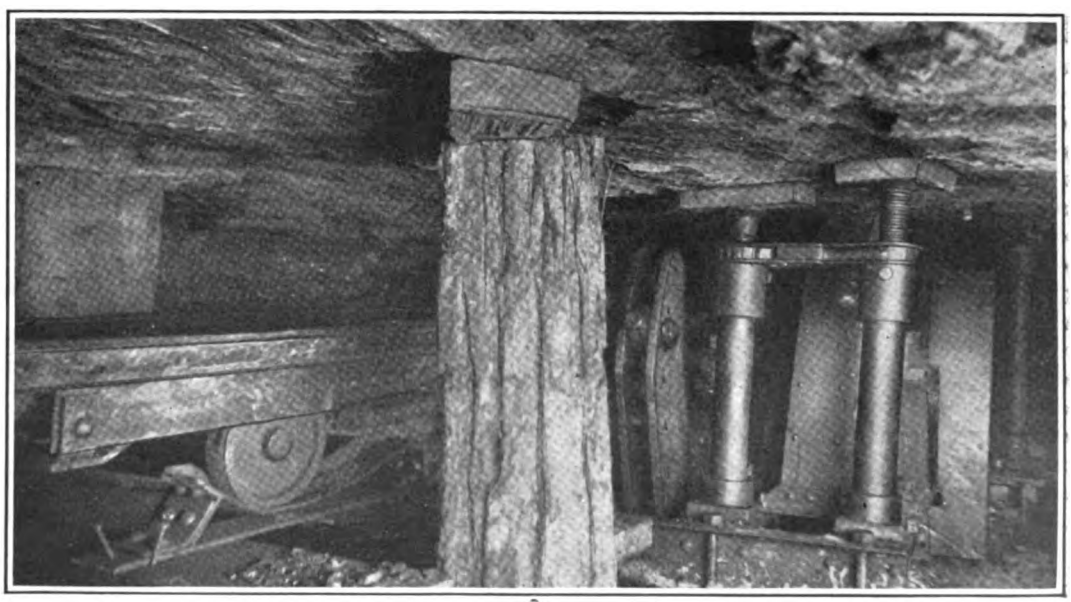
The pans of this conveyor are approximately 10 ft. 2 in. long and overlap 2 in. at the joints, making the net length of each section 10 ft. The metal from which they are rolled is 3 mm. or approximately ⅛ in. in thickness. The cross-section, shown in one of the accompanying illustrations, is such as to afford large capacity and great stiffness. A roller runway or track is provided on one end of each section only. The sections are joined together by means of bolts passed through adjacent deadeyes. It requires only a few minutes to add or remove a section, the only tool necessary for this operation being an ordinary wrench. A ratchet box wrench might reduce this time somewhat.

No mine of any size can be worked successfully with a single conveyor. On the other hand, coal companies wisely hesitate about making the investment necessary to equip an entire operation with machines of this kind until they have demonstrated their possibilities in use.

It will be readily perceived by mining men that a conveyor of this kind lends itself readily to a variety of applications. With 600 ft. of conveyor trough and two bellcranks it would be entirely possible to drive rooms 10 ft. wide and 400 ft. long on 210-ft. centers, bringing back 100 ft. of pillar upon either side of the conveyor. With a series of such rooms in operation the faces could be either stepped or maintained at an angle

Shaker Engine

This is a front view of the electric shaker engine. Lowering the connecting rod to the next set of holes in the rocker arm would increase the amplitude of the conveyor's oscillation and correspondingly increase the machine's capacity. Raising this connection would have an exactly opposite effect. The power consumed would also be affected in a similar manner and in approximately direct proportion.



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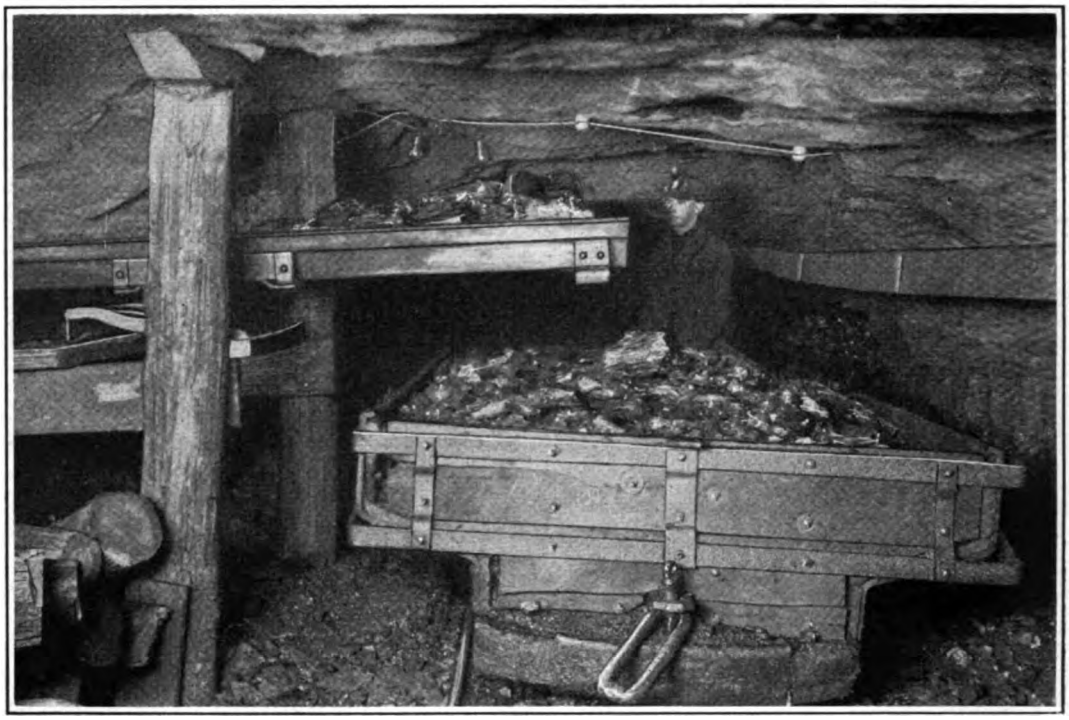
Loading Point

In order to give sufficient headroom at the loading point the roof of the heading has been brushed. The conveyor is blocked up until its discharge end has ample clearance above the car. The trimmer makes no attempt to top the cars, the material being merely piled up to its angle of repose. If too much coal is loaded on a car, some of it will be shaken off on the journey to the tipple. This should be avoided if possible.



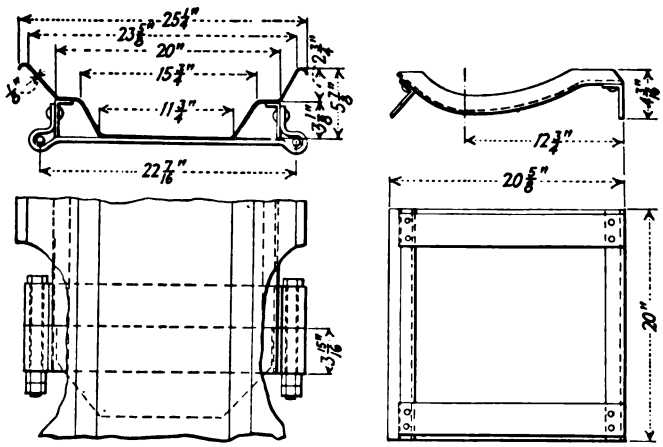


Fig. 3—Details of Trough and Cradles

Several sections of trough can be made each of which is stiff enough to take the thrust of the shaking engine. The contour of the cradles is such as to assist the engine both in stopping and in starting the conveyor at each end of the stroke. They thus aid in decreasing the power consumption

so as to give an oblique breakline for the roof. Room headings in such a case could be driven 800 ft. apart.

Another improvement would appear to be entirely possible if a whole mine were worked by means of these conveyors. The electrically operated shaker engine weighs 4,800 lb. Hence it is heavy and difficult to move especially in the close quarters imposed by thin coal beds. A shaking engine driven by compressed air has been developed that weighs only 1,170 lb. and that takes up far less space than does the electric machine. Although it might at first glance appear to be a backward step to substitute compressed air for electric power, yet where reciprocating motion is desired, air has many advantages—witness the rock drill. If several rooms are to be worked in fairly close proximity to one another, all the conveyor engines could be driven from one centrally located portable compressor installer at some convenient point on the heading.

In capacity, conveyors of this kind approximate one ton per minute. This capacity, however, varies with the size of the pan and the rapidity or violence of its oscillation. In driving rooms or crosscuts a telescoping or extensible section may be placed at the forward extremity of the conveyor chute. The end of this section practically slides back and forth on the floor. This chute will dig under any loose material that may be present, but its action may be much aided by men with picks who can pull down much of the loose material and roll it into the conveyor trough. Arrangements can also be made to slew this section sidewise so that much of

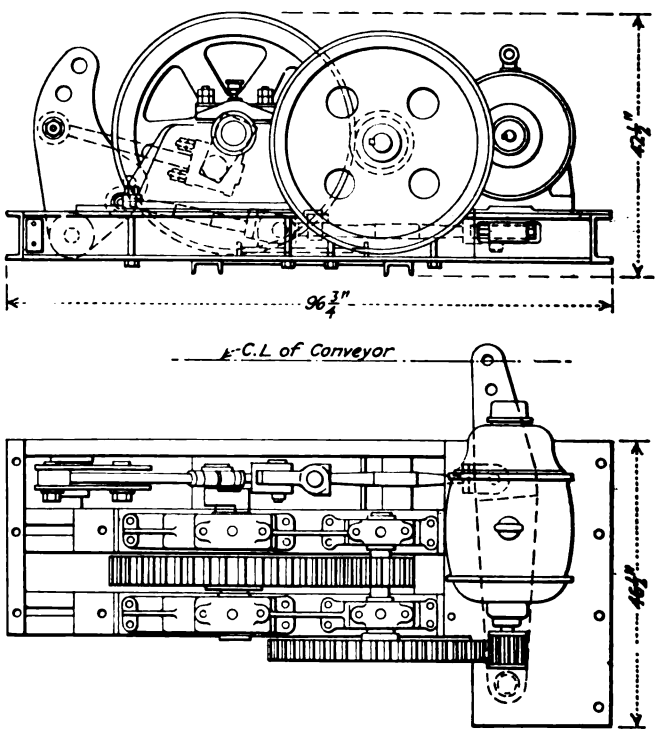


Fig. 4—Electric Shaking Engine

This machine contains two walking beams or levers, one vertical and the other horizontal, the vertical beam transmitting motion to the horizontal lever. By a suitable arrangement of cranks and connecting rods an unequal reciprocation is imparted to the conveyor. The amplitude of this vibration may be adjusted to suit local requirements

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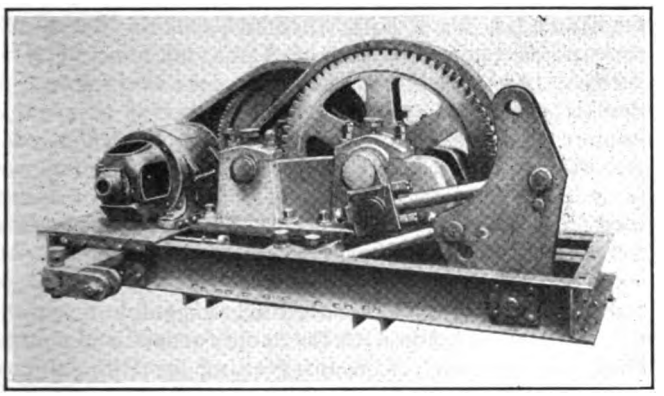
the face can be cleaned up in this way. Usually about four-fifths of the coal resulting from any one fall may be loaded out in this manner by the machine itself without any necessity for hand shoveling. From Wyoming comes the report that an undercut in the face of a room has been cleaned up in 20 minutes by the aid of this extension chute. This gives a hint of the possibilities of this machine in "narrow work."



Side View of Engine

This machine as used at Toms Creek weighs approximately 2½ tons. It is equipped with a 20-hp. direct-current motor and draws its energy supply from the trolley or feeder line.

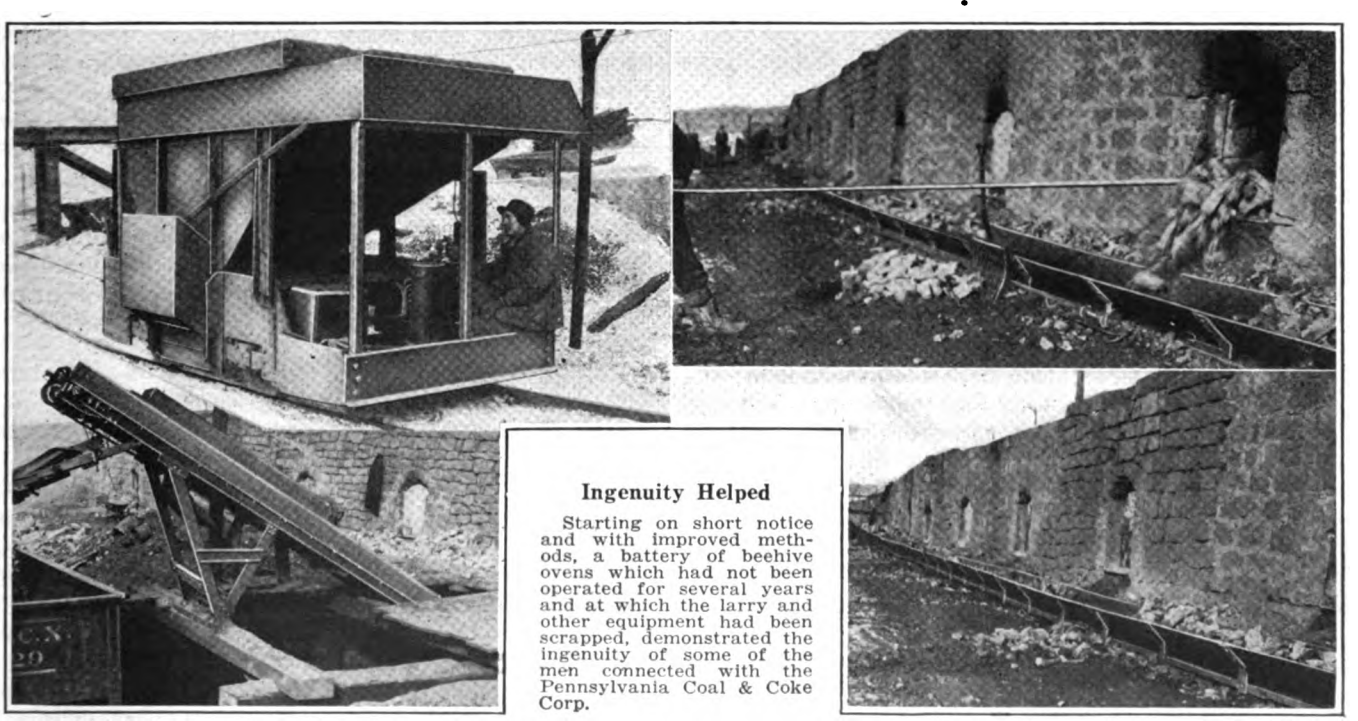
Many of the advantages claimed for the use of the conveyor in coal production are self-evident, but their relative importance will depend largely upon local conditions. Thus the conveyor is low in height compared with a mine car, and the distance through which the coal must be raised in order to be deposited upon it is relatively small. For a given expenditure of muscular energy, therefore, a man can load many times as much coal over the side of a conveyor as he can over the side of a car of even moderate height. In the case of the car much energy is wasted in lifting and lowering the body, whereas with the conveyor muscular effort is confined largely to the arms.

Use of the conveyor obviates the necessity of laying track from the heading to the face. This in turn makes it unnecessary to brush top or lift bottom in these passages. There is no carrying or long-distance shoveling of the coal for the reason that the conveyor is always near the face and consequently close behind or beside the shoveler. This short shoveling distance also entails less fatigue.

With a conveyor the consumption of power is of secondary importance. Inasmuch as mechanical energy costs only a small fraction of the price paid for muscular effort, the mine operator may economically be prodigal in its use wherever it can be made to supplant human brawn in mining operations.

The combined result of all these effects is an increase in the tonnage produced from the employment of a given number of men; or, what is the same thing, the cost per ton f.o.b. railroad car is decreased. This is the ultimate desideratum toward which all operators are striving. It will not be accomplished by the installation of one or two conveyors. Experimentation with a few such units, however, will tend to show the possibilities inherent to complete mechanization and thus point the way to cheaper coal.

Old Beehive Ovens Are Again Pressed Into Service



Ingenuity Helped

Starting on short notice and with improved methods, a battery of beehive ovens which had not been operated for several years and at which the larry and other equipment had been scrapped, demonstrated the ingenuity of some of the men connected with the Pennsylvania Coal & Coke Corp.

The coal larry (upper left) and the combination coke screener and loader (lower left) were built hurriedly in the company shop at Gallitzin. It is here, at the No. 10 mine, that the ovens are located. The larry, which holds approximately 5 tons, was built from an old 4½-ton combination battery-and-trolley locomotive, and from parts of a scrap tipple. No sheets of sufficient size were available for constructing the bin of the larry, so material was "made." Scrap sheets of odd size were cut, fitted, and electrically welded to form large sheets for the sides of the bin.

Acetylene cutting and electric welding, also played an important part in the construction of the coke screener and loader. The screening is accomplished by slots in the bottom plate of the flight conveyor. These miniature bar screens were made by cutting rectangular holes in the plate and welding strips of steel across the openings, forming slots parallel to the direction in which the coke moves.

The upper half of the loader is mounted on a pivoted support in order to facilitate repairs, and cleaning of the pit. When either becomes necessary, the loader is disconnected in the center, the upper section is than tipped to a horizontal position, and the lower portion, which is on wheels, moved out below the upper section.

The two pictures at the right show how an old conveyor is installed in front of the ovens for moving the coke to the loader. This conveyor is one which a few years ago was tried in the mines and found unsuited to underground conditions. The snapshot at the upper right shows the coke dropping directly into the conveyor.

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Surface Damage and Coal Betterment Waken Much Interest at A. I. M. E.

COAL OPERATING PROBLEMS were at the forefront during some of the closing sessions of the American Institute of Mining and Metallurgical Engineers' 133d meeting in New York City on Feb. 17, following the two days' proceedings reported in *Coal Age* last week. In the final coal conferences a notable report on subsidence was made by the Institute's coal and coke committee. Discussions in which coal men took part covered such subjects as coal cleaning, the difficulty of removing organic sulphur from coal, the use of X-rays for differentiating pyrite, shooting as a cause of mine squeezes, the mining of oil sand, and various recent developments in industrial relations.

Evaluation of coal, advocated by R. H. Sweetser in Tuesday's meeting, seemed to be the animating spirit of the paper by A. C. Fieldner and W. A. Selvig, which formed the opening feature of Wednesday morning's coal session. Unfortunately, we have had specifications which assumed a differential value for coals of varying quality, but we have had no scientific and carefully prepared data on which to base those differentials accurately.

It was suggested in Tuesday's meeting that this was a problem that the consumers of coal, the metallurgists, and gas men for instance, could best attack each for his own interest. Mr. Sweetser calls not for general principles so much as for actual figures that will evaluate differentials truly and not arbitrarily, and these Messrs. Fieldner and Selvig did not attempt to give in their article on the "Relation of Ash Composition to the Uses of Coal."

X-Ray Reveals Sulphur

Ansell St. John said that he had made experiments in the use of X-rays to determine the occurrence of ash. The fractures in the coal show much inert matter, and the X-rays confirm the fact that most of it has found lodgment there. Later Mr. St. John said that, in coking, organic sulphur became inorganic, as could be determined by X-ray methods. X-rays passing through truly colloidal matter give a different impression to that given when crystalline material is interposed. The organic sulphur is a chemical part of the colloid; the pyrite or marcasite is a crystal mixed in the mass. The X-ray differentiation is quite sensitive. When 0.2 per cent of crystals were intimately mixed in a mass of colloids, the presence of the crystals was made clearly evident in an X-ray examination of the mixture.

T. M. Chance said that unfortunately the washing of coal sometimes increased sulphur rather than decreased it. Thus, a piece of coal containing 2.2 per cent of organic sulphur and no inorganic might in washing be purified of non-pyritic ash to such a degree that the percentage of sulphur instead of falling to 1.8 per cent might actually rise to 2.8. The coal in the No. 6 bed of Illinois had a high organic-sulphur percentage and in places this fact made it utterly unsuited for coking. H. M. Chance, father of the previous speaker, declared that the presence of organic sulphur was, forty years ago, recognized by A. S. McCreath, of the Second Geological Survey of Pennsylvania. He found sulphur for which he could find a mate neither in iron nor in calcium. The Hay Creek coal field, some 50 miles north of Deadwood and the Black Hills, in South Dakota, has a sulphur percentage in places of 9.31, and none of it is pyritic. In examinations of coal for coke every attention should be paid to the presence in the coal of organic sulphur that could not be removed mechanically. He pressed for a statement whether organic sulphur was as undesirable as inorganic, and got all kinds of assurance from A. R. Campbell and Mr. Sweetser, but he said their statements were largely dogmatic. He would await certainty until a blast furnace in a trial of several days had been run with coke of high organic-sulphur content and comparison made with the same furnace and charge using a coke with a countervailing pyritic sulphur percentage.

Too Low in Sulphur for Washing

Thomas De Venney said that in the coal of the Portsmouth Byproduct Coal Co. there was more organic than pyritic coal, and the coke had the same characteristic. He said that 0.40 is about the lowest level of organic sulphur in coal and that any coal like that of his company that ran as low as 0.50 to 0.60 per cent sulphur was almost beyond beneficiation as far as sulphur was concerned. Mr. Fieldner agreed that 0.40 was about the correct low limit for organic sulphur.

"The Selection of Coals for the Manufacture of Coke" was presented by Harold J. Rose. Mr. Rose declared that experience in the construction of byproduct ovens had made it possible to coke coal having 21.1 per cent of volatile matter, as in Pierce County, Wash. Coal having 34 per cent of volatile matter, and coming from the Pittsburgh seam, had also been successfully coked. The coking time in the first case was 11 hr. 47 min. and in the second case 11 hr. and 40 min.

Mr. Rose showed that the carbon-oxygen ratios gave the best division for the separation of coking from non-coking coals, but said that the oxygen percentage lines would be equally suggestive, as they paralleled the lines drawn to exhibit the carbon-oxygen percentage. The surest way to test cokability was to coke the coal.

The Cost of Coal Washing

T. M. Chance then addressed the institute on the "Mount Union Sand Flotation Plant for the Preparation of Bituminous Coal." *Coal Age* readers can find a description of this plant in the issue of Dec. 3, 1925, pp. 769-773. Mr. Chance showed by a cost sheet that the coal was washed for 9.64c. per ton, including charges for power at 0.9c. per kilowatt-hour, maintenance at $1,200 per month, and fixed charges, taxes, etc., at 12 per cent on $140,000. He added that of the total labor cost of 4.8c. per hour, 75 per cent, or 3.6c., was tipple labor that would be required whether the coal was washed or was passed through the tipple without washing. At least 50 per cent of the rest of the cost would likewise be necessary for a non-cleaning, screening tipple. The total operating cost of such a tipple would, therefore, be about 6.02c. per ton. If hand picking were employed to the extent shown as necessary in the former operation of the Mount Union tipple, an added labor cost, resulting from the need of employing not

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fewer than twenty-five men, would be incurred, or 5c. per ton, making the cost 11.02c. per ton.

At the mining methods session George S. Rice described "Oil Sand Mining in France and Germany." The interest in this for coal men rests in the fact that whereas with exhaustive drilling 20 per cent of the oil can be taken out, with the driving of headings through the oil sand another 40 per cent can be obtained. Perhaps all the sand may be removed in some cases, but at Pechelbronn, in Alsace, and Wietze, to the north of Hanover, Germany, the sand is so loose and the pressure so great that complete extraction is unlikely by any method now in general use. In Wietze all the roadways are driven with forepoling and breast lagging.

The interesting feature of the situation is that oil has been extracted in Texas by Leo Ranney's method of undermining the sand with galleries and drilling upward from these headings to the oil above. Pipes are provided to bring the oil to the shaft.

The intention is to develop this method of mining extensively, as it is said it will be more efficacious, especially when compressed air or live steam is forced into the sand. The purpose is to divide the field by driving galleries so as to cut up the oil area into squares of forty acres each, providing 132 "wells" spaced 10 ft. apart on each side of the square. The mines may be quite deep, but one shaft is less expensive than a multiplicity of deep wells. It is stated that the Standard Oil Co. of New Jersey proposes to give the system a careful trial.

VALUABLE REPORT PRESENTED

In the afternoon the committee on ground movement and subsidence received the notable report of H. N. Eavenson on the surficial effects of coal mining. Its sixty-five pages constitute a book rather than an address, and the mining public owes the committee quite a debt for this elaborate and valuable report. John A. Garcia said that he believed the committee should consider the effect of impact in shooting. Two companies in Illinois worked two seams one above the other, the upper being a drift mine with a 5-ft. seam and lower a shaft mine with a 7-ft. seam. A squeeze in the lower mine was followed by a falling-in of the upper mine, and a suit was brought against the operator of the lower working. A counter suit was brought by the latter, alleging that the squeeze in the lower mine was the result of heavy shots in the upper. In fact, these shots were so heavy that they extinguished lights in the bed below. Mr. Garcia thought shooting an important element in roof movement and pressure.

J. B. Porter declared that the pressure of plastic material increased the effect of concussions such as earthquakes. Plastic material has a different wave period from sandstone, and a concussion is apt to cause side movement. Perhaps there was a plastic bed, he said, between the two mines which had the disastrous experiences narrated by Mr. Garcia.

C. M. Young declared that the roof often tended to choke when falling, and so yielded support. R. D. Hall declared that the roof could not fall far if it choked, and so could not choke except perhaps by an infinite series of falls. Mr. Rice declared that the material could fall at the top of the arch of failure and roll down so as to protect the haunches.

S. A. Taylor said that a certain Englishman in earlier years had definitely stated that subsidence did not occur if the bed mined were ten times as deep as the bed is thick. This erratic statement showed how time modified opinion. Mr. Eavenson said that, in one instance, the extraction of a bed 4 ft. thick and 2,970 ft. deep had caused a marked subsidence—1.44 ft., or 36 per cent of the seam thickness. Mr. Young delivered an interesting address on the ground movement due to a salt well in Hutchinson, Kan. Effort is being made to get information as to subsidences that occur as the result of the removal of oil, sulphur, and salt, but unfortunately the information as to the area and degree of extraction makes any conclusions somewhat nebulous.

INSTITUTE AWARDS MEDALS

At the banquet on Wednesday evening Wilbur Nelson, state geologist of Virginia was toastmaster. The speakers were J. V. W. Reynders, C. L. Kinney, Jr., J. M. Callow, T. C. Denis, G. S. Davidson, Scott Turner, and S. A. Taylor. Award of the Robert W. Hunt medal was made to C. L. Kinney, Jr., for his paper on the "Economic Significance of Metalloids in Basic Pig Iron in Basic Open-Hearth Practice." J. M. Callow was awarded the James Douglas Medal for distinguished services in the concentration of ores, particularly in flotation methods.

W. L. Saunders, it was announced, has provided an award for those contributing in the course of the year the most notable advance in the art of mining. On Thursday morning ninety members of the institute drove to Bear Mountain to see the new suspension bridge across the Hudson, which has the longest suspended span in the world. They lunched at the Bear Mountain Inn and later returned to New York.

A symposium on explosives the afternoon of Feb. 17 began as a hangover from the morning session on mining methods, with R. M. Raymond presiding. Lantern slides were shown illustrating the construction details and method of operating an automatic drill tempering machine. This device will handle and temper one drill steel every 30 sec.

GOOD SHOOTING PRACTICE ILLUSTRATED

It was stated that good practice with hand methods was represented by the sharpening and tempering of drill bits at the rate of 12 pieces per man per hour. The shop cost was about 7c. per piece, making the cost of sharpened steel at the face approximately 10c. An excellent gage of the quality of such steel is the amount of work the user is able to accomplish with each sharpened bit.

Most trouble with drill steel is caused by overheating of the metal. Mr. Stewart stated that he once conducted a test on the tempering of steel and found that his blacksmith was tempering at approximately the critical temperature on a rising heat. Checking this man's work with a magnet showed that it was practically correct. An average of 18 in. of hole in the hardest kind of quartzite was drilled with steels thus treated while in rare instances 36 in. was attained.

Consideration of explosives was then taken up, with B. F. Tillson as chairman. The first paper presented was one by Theodore Marvin, managing editor of *The Explosives Engineer*. This dealt with the blasting of coal in the mines of the United States. Mr. Marvin exhibited thirty-six lantern slides showing good coal-shooting practice under varying conditions. He explained that the arrangement and loading of shotholes must necessarily vary from point to point even in the same mine if the largest reliable percentage of lump coal is to be obtained. Most operators have made no

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consistent effort to better their coal so far as its blasting is concerned.

Mr. Marvin then showed a few slides illustrating somewhat imaginatively the result, on the quality of the product, of using a high explosive and a permissible. He also displayed a second short series showing the effect of cushioned and non-cushioned blasting.

The question was then asked, "What is a high explosive?" The answer was that a 60 per cent gelatine dynamite might be considered typical. Ammonium nitrate is now used as a base for mine explosives. Practically none has a nitro-glycerine base.

Someone then asked what was the maximum percentage of lump produced in American coal mines. The reply was that this depended much on the nature of the bed worked. In most mines, under present conditions, from 33 to 40 per cent of lump is attainable, while some operations realized as much as 67 per cent.

It was then asked "What is the effect, from a safety standpoint, of using delay exploders? Do they cause windy shots?" In reply it was stated that such an effect was not markedly apparent. Practically all the anthracite mined is shot with fuse, the shots necessarily occurring in sequence. Few, if any, explosions in bituminous mines have resulted from the use of delays. In Utah, where the coals worked produce extremely inflammable dusts, the action of these exploders is feared, yet nevertheless some delay caps are being used with good results.

THE POSSIBILITIES OF L. O. X.

The next paper, on "Liquid Oxygen as an Explosive," by Frederick W. O'Neil and Herman Van Fleet, was presented by Mr. O'Neil. An abstract of this paper will appear in a forthcoming issue. There has been much misconception, rumor and conjecture concerning this new explosive, its possibilities and limitations. This authoritative treatise therefore, comes at an opportune moment.

At the conclusion of this presentation someone asked what is the smallest plant to be had for the manufacture of liquid oxygen. It was stated that a plant with a capacity of 16 liters, or approximately 40 lb., per hour is the smallest commercial outfit now procurable.

Several other questions were asked and answered, this discussion bringing out the following salient information: The temperature of exploding L.O.X. is unknown. It is believed to have a long hot flame similar in characteristics to that of black powder. In action it is closely equivalent to 40 per cent dynamite although its speed of explosion propagation or its quickness is the same as that of 60 per cent dynamite. Water forms an excellent stemming, but when used freezes. Cartridges of the new explosive can be made by anyone. About 1⅛ in. is the smallest diameter of cartridge that has been found practicable and this must be fired within 10 min. after being introduced into the shothole. Six-inch cartridges may remain unfired in a rock drill hole for as much as 2½ hr. and still give excellent results.

In closing the meeting Mr. Tillson remarked that it had been an extremely interesting session, highly profitable from an educational standpoint to all who attended it. If the mining industry could have as comprehensive and as authoritative information upon other explosives as quickly after they have been developed as is now available concerning L.O.X. much more rapid progress in blasting methods and practice would be possible.

The group meeting on industrial relations, held Feb. 17, drew only a few members of the Institute, who listened to a paper by George E. Roberts, vice-president, National City Bank, on "Employee Stock Ownership" and an extended recital of what Mitten management has done to promote better industrial relations on the Philadelphia Rapid Transit Co., by J. M. Shore, editor of the street railroad company's employees' magazine. C. J. Hicks, Standard Oil Co., who also was scheduled to address the meeting, did not appear.

PROBLEMS OF THE BIG UNIT

With the growth of society from the primitive system in which human wants were simple and contacts few as compared to the complex, highly specialized social systems of today, the trend away from the small business unit to the big corporation was inevitable, said Mr. Roberts. It requires no stretch of imagination, he declared, to foresee the day when these large units, owned by the employees and the public they serve, will supersede the old system of ownership of a multitude of small industries by many individuals.

Most of the troubles which the bigger unit faces, continued the paper, read in Mr. Shore's absence by his son, are due to the development of the industrial organization beyond the comprehension of the ordinary worker. Nevertheless, fundamentally the complex organization is the same as the simple type. The modern industrial system, however, will break down unless the spirit of co-operation between management and worker exists. The engineer, the author pointed out, is the natural mediator between capital and labor because he understands the problems of both sides. Stock ownership offers the best method of sharing the profits of industry with the worker. It is superior to ordinary profit-sharing schemes in that it adds responsibility.

MITTEN FINDS LIBERALITY PAYS

Mr. Shore's paper explained that Mitten management, by convincing the worker it was fair and ready to share the benefits of improved operation with those who made such betterment possible, had lifted a company facing bankruptcy to a dividend-paying level and had developed an employee ownership scheme which now takes in one-third of the common stock of the company. Under the latest scheme, recently adopted, wages are based on the purchasing power of the dollar, plus a bonus for increased efficiency. The stock owned by the employees, he said, had been purchased out of wage bonuses accruing to the men. These bonuses had been based upon increased gross earnings.

A suggestion thrown out by the speaker that the mine worker was not as intelligent as the street-car employee drew a sharp defense of the mine worker by Sidney Jennings, past president of the Institute, and Clarence T. Starr, Chamber of Commerce of the United States. Doubt was voiced whether conditions in the mining industry were such that a stock-selling scheme would be successful. The position of the mine, beaten to and fro by competition, and of the public utility, enjoying government protection of earnings, was contrasted.

The ladies are taking more and more an active interest in the meetings of the Institute. For them a full program was provided having no relation to mines or metals.

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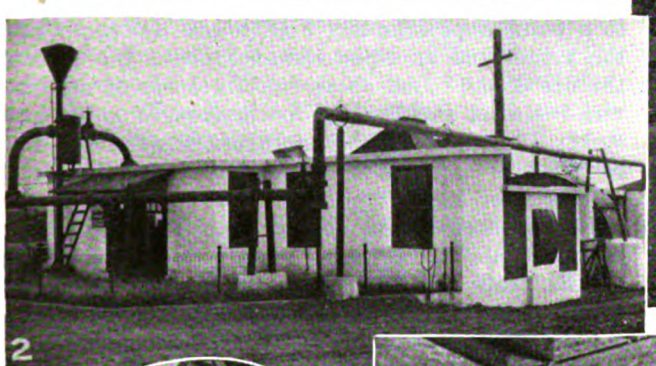
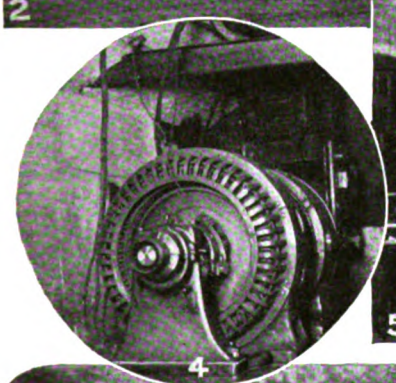
An Enterprising Coal Operation in Alabama

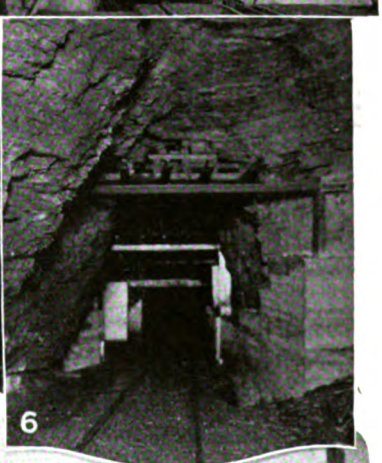
















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Well-Equipped Virginia Mine of the Gulf States Steel Co., at Bessemer

(1) View of the top works showing at the left the lamp house and engine room, and at the right the main slope and steam-driven fan. (2) Close-up view of the fans. In the foreground is steam-driven multi-bladed fan rated at 100,000 cu.ft. per minute, ½-in. water gage, which provides the regular ventilation for the mine. Adjoining it, at the right, is another steam-driven fan, of an older type, which serves as a spare. (3) Main slope and double fan. Note the absence of trash on the surface. (4) The machine in this manually-controlled substation is a 200-kw., 250-volt synchronous motor-generator set. Power at 2,300 volts for operating the set is transmitted from the surface through a 680-ft. borehole by a three-conductor armored cable. Above the machine is an I-beam support for fastening tackle in case heavy repairing becomes necessary. (5) Concrete walls and steel timbers on the main slope below sixth right. At some points on the slope as much as 15 ft. of top has come down. (6) View in lamp house where an addition to the power house engine room provides space for charging and caring for the 285 permissible cap lamps. (7) The 22-ft. roof span in this three-track yard is protected by 12-in. I-beams set on 6-ft. centers. The steel is supported on concrete posts and is lagged with rails and wood. (8) L. E. Rich, master mechanic, inspecting the man trip while L. E. Geohegan, general manager (right), and W. M. Mason, mine superintendent, chat a few minutes before entering the mine.

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Modified Hand Firing Cuts Mine Fuel Consumption

Boilers that Formerly Used 1,600 Tons of Mine Run per Month Were Raised and Feeders Added—Now 700 Tons of Slack Suffices

By J. H. Edwards
Associate Editor

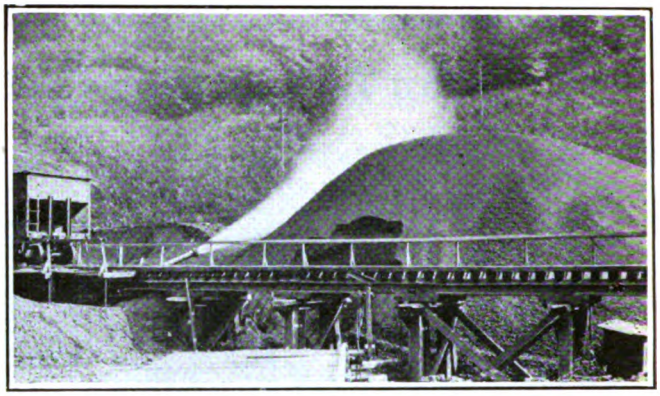
A 56-PER CENT SAVING in fuel consumed at the mine has been effected by the Gatliff Coal Co., of Gatliff, Ky., by a change in firing method and by the investment of a relatively small amount of money in boiler-room improvements. Formerly this company burned mine run coal in its plant while paying the cost of hauling a certain quantity of fine, practically unsalable coal from the tipple to a refuse dump. Today it consumes the fine stuff and markets the run-of-mine.

This plant supplies compressed air and electricity for three mines which produce a high grade of bituminous coal for the domestic market. It is located close to a twin tipple which in addition to the usual shaking screens is equipped with a vibrating screen for removing all coal under ⅜ in. This slack runs so high in ash that it is difficult to market, and much of it was formerly dumped as refuse. It had to be loaded into railroad cars, and hauled several miles.

The power plant equipment consists of seven, 72-in. x 18-ft., 150-hp., horizontal-return-tubular boilers, a steam-driven air compressor, and two generators, one engine- and the other turbine-driven. The boilers are equipped only with natural draft, which is supplied by individual steel stacks. A barometric condenser and spray pond complete the plant layout.

As originally installed, the furnaces were fired by ordinary hand methods, and judging from what the plant engineer and company officials say, it was one continuous fight to carry the load with six boilers. Now the same load is carried easily with but four boilers, burning 700 tons of the slack per month as compared to 1,600 tons per month of mine-run—the former fuel consumption.

This decided saving in quantity, and the change to a lower grade fuel was the result of rebuilding the boiler settings and installing inclined shaking grates and overhead bunkers in combination with furnace feeders. Now only one fireman per shift is needed as compared to a minimum of three under the old system.



The Ash Conveyor in Action

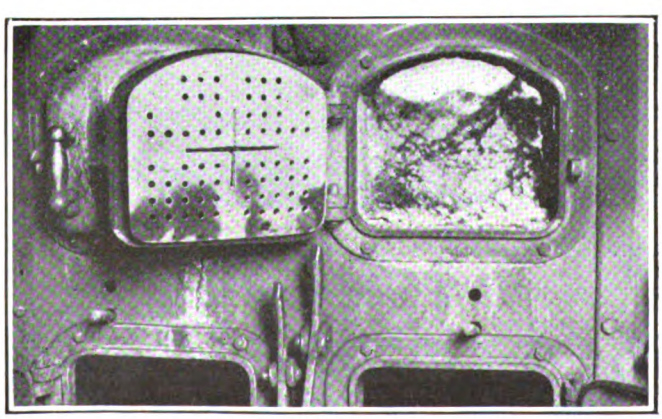
Except for one 30-deg. bend this steam-jet conveyor is a straight pipe. Although this type of conveyor uses about 150 boiler-hp., it need be operated but a few minutes each day. The platform in the foreground is a driveway for a truck which hauls cinders for road making.

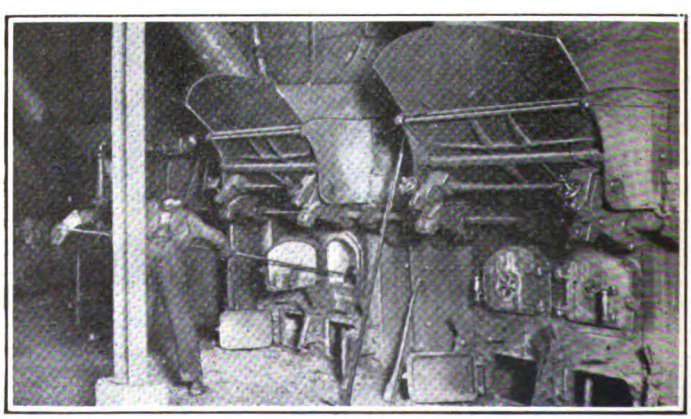
The boilers were raised about 2 ft., bringing them to a point approximately 5 ft. above the upper end of the grate, and an equal distance above the bottom of the fire doors. Just above the fire doors of each boiler was installed the feeding mechanism of a mechanical stoker. The inclined shaking grate, was set on an angle of about 20 deg. and is provided with dumping sections at the lower end.

Fuel is fired by the coking method the feeder being operated intermittently. The coal is dropped in a heap on the grate in front of the fire doors. After a pile about 18 in. high has accumulated the feeder is stopped for a few minutes or until the volatiles have been distilled off. The fireman then opens the door and with two or three strokes of a hoe pushes and distributes the coked fuel down over the grate.

Each fire is cleaned twice a day by the ordinary hand method. Half of the grate is cleaned at a time and the clinker, after being broken up, is dumped at the rear end of the grate. The ash is disposed of by a steam-jet conveyor, the intake openings of which are on the floor in front of the ash pit doors. The ashes are raked up the sloping bottom of the pit and out on the boiler room floor where they are fed into the conveyor openings. There is but one bend in the conveyor pipe, a 30-deg. elbow which gives the discharge the desired elevation.

Inasmuch as the coal is spread by hand and the fires must be cleaned periodically, the method employed at Gatliff differs from hand firing only in that fuel is





New Method Combines Automatic Feed and Hand Firing of These Boilers at a Kentucky Mine

The photograph at the left shows where the mechanical feeder drops the fuel and where it is left to bake for a few minutes before the fireman pushes it down over the grate. This differs from hand firing by the coking method only in that the coal is deposited mechanically instead of by scoop. In the other picture the fireman is spreading the coked fuel. Only two or three strokes of the hoe are necessary. Mechanical feeding minimizes the time that the fire doors must be kept open.

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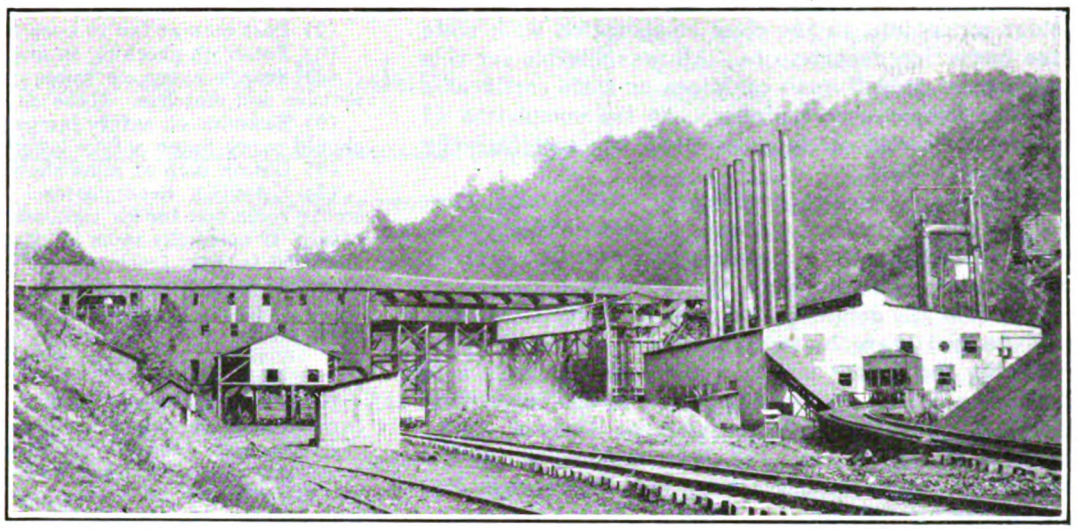
Twin Tipple and Power House

Recent improvements to the tipple included the addition of a conveyor for delivering screenings to the boiler room. At the time the photograph was made the conveyor was not completed, hence the car of fine coal standing at the right ready to be dumped for plant fuel. The boiler room contains seven 150-hp. return-tubular boilers.

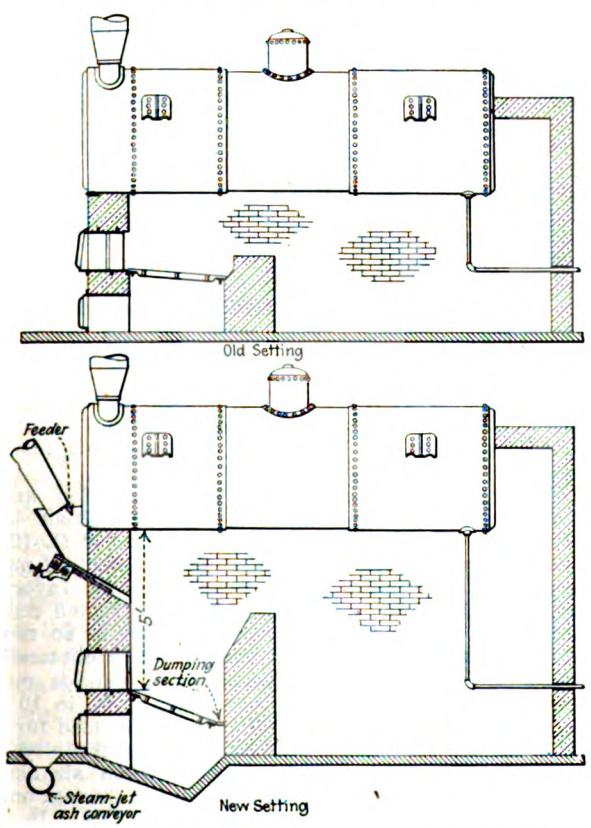


introduced into the furnaces by mechanical means instead of by the use of a hand scoop. The gain creditable to the use of feeders lies in the labor saved and in the better combustion efficiency obtained through a reduction in the quantity of excess air admitted.

A definite volume of air is required for complete combustion of a certain quantity of fuel. Assuming that the correct volume of air is being admitted, then, if the fire doors are opened without first closing the stack damper, there will be an inrush of cold air which will lower the furnace temperature. The waste from this cause is much reduced by mechanical feeding.

No doubt the increased volume of the combustion chamber in the new setting also had a material effect in increasing the efficiency. Still another reason for the better results obtained lies in the fact that there is now but one fireman per shift and therefore no divided responsibility.

Although a large proportion of the hand-fired mine plants have been displaced by purchased power, there still exist a goodly number, at which economies similar to those enjoyed at Gatliff could be realized through additions and alterations to the present equipment. In many instances the mere fact that a mine plant is equipped with horizontal return-tubular boilers is a good indication that it is exceedingly inefficient and therefore a place that visitors are not urged to see. This, however, does not hold true at Gatliff. At this plant the officials point with pride to the boiler room and recount the savings resulting from the improved method employed and the equipment installed.



New Setting Gives Big Combustion Chamber

The principal reason for raising the boiler was to make room for the feeder between the fire doors and boiler doors. This feeder drops the fuel in a heap on the grate, just in front of the fire doors.

Bureau Offers "Graduate" Course In Mine Rescue[1]

By J. J. Forbes[2] and G. W. Grove[3]

A NEW SUB-DIVISION of safety service, called the Safety Extension Service was formed in the Bureau of Mines on July 1, 1925. Soon after the organization of this section one of the important things done was the outlining of a course for coal mining men known as "Advanced Instructions in Mine Rescue and Recovery Operations." This course outlines the duties of all the men at the time of a mine disaster, from the general manager down to the men who do the actual recovery work. A total of 128 mine superintendents, foremen and others who would be in charge of safety and recovery work at mines have finished the course.

The need for instruction of this kind has been recognized for a long time as the local mine organization after a disaster is usually disorganized and has little or no idea of what procedure to follow, thereby losing valuable time, retarding the recovery work, and possibly sacrificing what little chance there may be of saving life.

An effort is made in this course to obtain men who are a permanent part of the mining organization, such as underground officials and superintendents with par-

[1]Published with the permission of the Director of the Bureau of Mines.

[2]Chief engineer, Safety Extension Service, Bureau of Mines.

[3]Assistant mining engineer.

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ticular stress laid on the close co-operation with state mine inspection departments. All men eligible for this course must hold Bureau of Mines or state certificates covering mine rescue training. At the completion of the course a certificate is issued to all who satisfactorily complete the work.

The initial classes were conducted at the Orient Central Rescue Station at Orient, Fayette County, Pa., where the officials of the station and the contributory companies co-operated with the Bureau engineers in working out the details of the course. Fifty-seven men were trained there in four classes of one week each. Following the Orient training, three classes were held at Thomas, W. Va., where 51 officials of the Davis Coal & Coke Co. and representatives of the departments of mines of West Virginia and Maryland completed the course. In addition classes were held at Boswell, Pa., and Glen White, W. Va.

Briefly, this course of instruction starts with a lecture on the properties of mine gases, with particular stress on sources, explosive limits of methane and air, physiological effects, etc. Then follow demonstrations in a small lamp gallery with instruments used in the detection of mine gases, such as approved types of flame safety lamps and the Burrell Methane Indicator.

The course next covers methods for the detection of carbon monoxide or the abnormal conditions found in mines after explosions and during mine fires, using the iodine pentoxide (Hoolamite) and the pyrotannic acid methods, for the quantitative determination of carbon monoxide in blood and air.

After classes have been given a thorough drilling on the instruments used in the detection of mine gases, protective measures against these gases such as are approved and recommended by the Bureau are considered. These include the value of erection of barricades during mine fires and explosions; the use of the self-rescuer and the All-Service gas mask, and finally, all types of self-contained oxygen breathing apparatus. Much time is devoted in classroom work to the proper method of constructing stoppings used in restoring ventilation after explosions and the types of stoppings used for fire seals.

In addition to the lectures and demonstrations for the detection of mine gases and the protection against these gases, classes are taught the different methods of mine air sampling, such as the vacuum tube, water displacement, and aspirating bulb methods; how to take samples from behind seals in fire areas, and, finally, the analysis of mine air.

About one full day is devoted to instructions on the surface organization plan for explosions and fires and methods of procedure for mine rescue crews. It takes approximately five full days or 35 to 40 hr. to complete the course as outlined, three days being devoted to classroom work, and the remaining two days to underground maneuvers. In the underground work the men are given a thorough drilling on how to proceed in case of fire or explosion, and the problems encountered during the progress of recovery operations.

In the outline for the course the following procedure during recovery operations after an explosion is taught:

(A) Signaling (Life Line)—Advance, 2 jerks; Retreat, 3 jerks, and Distress, 4 jerks.

(B) Instructions to apparatus crews before entering mine.

(1) Cut off electric power underground, including telephone and signal wires.

(2) Post man at fan to keep fan in operation.

(3) Establish checking in and out system.

(4) Search everyone going underground for smoking articles and matches. Make no exceptions.

(5) Examine all safety lamps going underground—Who should carry flame safety lamps.

(6) Obtain map of mine showing ventilation.

(7) Establish headquarters for rescue crews. Make smoke room test for air tightness and functioning of apparatus. If no smoke room is available crew should proceed about 50 ft. past fresh air and stop for a few minutes to ascertain safety of apparatus.

(8) Captains of rescue crews take orders only from one in authority as to work and distance of travel. Competent man should be in charge who is familiar with recovery operations.

(9) Examination and checking up of equipment to be carried, such as safety lamp, canary bird, CO detectors, "self-rescuers," chalk, writing pad and pencil, life line, wrenches, nails and screw drivers.

(C) Instructions to rescue crews after entering mine—(Exploration trips should not be undertaken under the following conditions.)

(1) In dense smoke, except with life line and then only to save life, to turn valves, or to open or shut doors essential to recovery operations.

(2) When an explosion from dangerous gas is probable.

(3) When crawling on hands and knees is necessary because of low roof, slate falls or other obstructions.

(4) When necessary to wade in water more than knee deep.

(5) In dangerously high temperature with high humidity.

(6) With less than a full crew of five men.

(7) With apparatus inadequately charged or in unsafe condition.

(8) Unless there is a reserve crew fully equipped at fresh air base except for very short trips.

(D) As soon as the fan has been placed in operation (if out of commission) a fresh air base should be established and telephone communication established to the outside.

(1) Before leaving fresh air base captain of advance crew should be sure that reserve crew is at fresh air base.

(2) Before starting exploration the captain should make sure that each member of the crew has an adequate supply of oxygen for the work which is to be done.

(3) After leaving fresh-air base, crew should proceed carefully in single file with a 6-ft. interval between members of the crew. They should examine roof and roadway, mark with chalk the direction of travel with arrows pointing to fresh-air base, mark the farthest extent of the exploration trip, carefully observe conditions and report to the man in charge upon return to the fresh-air base. All doors should be left as found and not opened any longer than necessary until trip and observations have been made.

(4) Where possible, it is always advisable to make short trips ahead of fresh air—the distance of one or two break-throughs—rather than long and dangerous explorations. Experience has shown that more can be accomplished and the work carried on safer by this method, than by trips far in advance of fresh air.

(5) With crew in proper physical condition and a reserve crew wearing apparatus at the fresh-air base, explorations in flat seams, not to exceed 1,000 ft. (2,000 ft. round trip) in irrespirable gases may be made if necessary, provided conditions are favorable. By favorable conditions are meant a nearly level, unobstructed course, height 5 ft. or more, good roof, air clear, or so nearly clear that vision of the crew is not materially obscured.

(6) For pitching seams (by pitching seam is meant any seam that dips or rises more than 1 ft. in 10 ft.) The maximum distance of 1,000 ft. recommended for flat seams should be reduced proportionally as the pitch increases. Explorations in advance of fresh air should never be undertaken on pitches in excess of 30 deg. unless there is reasonable assurance of saving life. In any event apparatus wearers should take into consideration the difficulties encountered on steep and comparatively steep pitches, such as insecure footing, falls and other obstructions, and be reasonably certain of their ability to return to fresh air unaided.

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Viewpoints of Our Readers

Mr. Reynders Didn't Say Coal Mining Is Safe

On page 200 of the issue of Feb. 4, 1926, Robert Emery criticizes the remarks of J. V. W. Reynders, president of the American Institute of Mining and Metallurgical Engineers, quoted in the issue of Dec. 10, on the ground that Mr. Reynders did not prove the point that he was trying to make. Perhaps this criticism would be valid if Mr. Reynders had been attempting to make the point which Mr. Emery ascribes to him. I listened carefully to Mr. Reynders' address and also read carefully the official version of it printed in "Mining and Metallurgy," and I am sure that Mr. Emery is mistaken in supposing that Mr. Reynders was trying to prove that coal mining is a safe occupation.

Those who heard Mr. Reynders' address realized quite clearly that Mr. Reynders was referring to the extraordinary emphasis that is attached to the number of deaths that occur in coal mining from coal mine explosions. Mr. Reynders made a comparison between coal mine fatalities and traffic fatalities, but he might equally well have used the number of people who were overcome by carbon monoxide poisoning resulting from the use of illuminating gas. In a city of half a million population there were twenty-six deaths from accidental poisoning due to illuminating gas in the past year.

Another way of putting it would be that the general public gives the coal mining industry no credit for the large amount of intelligent and well directed work it has done towards trying to decrease the loss of life in connection with the mining of coal. As a matter of fact, coal is produced in this country not only with the least human suffering per million tons produced of any country in the world, but also with the least amount of human effort.

The inaccurate thinking that most people do in this regard is illustrated by Mr. Emery's use of the fatality rate for the men engaged in coal mining, applying it against the total population of one hundred and ten million. It must be evident that a considerable percentage of the whole one hundred and ten million are small children and old people who are relatively free from exposure to accident hazards. The last census of occupations indicates that only about 40 per cent of the total population of the United States are "gainfully employed."

Even if comparisons are restricted to persons engaged in industry, it it rather absurd to attempt to prove that coal mining is as safe as any other form of occupation, because a moment's reflection will reveal that it is not. A good example is the difference between the occupations of picking strawberries and picking cherries. It is perfectly obvious that a strawberry picker can not possibly fall and hurt himself, whereas a cherry picker (who has to climb a tree) has a good deal of hazard of such an accident. The relative safety of strawberry picking and the relative danger of cherry picking has nothing whatever to do with the persons engaged in those industries, because the hazards are not of their making but are inherent in the occupation itself.

About half of the deaths in coal mining result from falls of roof and coal. Coal can not be broken down and brought to the surface without its falling. The workers engaged in taking it out try not to be under it when it falls but they do not always succeed and accidents result. To attempt to prove that coal mining, where the worker is always dealing with falling material, has as little inherent hazard to the worker as occupations where no falling material is dealt with is an absurdity which I am sure Mr. Reynders would not attempt.

I am glad, however, to be able to agree with Mr. Emery as to the utterly unnecessary hazard incurred by the use of open lights in coal mines. Every effort should be made to prevent gas and explosive dust from accumulating in coal mines, but when accidental accumulations occur they are still powerless to do harm unless a flame or a spark sets them off. If there were any real necessity for the continued use of open lights in coal mines there might be some excuse, however slight, for incurring the hazard of an explosion, but under modern conditions there is no valid reason for the continued use of open light, and any operator who permits an open flame to be used in a bituminous coal mine is incurring a hazard not only to the life of his workers but also of property damage that is entirely unwarranted.

Even when great care is taken to operate a coal mine safely accidents will sometimes occur, as in the case of the Orient No. 2, where a man who knew he was in the presence of explosive gas, and presumably knew the chance he was taking took his safety lamp apart and tried to light it with a match. If all bituminous coal mines were rock dusted, as this one was, large numbers of lives would be saved, as in that instance. It is to be hoped that some time in the near future someone will invent a reliable methane indicator that is convenient to use and will permit the keeping of all flames of every character out of bituminous mines, through doing away with the "safety" lamp.

THOMAS T. READ,
Director of Safety Service,
U. S. Bureau of Mines
Washington, D. C.

Bad Light Causes Loss of 108,000 Years

I have just noted on page 724 of the Nov. 26 issue of *Coal Age* an editorial referring to light and safety. In this editorial I am quoted as being responsible for the statement that 108,000 serious accidents yearly are the result of inadequate illumination.

I am afraid the writer of the editorial has confused some of my statements. You will recall the so-called heatless Mondays during the war, and how every effort was made to conserve our coal supply. Among other things was a demand for the curtailment of illumination generally.

I made an investigation at the time and found that inadequate illumination caused about 18 per cent of our industrial accidents, and the time lost due to these accidents was equivalent to an army of 108,000 men remaining idle for a whole year. The actual number of accidents, however, greatly exceeds 108,000.

R. E. SIMPSON,
Engineer.
Travelers Insurance Co.,
Hartford, Conn.

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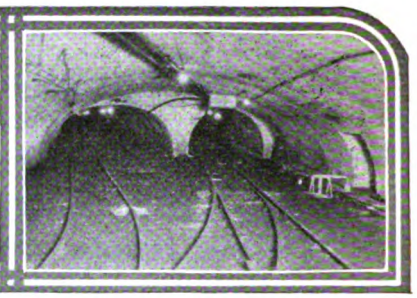
Underground Operation



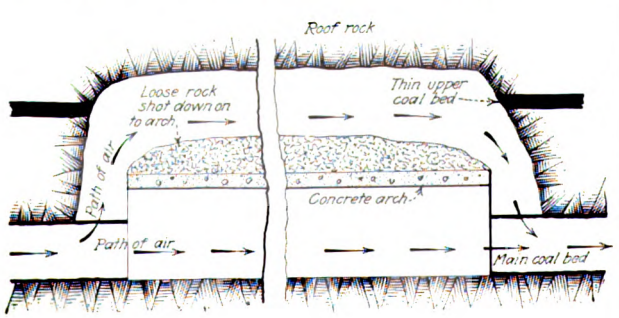
Builds Arch to Ventilate High Roof Fall

In many mines the roof has an extremely inconvenient way of caving, sometimes to great heights. This tendency is aggravated greatly if any slips or horsebacks are present in the roof strata. Whenever such caves reach upward to any overlying coal beds, there is the additional danger of outbursts of gas in the caved area. These must be guarded against, if possible.

In the coalfields of eastern Kentucky such conditions as have been outlined are frequently encountered, and it becomes necessary to forestall by all means possible the accumulation of dangerous quantities of gas near the roof. In one mine in that region roof falls were so heavy locally and the quality of the roof strata was so uncertain that it became necessary to build a heavy concrete arch over one of the main headings for a distance of several hundred feet. This was put in section by section each segment being about 20 ft. long. After each section was completed and had time to set the roof was shot down in small pieces to form a kind of cushion above the arch to receive the impact of future falls should any occur.

Natural caving together with the shooting of the roof as just mentioned carries the fall up through a small coal bed located several feet above the main seam. In order to guard effectively against the possibility of the emission of gas from this upper bed to form a dangerous mixture with the mine air it has been decided that the passage above the arch must be ventilated as well as that below it. To this end a split of air will be taken off the current carried in the haulway. This will be circulated above the arch and returned to the main current after sweeping the roof above the fall and the material overlying the arch which in effect is really a gob area.

How this is to be accomplished may be seen in the accompanying sketch. If sufficient air will not traverse the fall as a simple shunt from the main current, it will be an easy matter to install, in the roadway below the concrete arch, a light curtain or half curtain near the forward end of the fall and thus force the air to take this course. In any case ventilating the top of the fall will sweep out any gas that might otherwise accumulate there and thus render it harmless.



Air Has Full Sweep

Leaving an opening between the end of the arch and the roof permits the air current to clear the space above which is practically a gob area. Any gas coming from the roof or upper coal bed is thus effectively diluted and carried away.

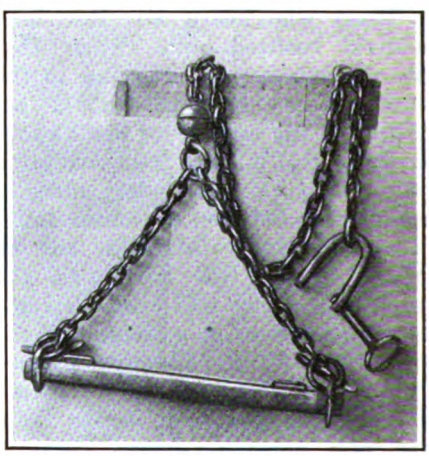
Insulated Draft Chain Protects Mules

Although gathering locomotives have been widely adopted during recent years there are places in almost every mine that can be more economically served by mules than by these machines. It is probable, therefore, that mechanical or electrical haulage will never entirely supplant the "Missouri straw burner" in American coal operations.

Using mules in electrified mines should entail protecting them from shock that they may receive by way of the draft chain. The accompanying illustration shows a spreader and insulated draft chain or a tail chain and butt stick. In this outfit the mule is protected from shock reaching him from the cars by a strain insulator that is welded into and forms a part of the draft chain.

The draft chain proper is made of ⅜-in. iron and is 5 ft. long from clevis pin to insulator. Into the opposite eye of the insulator is welded a ring of ½-in. iron 2¾ in. in diameter. From this ring extend two ⅜-in. chains 21 in. long that terminate in toggles or tees 5½ in. long made of ⅜-in. iron which hitch to the butt stick or spreader.

The butt stick is of hickory 26 in. long. Upon either end are 2-in. ferrules made from 1½-in. pipe. Embracing each of these ferrules and riveted to them is a link into which the tugs or trace chains are hooked. On their opposite ends these links each carry a ½-in. iron ring 2¾ in. in diameter for the reception of the toggles already mentioned. A short distance from the end ferrules the spreader is provided at each end with a brass staple ⅜ in. high and 2¼ in. long in the clear through which suspension straps from the rump spider pass. This device performs a double safety function of much importance. It provides a wooden buttstick that



Hickory Spreader and Insulated Chain

A wooden spreader will not gall a mule as will one made of steel. Furthermore the strain insulator that is welded into and forms a part of the draft chain effectively protects the mule from shock coming from the car or cars hauled.

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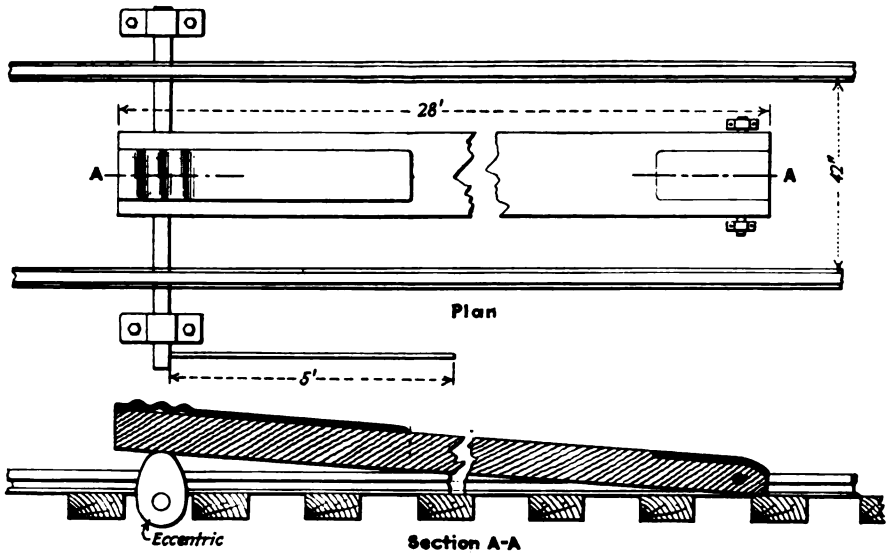


This Device Stops Cars at Head of Slope

At the Frontier, or No. 1 Mine, of the Kemmerer Coal Co., in Wyoming, the cars, after being raised up a slope, have to be dropped back to the tipple, the seam of coal inconveniently outcropping in the hillside and dipping at a steeper angle than the slope of the hill. In order to prevent the cars from running loose before being coupled to the rope, an axle scrubber or rubber is placed between the tracks which can be raised or lowered at one end by the action of an eccentric. As the scrubber sometimes failed to achieve its purpose and let the cars go by, the steel rubbing surface was corrugated at the high end and this was found absolutely efficacious in all cases.

will not gall or irritate the mule's legs, and as the chain is insulated it obviates all danger of shock from the cars.

Curtains Versus Doors in Mine Ventilation

The mine door is an ancient institution. It has been employed in the control of mine ventilation for many generations and consequently has behind it as justification for its use the experience of centuries. Nevertheless, this time-honored device has, and always has had, the shortcoming that it may sometimes be left open. Under such circumstances it becomes inoperative and the air that it is supposed to control may be short circuited with disastrous results. Much trouble, danger and even loss of life has been traced to this cause.

Another device for controlling air currents within the mine, one which cannot be left open but which is usually considered as being too light to be depended upon implicitly, is the curtain. An added objection to the curtain as ordinarily constructed is the fact that it may leak air especially along its lower edge. Furthermore, it is subject to rapid wear inasmuch as it comes in contact with and drags over trips as they pass through it.

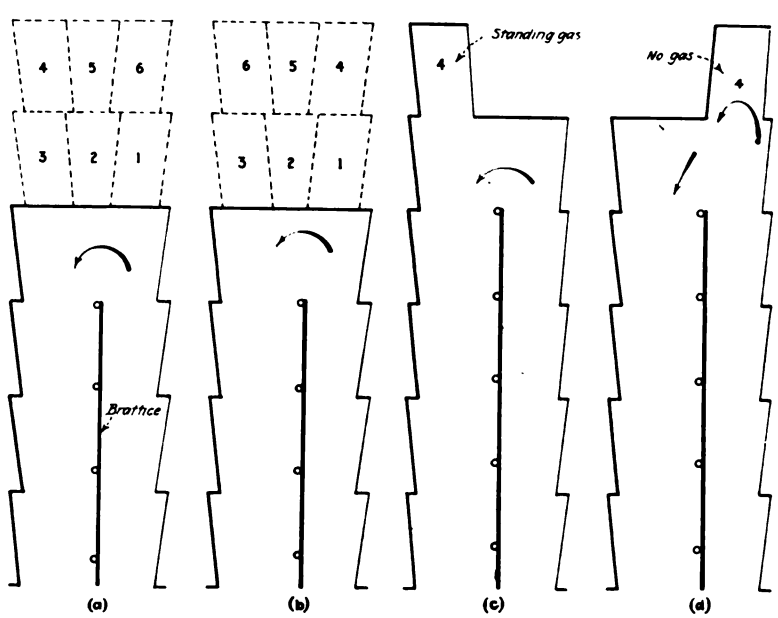
Obviously wear upon a curtain cannot be eliminated. Leakage of air either along the bottom or sides may be stopped by making the curtain large enough to somewhat more than fill the opening in which it is hung. Lightness such as would let it yield to the force of the current and thus leak air can be overcome by adding thickness on thickness until the weight necessary to hold it in place against the air pressure is attained.

Building up curtains in this manner thus surmounts all of the objections that have heretofore retarded their adoption except one. And while this one difficulty—rapid wear—is rather increased than decreased by the additional weight, the advantage obtained may far outweigh it. Thus wear on a laminated curtain is confined almost exclusively to the outer thickness of canvas upon either side. Only these outer sheets require frequent renewal.

On the other hand as it is impossible to leave curtains open, their use assures that the air will at all times be properly coursed and that there is no possibility of the ventilation current being short circuited. Dangerous accumulations of gas are thus obviated.

Ventilation with Mechanical Entry Drivers

With entry drivers that remove the coal at the face in a series of lifts such as are shown in the drawing as 1, 2 and 3, also 4, 5 and 6, the order of operation of the machine has great importance. The natural tendency is to cut section 1, follow by section 2 and 3 and then, without moving the machine sideways, to cut a section 4, as in (a). However, if the entry generates gas it is better to move the machine over and cut section 4 back of section 1 as shown in (b) and the reason for this can be seen in (c) and (d). In (c) sections 1-4 have been cut but section 4 is a pocket into which the air cannot be directed. In (d), sections of the same numbers have been cut, but as section 4 is close to the ventilating brattice cloth the air can be directed into it thus driving out the gas. When sections 5 and 6 are started in turn the same draft of air keeps them free of gas and ready for safe operation.



Way to Ventilate for Machines that Cut Entries by Sections

(a) Sequence that reduces machine moves; (b) Sequence that gives best ventilation conditions; (c) Condition when mining section 4 in sequence (a), and (d) Condition when mining same section in sequence (b).

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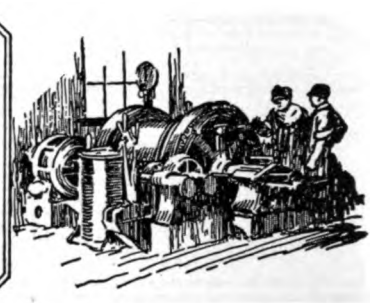
Practical Pointers For Electrical And Mechanical Men

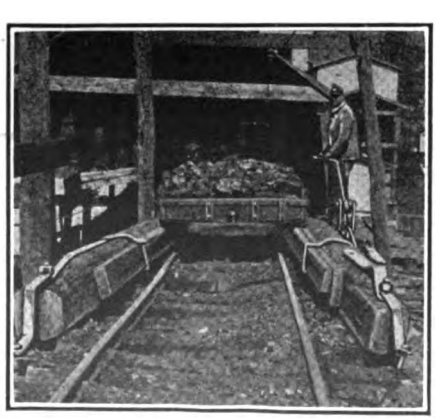


"Squeezer" Made of Planks Does Sprag Duty Reducing Wear and Danger

Of the various ways of retarding mine cars as they approach the dump, the "squeezer" method is one that is little used yet has certain marked advantages over spragging, which is so common at mines not equipped with positive car hauls or retarders. Spragging is not a safe practice. It requires considerable physical labor, and does not afford the certainty and nicety of control that is desirable.

The car squeezer used by the Gatliff Coal Co., at Gatliff, Ky., is shown in the accompanying illustration. Essentially, the device consists of two heavy timbers which parallel the track and rub against the hub caps of the car wheels. At the end where the cars enter, the timbers are spaced a distance slightly more than the car width, and are pivoted so that the opposite ends can be moved in and out to squeeze or release the car.

The timbers are lined with renewable wearing strips of 2x6-in. oak. Movement of the timbers for squeezing the cars is effected by pushing down on a long lever mounted beside the track. Control of the cars is positive, is accomplished with little physical effort, and with no danger to the operative.



Car Squeezer at Gatliff

Forward movement of the loaded trip, which descends by gravity from the mine yard to the tipple, is controlled by the squeezer. The man at the right is holding the operating lever. Braking is effected by pinching the renewable wearing strips of the two heavy timbers against the wheel hubs.

Possible objections to the method are wear on the hub caps and strain on the axle and its mountings. Experience at Gatliff, however, is that the wear on hubs is very slight and that only a very weak car can be damaged by the squeezer.

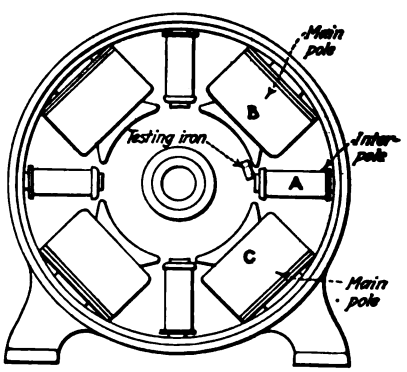
Safe Practice in Connecting Interpoles of Motors

Interpole motors have been in use for a number of years and most maintenance men understand what the interpole is for but some are very much puzzled about the polarity of the interpole in relation to the direction in which the armature rotates. The proper polarity of the interpole and the rotation of the armature in relation to the interpole can be found in the following manner:

In assembling a compound interpole motor, put the field coils in place and connect them in the proper manner so that adjacent poles have opposite polarity, then connect the interpole coils in like manner. After this has been done, connect two adjacent brush holders or brush holder supports together. This is to complete the series and interpole circuit. Next make the connections outside the frame, as for series operation.

Now connect, in series with this circuit, a resistance that will give a fairly strong field in the interpoles and also in the main poles. Next take a short piece of soft steel and try for polarity of interpoles in relation to the main poles and the rotation of the armature, as shown in the accompanying sketch.

Hold the piece of soft steel in front of *A* and *B*, then in front of *A* and *C*. If there is more attraction between *A* and *B* than there is between *A* and *C* then the armature must rotate from *A* to *B*. Mark this on the field frame and put the armature in place and try out as a series motor. If the armature revolves in the opposite direction from that indicated by the test, interchange the lead on the brush holder studs or



Determining Proper Polarity

The direction of rotation will become evident by the use of the piece of soft steel. If there is greater attraction between *A* and *B* than between *A* and *C*, the armature must rotate from *A* to *B*.

supports from the outside of the field frame to the brush holder and the one from the interpole to the brush holder. This will give the proper rotation in relation to the interpole. Next connect the shunt field to correspond to this rotation.

Rimersburg, Pa. J. A. SHAW.

Tractor Dewaters Strip Pit

Stripping coal frequently involves problems in drainage. The accompanying illustration shows how the Hawley-McIssac Coal Co., operating mines at Nebo and Centertown, Ky., dewaters its surface pits. This company some time ago purchased a tractor for each of these mines. Both were fitted with caterpillars.

Above the gas tank of each machine was mounted a centrifugal pump, weighing 450 lb. and capable of handling 500 gal. of water per minute. These pumps are chain driven from the main power shaft. The tractors are driven into the strip pit proceeding out into the water sometimes to hub depth. The pump is here connected and the machine started in operation.

In this condition these machines operate over long periods of time,

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practically without any attention except periodic inspection, refueling, and replenishment of lubricant. Although this type of work is hard on the machines they have withstood it well. The unit at the Centertown mine is now over 18 months old, and



On the Job in a Strip Mine

This shows one of the tractors in the strip pit and gives a good idea of the conditions under which the machine must operate. In this instance, however, the tractor is merely standing idle, neither the suction nor discharge lines being connected. The photograph, nevertheless, gives a good idea of the exacting service to which this machine is put.

has required no replacement of parts. The one at Nebo is only about 8 months old, but has withstood successfully severe daily service.

Starting Batteries Need Special Attention

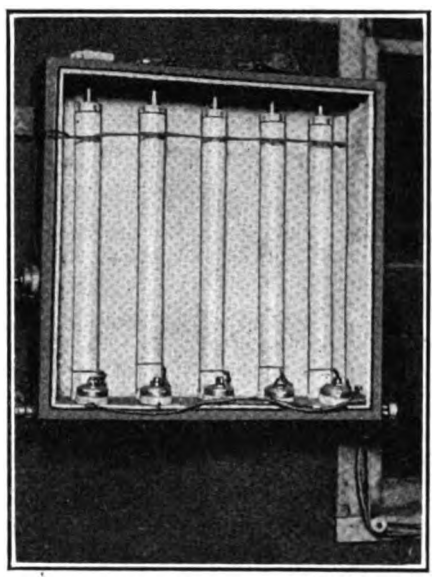
Quick and certain starting of most gasoline engines which are used for mine fan standby service depends upon a small storage battery. This battery in turn depends upon operation of the engine for charging current, as does the battery of an automobile.

As a rule, however, a standby unit is not operated enough to keep the battery charged. It may be the practice to start the engine once a day or once a week in order to make certain that it is in working condition, but it would be an expensive proposition to operate it long enough each time to maintain a proper state of charge in the battery.

It is important, therefore, to provide a convenient means of charging the battery from an outside power source. Where low-voltage alternating current is available, a rectifier will suffice. Where the direct-current mine circuit is available, charging may be done through suitable resistance units.

An example of the latter method is illustrated in the accompanying photograph of the resistance units which are used to charge the battery of the standby fan engine at the Dehue (W. Va.) mine of the Youngstown Sheet & Tube Co. Five 275-ohm resistors in parallel are connected in series with the battery across the 275-volt line. This allows a maximum charging current of approximately 5 amp.

Referring again to generalities, it is not enough to arrange for convenient charging. In addition, some regular schedule of testing the gravity and of charging when necessary should be followed. Only in this way will there be a certainty that the battery will always be charged ready for use.



Starting Assurance for Fan Engine

This group of resistors is mounted on the wall beside a 127-hp. 1,200-r.p.m. gasoline engine which is a standby for fan drive. The engine-starting battery can be placed on charge from the direct-current mine circuit by closing a snap switch.

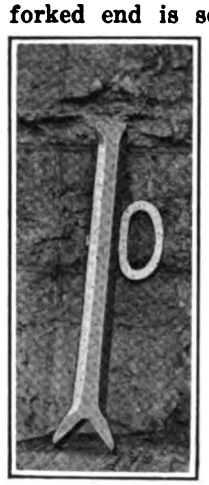
Rerailing Jack Saves Fingers of Its Users

Derailments are all too common accidents in most coal mines. In fact there is scarcely a mine of any size but what has one or more cars off the track every day. Getting such cars back on the rails is sometimes a hard job, especially if the headroom is scant.

One favorite method of rerailing a car is by the use of a fishplate or splice bar. This is used as a prop or slanting jack onto which the car is pushed by the locomotive. One end of the fishplate is placed against the bumper or drawbar and the other against a tie in such a way that the force of the motor will lift and slew the car into place. When so used, splice bars have an unfortunate way of slipping with the result that the fingers of the hand holding the bar are liable to suffer. In fact many fingers have been entirely lost to their rightful owners in this manner.

In order to overcome this difficulty and render the replacement of cars on the track a fairly safe operation the rerailing jack shown in the accompanying illustration has been devised and is being used at the Lynch (Ky.) mines of the U. S. Coal & Coke Co. This consists of a 1¼-in. steel bar, 18½ in. long over all, provided on the side with a suitable handhold. At one end this bar is split, the two halves being flared out to form a crotch that will fit over and firmly grip a tie. The other end is slightly upset, two grooves being forged into it at right angles to each other so as to make it easy to grip the bumper or drawbar of a car, without danger of slippage. The surface of this end is also nicked transversely with a chisel to give the effect of knurling, and assure a firmer grip.

In use this jack is handled exactly the same as the splice bar. The forked end is set firmly astride a track tie and the opposite end against the bumper or drawbar of the derailed car. The jack is given an inclination sidewise that will slew the car toward the track. When the locomotive pushes the car against it when so set the car is lifted and at the same time pushed sidewise against and upon the rails. Only one hand is required to place and hold the jack and even it is protected largely by the handhold. As soon as the jack is held between the car and tie the hand is withdrawn.



Finger-Saver

This little forging is carried on every locomotive in the Lynch mines of the U. S. Coal & Coke Co. It is vastly more efficient and safer in use than a fishplate or splicebar when used as a rerailer. A car slipping on a splicebar while being pushed to place by a locomotive had a great way of snipping off fingers. This jack gets a good hold on both car and tie and no fingers have been lost since its adoption.

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News Of the Industry



Victory of Public in Coal Strike Causes Chagrin to Some Senators Who Voted for Copeland Resolution

By Paul Wooton
Washington Correspondent of *Coal Age*

The prevailing impression in congressional and administration circles is that the public won the coal strike. It is a matter of no little chagrin to some of the Senators who voted for the Copeland resolution that they should have aided in an act calculated to snatch victory away from the public just three days before settlement was reached within the industry itself.

It is apparent to the legislators that the public has learned what to do in the event of a future strike. It has had a practical demonstration that self-protection is a much more effective defense than is political intervention. It has learned a lesson in self-reliance and, as a result, is imbued with a new-born confidence. The net result probably will be that this is the last great anthracite strike in which the present generation of miners will participate.

As to the belligerents themselves, the victory lies clearly with the operators, in that they stopped every offensive launched by the mine workers. The miners had become so accustomed to the squeezing of some concession out of every new wage contract that they are surprised and dazed that they did not get some substantial advantage out of this one. After expending all their strength throughout a five and one-half months' strike and after having brought to bear all of the political influence they possess they got nothing.

The old scale is continued provisionally for five years but the machinery for making the changes provided in the agreement is nothing more than an elaboration of the present method of negotiating by consent. Only on paper is it arbitration.

This conclusion is borne out by an analysis of the steps to be taken if the wage scale is to be changed. Every year either party is free to propose a change, to be considered at a joint conference in the familiar way. If the joint conference deadlocks, both sides promise that the differences are to be referred to a board. Both sides are pledged to abide by the decision. This sounds like arbitration, but the method of appointing the board is the joker in the agreement. One of the members is to be selected from a panel of three named by the miners. The other member is to be selected from a panel of three named by the operators.

The two members may select a third, but, in effect, only with the consent of their respective principals. If, therefore, the board of two deadlocks, neither representative is likely to consent to the election of a third member, who would cast the deciding vote. This probably means that no agreement will be reached during the life of the contract that would either lower or raise wages. The chances all are that the existing wage scale is pegged for five years.

As to the check-off feature mentioned by the Secretary of Labor in his announcement of the settlement, one fails to find it in the text of the agreement. The agreement does say that the question of co-operation and efficiency, which, of course, might include the check-off, is to be referred to the Board of Conciliation. This is another polite way of providing for no action. The board can function only by unanimous consent. An important feature of the agreement is its face-saving element. Concessions of a phraseological character are made to both operators and miners without change in fact.

Strike Costly to Both Sides

While there may be no change in the actual relationships of the two sides, there certainly has been a change of attitude. Each party to this dispute apparently realizes that the strike has established the precedent that the participants themselves must settle their own quarrels. Each side has been reminded again of the hopelessness of bringing about changes by force. Each side has been penalized heavily. As in wars between nations, the cost has proved to be the most forceful deterrent. It will require the sweat of years, figuratively and literally, to meet the financial aftermath.

Three figures stand out with particular prominence in having made it possible to prevent a political settlement of this economic dispute. It was Secretary Hoover who determined the administration's policy. It was the President who took the political responsibility and who adhered courageously to the hands-off policy, even in the face of a Senate resolution. It was John Hays Hammond who suggested and launched the highly successful campaign for the use of substitutes.

Kentucky Power and Mining Companies in Merger

Merger of seven large mining operations at Nortonville, Ky., with Monro B. Lanier, of the Monro-Warrior Coal & Coke Co., Birmingham, Ala., as president of the new corporation, the Norton Coal Mining Co., was announced late last week. The companies included in the merger, all of which are located near Nortonville, are the Norton Coal Co., Sunlight Collieries Co., Illsley Mining Co., Sunlight Mining Co., Magic Collieries Co., Empire Coal Mining Co. and Western Collieries Co.

It is stated that the combined companies have 10,065 acres of land, 6,200 acres of which is owned outright and the balance controlled under leases, with developed mines having a capacity of 1,000,000 tons annually, about one-half of which is obtained from stripping operations. The Norton Coal Mining Co. is expending some $700,000 in major improvements at its properties, including among other things a large electrically operated shovel for its stripping operations at Illsley.

The Kentucky Electric Power Corporation has been organized by the same interests and has taken over the power plant of the Norton Coal Co. and contract has been made with the J. G. White Engineering Corporation, of New York for major additions to the plant, which will supply power for all the mining operations and for general industrial and domestic use in the section where located. A holding company has been formed for both the mining and power properties known as the Kentucky Consolidated Power & Utilities Co., the controlling interest in which is held by the Monro-Warrior Coal & Coke Co., Birmingham, which will act as general sales agent for the output of the mines, with branch offices in Nortonville, Ky., and Chicago, Ill. The Norton Coal Mining Co. has issued $1,000,000 in bonds and the power company $1,500,000, funding all indebtedness.

Officers of the Norton Coal Mining Co. are Monro B. Lanier, president; Sterling S. Lanier, Jr., Nortonville, Ky., first vice-president and general manager; R. L. Schlotman, Nortonville, secretary; John T. Edmunds, Hopkinsville, treasurer; H. B. Robinson, Birmingham, assistant treasurer; T. F. Ellard, Birmingham, assistant secretary; R. D. Lanier, Birmingham, vice-president in charge of sales; J. G. Gaither, Hopkinsville, vice-president. Monro B. Lanier also is chairman of the board of the Kentucky Electric Power Corporation. The Monro-Warrior Coal & Coke Co. has extensive mining operations at Nauvoo, Walker County, Ala.

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Committee Votes Against Confirming Woodlock

Efforts of President Coolidge to have the Senate confirm his recess appointment of Thomas F. Woodlock, of New York, as a member of the Interstate Commerce Commission, received another and unexpected setback Feb. 19 when the Senate Interstate Commerce Committee voted unfavorably, 7 to 6. An unofficial poll some time ago had shown a margin of one for a favorable report. The nomination now goes back to the Senate, which failed to act upon it when it was first presented at the last session of Congress.

When Mr. Woodlock's nomination first was presented to the Senate a year ago there was sharp opposition from Senators from the South who wanted their section represented on the commission. When the nomination was returned to the Senate at this session it was accompanied by that of Richard V. Taylor, of Alabama, who was appointed to succeed C. C. McChord, resigned. Hearings were held on both nominations and that of Mr. Taylor was promptly confirmed.

Mr. Woodlock was called before the committee and questioned during parts of several days, with Senator Wheeler, Democrat, of Montana, leading the cross-examination largely on the basis of Mr. Woodlock's writings on economic and railroad subjects.

Commonwealth Fuel Co. Sold For $3,000,000

With the purchase of the stock of the Commonwealth Fuel Co., of Brooklyn, by Gardiner Pattison, of Pattison & Bowns, of New York, as agent, representatives of well-known families who have been in the coal business in Brooklyn for more than half a century pass out of the retail trade.

Announcement of the purchase of the stock was made last week by Baldwin, Hutchins & Todd, attorneys, of New York, representing the Commonwealth Fuel Co., who stated that the Board of Directors had accepted the offer of Mr. Pattison and that the Brooklyn Trust Co. as transfer agent will soon begin the distribution of the purchase price, said to be in the neighborhood of $3,000,000, to stockholders of record.

It was reported that the purchase of the Commonwealth company was made in the interests of Rubel Brothers, who control 28 coal and ice plants in Brooklyn and Queens. With the acquisition of the Commonwealth Fuel Co.'s 11 plants, the new concern will control and operate 39 plants in the two boroughs.

Richard Wulff, president of the Commonwealth Fuel Co., will continue to occupy that position under the new concern, the Commonwealth company retaining its old name, at least for the present.

Those who will retire as directors of the Commonwealth Fuel Co. are Frank Day Tuttle, Winthrop M. Tuttle, Rudolph Reimer, Richard Wulff, Walter H. Nelson, J. J. Rathjen, W. R. Taylor, W. T. Benedict and Hiram Todd.

The Tuttle family previous to forming of the Commonwealth Fuel Co. were retail coal dealers for many years. The family name of Reimer has been identified with the retail coal business since 1875 and the Taylor family since 1850. Mr. Rathjen also has been in the coal business for many years.

Reject Glace Bay Pact Without Check-Off

Caledonia local of district 26, United Mine Workers, one of the strongest in the Glace Bay (N. S.) sub-district, at a largely attended meeting Feb. 16, unanimously rejected the two-year wage agreement with the British Empire Steel Corporation. The resolution of rejection was in line with the recommendation of the district officers, saying in part: "That the local union goes on record as being unanimous against any contract which does not carry with it the union check-off."

Caledonia local is the first of the score or more locals of the district to consider the proposed agreement, and, according to District President J. W. McLeod, it received short shrift. Mr. McLeod stated that the executives are preparing a statement for immediate issuance to the locals, in which the officers will advise the membership not to accept the agreement unless the check-off is granted.

Resume Work at Euclid Mine

The Pittsburgh Coal Co. started work Feb. 23 at Euclid Mine, four miles from West Newton, Pa., this being the eighth mine of the company in the Pittsburgh district to resume operations on the 1917 scale. Fifty-seven men went to work at Euclid mine, making a total of more than 1,700 men working for the company in the district at the 1917 scale.



Wrecked Tipple at Powhatan Mine

One miner was killed and nineteen were injured—one perhaps fatally—in an explosion Feb. 15 at the Powhatan Mine of the Powhatan Mining Co., 16 miles south of Bellaire, Ohio. Six hundred other miners escaped from the mine without injury.

John A. Bell Properties Sold at Auction

John A. Bell, bankrupt coal operator and banker of Carnegie, Pa., who is under sentence for embezzlement, was shorn of his coal property and realty in the lobby of the City-County Building, Pittsburgh, on Feb. 17, as the auctioneer's gavel banged down on bids for heavily-mortgaged lands.

The sale brought forth bids involving land valued at auction at approximately $275,000, but only about $16,000 changed hands. Mortgages on the properties amounting to $241,500 were assumed by the purchasers.

Outstanding in the sale was the auction of the "Potato Garden Run" tract in Findley township, near Imperial, consisting of 562 acres of Pittsburgh coal and 1,114 acres of surface land. Laden with mortgages of $238,000, the land was knocked down for $150 and taxes to A. D. Robb, representing the Colonial Trust Co., which already holds a $175,000 mortgage on the land.

A bid of $50 and taxes took 45 acres of coal land in West Deer township, which is burdened with a $3,500 mortgage. The successful bidder was C. C. McDermott, of McKees Rocks.

A tract of 197,434 acres in Smith township, Washington County, was purchased by the Hanover Coal Co. for $2,700. Coal and surface was included at this low price. John A. Bell bought this land in 1917.

A tract of 167 acres of coal land in Mt. Pleasant township, Washington County, was purchased by Finkel Brothers, of Washington, for $100. They also bought another tract, which contained about 137 acres, for $2,000.

Other tracts involving small acreages were sold for a few hundred dollars each.

The Carnegie Coal Co., which was one of John A. Bell's holdings, is worth $15,348,240, according to the report of the appraisers, John M. Rayburn and James Donaldson, filed in federal court in Pittsburgh. The appraisers were named after suit had been filed to recover on a $10,000 note by the Harrison National Bank. W. N. Wilshire and C. C. McGregor, receivers, asked for the appointments.

Active and unassigned land is valued at $13,553,250 and railroads, office equipment and docks are valued at $1,794,990, the report shows. The company has a capacity of 2,900,000 tons a year, with a recoverable tonnage of 48,000,000 from the remaining active land, the appraisers reported. There is a recoverable tonnage of 142,000,000 from the unassigned lands, the appraisers stated.

Kills Alberta Union Organizer

Jack Nolan, 35, organizer for the United Mine Workers at Drumheller, Alta., and former boxer, was shot to death Feb. 20 by Constable McKeen, who had arrested him on an assault warrant. Constable McKeen, who is held pending an inquest, said that after he had warned Nolan to desist the latter had made threatening remarks in an argument over bail. The shooting followed.

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D. L. Wing Dead; Was Noted As an Economist

David L. Wing, widely known as an economist, who had specialized in coal for many years, died in Washington Feb. 16, a victim of pneumonia.

Most of Mr. Wing's career had been spent in the government service. Since 1923 he had been engaged in consulting practice, an ambition which he long was prevented from realizing due to the fact that he was drafted by the government to perform first one task and then another.

His first service with the government was in the Census Bureau. Later he was a member of the staff of the Bureau of Corporations. He served with the economic staff of the Federal Trade Commission from 1915 to 1920. He was retained by the Calder commission during its probe of coal. In 1921 he served as a coal specialist with the President's Unemployment Conference. In 1923 he was retained by the Harding Coal Commission to conduct an important part of its work.

During the early days of the Lever act Mr. Wing had to take the real responsibility for fixing coal prices. This was a great responsibility and one which was particularly distasteful to him. He was careful and methodical and never lost an opportunity to point out the inadequacy of the data on which to base conclusions as to coal prices and of the impossibility prescribing a scale of prices that would do justice to all fields.

It is no secret that some of the members of the war-time Federal Trade Commission played politics. Through this period Mr. Wing stood like a rock, insisting that the price determination be made on a basis of fact with adequate margins above cost.

The coal producers probably never have known how much Mr. Wing's courage and integrity saved them by frustrating irresponsible members of the Commission who sought to make political capital out of the disordered market.

Throughout his career Mr. Wing insisted on the necessity for actual data as a basis for opinion or administrative policy. He was a stickler for accuracy, for honest attention to detail and never sacrificed accuracy for interest. If his passion for accuracy at some times led him into a mass of detail it was because of his unwillingness to act without an adequate basis of knowledge.

The seven-volume report on costs which Mr. Wing prepared for the Federal Trade Commission and his equally elaborate studies of cost, investment and profit for the Harding Coal Commission are conceded to be monumental pieces of work. They are the industry's best answer to charges of profiteering. From a scientific standpoint these are the most comprehensive studies of production costs that ever have been made in any American industry.

Mr. Wing was born in Valparaiso, Chile, Dec. 20, 1874. He was graduated from the Massachusetts Institute of Technology in 1898 and later took post-graduate work at Columbia University.

Mr. Wing is survived by his widow, a son and a daughter.



The Late David L. Wing

Big Muddy Dredging Project To Get Further Study

The U. S. Government has not closed the books on the proposed canalization of the Big Muddy River as a coal transportation outlet for that section of southern Illinois to the Mississippi River. In a letter to Congressman E. E. Denison, of Marion, Ill., Maj. Gen. H. Taylor, chief of the engineers for the War Department, has assured a more extended consideration of the project.

"The board considered certain aspects had not been fully covered, and at its recommendation the report was returned to the district engineer for further study."

In a communication to the board of engineers Congressman Denison suggested that Illinois might pay part of the canal project's cost. Major General Taylor expresses keen interest in this suggestion.

The district engineer's report was unfavorable to the project principally on the basis that the government should first develop the main water arteries before undertaking work on streams entirely within the confines of one state.

Motion Picture to Portray Rock-Dusting

A two-reel moving picture captioned "The Story of Rock-Dusting," which is to be made and distributed by the U. S. Bureau of Mines, will graphically portray the manner in which this safety method saved 1,055 miners in an explosion Jan. 29 in the New Orient mine of the Chicago, Wilmington & Franklin Coal Co., at West Frankfort, Ill. The film will be financed by the Illinois company, according to word received by Scott Turner, Director of the U. S. Mines Bureau, from George B. Harrington, president of the company.

Dust Code Wins A. E. S. C. Vote; Other Plans Afoot

Standard practice for rock-dusting mines has been recommended to the industry by the American Engineering Standards Committee. The safety code for rock-dusting sponsored by the American Institute of Mining and Metallurgical Engineers has been adopted by a mail vote of 42 affirmative, 1 negative and 1 not voting. The vote by which the proposed mine ventilating code was rejected, as reported previously in *Coal Age*, was 19 to 9. As only 15 votes were necessary to prevent approval, the code was referred to the sponsors for reconsideration by the sectional committee.

The American Mining Congress and the National Safety Council were voted, in the Nov. 11, 1925, conference of the Mine Correlating Committee, joint sponsors for the code, "Fire Fighting Equipment in Metal Mines." Later it developed that the National Fire Protection Association wished a joint sponsorship in this code, and on Jan. 4 the National Safety Council agreed to withdraw in its favor. A letter ballot will be circulated on the advisability of this change.

In regard to the sectional committee on underground transportation, the American Mining Congress has submitted the following recommendation: That the Congress be given 4 votes; manufacturers of special trackwork material, 3 votes; the American Institute of Mining and Metallurgical Engineers, the Electric Power Club, the U. S. Bureau of Mines, consulting engineers, manufacturers of cars and wheels be each given 2 votes, and the American Railway Engineers Association, the American Society of Civil Engineers and the American Electric Railway Association, 1 vote each.

Consideration Deferred

It has been suggested that the standardization of metal-mine projects be submitted to a separate correlating committee to consist of metal-mine societies and groups. This suggestion will be considered later.

Dr. Lucian W. Chaney, of the Bureau of Labor Statistics, has been appointed the second member of that bureau on the Mine Correlating Committee. G. H. Clevinger will submit a report on standardization of screen sizing tests to his committee and advise the Correlating Committee. The Coal Mining Institute of America will submit a "Classification of Coal Standards" proposed by G. H. Ashley to the Correlating Committee.

O. P. Hood, of the U. S. Bureau of Mines, is preparing a standard code for coal-mine illumination. One on electrical equipment in coal mines which has been prepared is being circulated to the committee to consider this subject.

Secretary Hoover has reached no conclusion as to the merits or demerits of retail price fixing. He points out that business men and economists differ widely on the subject, as do the specialists in his own department.

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Local Strikes Reflect Return to Normalcy in Hard-Coal Fields; See Trouble in Interpreting Pact

Anthracite mining was officially resumed on Feb. 18.

The preliminary formalities to the termination of the longest strike in the history of the hard-coal industry were disposed of without a hitch. The terms of the agreement signed at Philadelphia on Lincoln's birthday were approved by the tri-district convention of the mine workers at Scranton on Feb. 16 by a vote of 698 to 2. The following afternoon the same men who had affixed their signatures to the Philadelphia contract assembled in the office of Major W. W. Inglis, chairman of the anthracite operators' negotiating committee, and signed the formal peace pact.

On the surface all is again serene. Men are trooping back to work, general business in the region is recovering from its long slump and coal once more is moving to the anthracite coal-consuming territory. Normal volume, however, has not yet been reached. Although there were many men who were called back to put the mines into shape prior to last Thursday, there still remains considerable work to be done in some operations. Moreover, many men who deserted the region in the early weeks of the strike have not returned. As if to give patent to the return to "normal conditions," local strikes already have made their reappearance.

The element of danger underlying the surface harmony, as some observers see it, lies in the possibilities of conflict. in the interpretation of the contract. From the viewpoint of the average reader of the agreement—a viewpoint shared by the operators—the new agreement provides for arbitration in unmistakable terms. Nevertheless, leaders of the United Mine Workers, in addressing the tri-district convention last week, denied emphatically that the labor organization had been compelled to accept arbitration.

But the union officials went still further and assured their followers that the new contract was broad enough to cover the check-off and intimated that failure upon the part of the operators to agree to act as the collection agency of the United Mine Workers in the anthracite region would be a breach of contract. "Section 4 of the contract," asserted John L. Lewis, president of the union in his address to the convention, "provides for a plan of co-operation in the industry. We have ofttimes pointed out to the anthracite operators that their industry could be improved in many ways and production costs could be lowered through the application of greater efficiency not alone on the part of the men but on the part of the management, and we have made the suggestions from time to time and we have said to them that if they were applied in a genuine way there would not be any necessity for the least profitable of the anthracite collieries to ask a wage reduction, and Heaven above knows there is no necessity for the greater portion of them, and to that end we presented them upon several occasions with a joint plan of co-operation calling not only for the co-operation of the mine workers but the co-operation of the operators, but they did not like the word 'check-off' as it appeared in the co-operating plan, so we wrote up a plan that did not contain the word 'check-off,' but it is here in Sec. 4, word for word, as we wrote it, but whether it reads 'check-off' or not that is precisely what Sec. 4 means.

"The operators fully understand that what we mean by reciprocal co-operation is co-operation on our part to reduce cost and co-operation on their part by granting the check-off. And they accept and will sign tomorrow this document, which says that the Board of Conciliation, exclusive of the umpire, shall work out a reciprocal program of co-operation efficiency. They shall work it out. It does not say they may work it out. That is a mandatory clause in that contract. That is a mandate just as strong as the English language can state it, and if they do not agree to that clause and work it out, then they are in violation of the contract and they are doing less than their contractual duty—that is the meaning of Sec. 4."

Although it is known that the operators are as firmly opposed to granting the check-off as they were when the strike began, no official reply has been made to Mr. Lewis' contention. This silence, it is understood, is not to be construed as acquiescence in Mr. Lewis' interpretation.

That the union may bring up the check-off before the Board of Concillation under the terms of the new agreement is freely admitted. But that there has been any understanding, express or implied, that the operator-members of the Board would give such a proposal favorable consideration, however, is an assumption vigorously denied by observers who have been following the situation closely. In view of the importance which both sides attach to the question, it seems hardly tenable, in the opinion of these observers, that the union members of the scale committee were in any doubt as to the operators' attitude before signing the agreement.

Wage Board Gets to Work On Kansas Machine Scale

A joint wage board, composed of representatives of the Kansas Coal Operators' Association and members of District 14, United Mine Workers, organized Feb. 5, began negotiations Feb. 11 for the establishment of a machine scale in the Kansas field. The move was necessitated by the increase in the number of machines in the Kansas field in the last year.

Seven Die as Result of Kentucky Mine Blast

An explosion occurred at about 3:30 p.m., Feb. 16, as the day shift was leaving the Nelson Creek Coal Co. mine, six miles from Central City, in the western Kentucky field, caused the instant death of three workers, while four others died from gas, in a rescue effort. Seven others were overcome, of whom three were in a dangerous condition, but all are now expected to recover.

It is thought that the accident was caused by a windy shot a half mile from the shaft.

Rescue work was hampered by impassable roads, doctors with pulmotors who came from Central City having to be transferred from motors to wagons. When they reached the mine, the gas supply for the pulmotors wasn't sufficient to revive all of those overcome.

By evening gas had been fanned out, and every one accounted for. Cecil Fulkerson, assistant mine manager, was one of the first to go in after the explosion, and was carried out unconscious. J. W. Bastin is general manager of the mine and R. S. Lytle, of Danville, Ky., is president of the company.

New Anthracite Prices Out

"Company" anthracite prices, announced following the resumption of hard-coal mining last week, range from $8.25 to $9.15 on broken coal, $8.75 to $9.25 on egg and nut, $9.25 to $9.50 on stove and $6 to $6.35 on pea. Specific schedules of the various companies are shown in the tabulation following:

	Broken	Egg	Stove	Chestnut	Pea
D. L. & W.	$8.25	$8.75	$9.25	$8.75	$6.00
Hudson Coal Co.	9.00	9.00	9.35	9.00	6.00
Phila. & Reading	9.15	9.15	9.40	9.15	6.25
Lehigh & Wilkes-Barre	8.25	8.75	9.25	8.75	6.00
Lehigh Valley	8.50	9.00	9.35	9.00	6.00
Lehigh Coal & Navigation Co.	9.25	9.25	9.50	9.10	6.35
M.A. Hanna & Co.	9.00	9.25	9.60	9.25	6.50

Steam sizes—No. 1 buckwheat, $3 for all companies listed except Hudson Coal Co., which is $3.50; No. 2 buckwheat (rice), $2 for D. L. & W. and Lehigh & Wilkes-Barre coals; $2.25 for other coals; No. 3 buckwheat (barley), $1.60 for D. L. & W. and Lehigh & Wilkes-Barre coals, $1.75 for others. No rice or barley quotations made by Hudson Coal Co., which offers birdseye at $2.

The prices named by the same companies for February, 1925, were as follows:

	Broken	Egg	Stove	Chestnut	Pea
D. L. & W.	$8.00	$8.75	$9.00	$8.75	$5.85
Hudson Coal Co.	8.75	8.75	9.25	9.00	6.00
Phila. & Reading	9.15	9.15	9.40	9.40	6.00
Lehigh & Wilkes-Barre	8.00	8.75	9.00	8.75	5.50
Lehigh Valley	8.50	8.80	9.15	9.15	6.00
Lehigh Coal & Navigation Co.	9.25	9.25	9.50	9.25	6.00
M.A. Hanna & Co.	8.80	9.15	9.85	9.40	6.75

Steam sizes—Buckwheat No. 1, $3 @ $3.15; rice $2 @ $2.25; barley, $1.50; birdseye, $1.60.

All quotations are f.o.b. mines per gross ton.

Delay Horning Report

John I. Pratt, Pennsylvania state mine inspector for the Pittsburgh district, says the blame for the explosion in the Horning No. 4 mine of the Pittsburgh Terminal Coal Corporation on Feb. 3, in which twenty lives were lost, will not be placed until his investigation is completed and a report submitted to the Department of Mines at Harrisburg.

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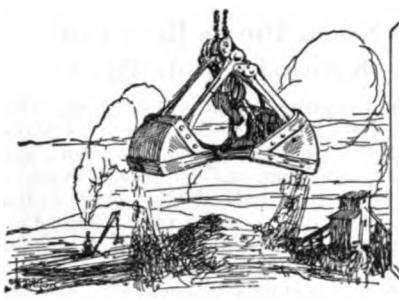
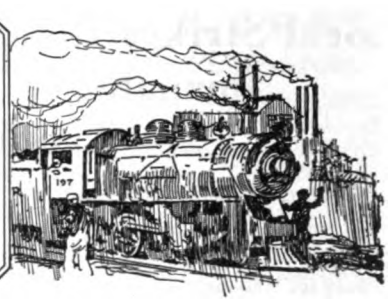


Production And the Market



Coal Market Unsettled, Due to Weather Changes And Sudden End of Strike

The bituminous coal markets of the country are still in a state of flux. Producers and distributors are trying to adjust themselves to the conditions created by the sudden termination of the anthracite strike while endeavoring at the same time to accommodate output to the fluctuations due to changing weather conditions and the uncertainties of year-end industrial requirements. This seesawing, as might be expected, has been accompanied by some upsets in prices which have further decreased average realizations at the mines.

The most cheering feature of the situation is that the decline has been more moderate than some of the pessimists predicted. *Coal Age* Index of spot prices on bituminous coal for Feb. 22 was 170 and the corresponding price was $2.06, as compared with an index number of 173 and a price of $2.10 on Feb. 15. There were some sharp losses in going prices on prepared sizes in eastern markets, both in the high- and the low-volatile grades, and these losses were reflected back in interior markets. Mine-run, too, was weaker along the Atlantic seaboard. As forecast last week, prices on slack are firmer.

Operators Trim Production

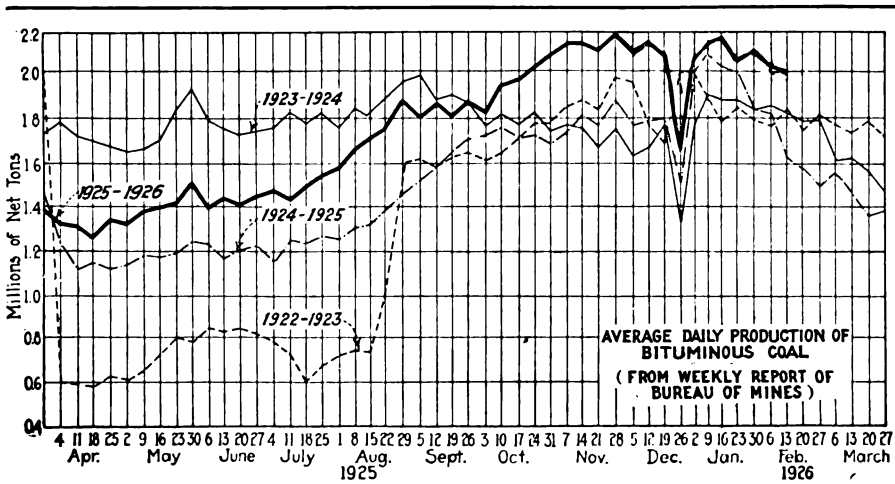
In keeping with the changed conditions operators are effecting a gradual reduction in production. For the second week in the month the output had been pulled down to 12,008,000 net tons. Part of this decrease was credited to the holiday in that week, but loadings on Feb. 15 and 16 gave evidence of the diminished demand for coal. Nevertheless, unless industrial requirements of the country have been grossly underestimated, further curtailment will be necessary before a balance has been struck between supply and demand.

Mining of anthracite was officially resumed last Thursday and some coal reached the New York harbor the next day. It will be some time, however, before there will by any accumulation of reserve stocks. Working forces at the mines have not yet been recruited to full strength, some operations require extra maintenance and repair work to put them into shape and producers are trying to make the present output cover as wide an area as possible. From the retailer's standpoint, this is very desirable, as it will give him a better chance to dispose of his yard supplies and rolling tonnage of other fuels.

Price Reductions Extremely Unlikely

Price announcements made by the big line companies show schedules on the "normal" winter basis. The first shipments of independent coal received at New York sold all the way up to $14 and $15. This basis, of course, cannot be maintained; on Saturday, for example, there were middle houses quoting $10@$12. Independent prices after the first rush probably will settle down to levels 50c.@$1 above company circulars on domestic sizes. Although no official statements have been made, there seems to be little hope that the old line companies will make any spring reduction.

Life has gone out of the Connellsville coke market. For several days last week there was practically no spot buying. New York quotations were on a $6@$6.50 basis, with some reports of offers at $4.50. Spot furnace coke was as low at $4 and some run-of-oven tonnage in small lots sold at $4@$4.25. Inasmuch as recent coke output has been at a rate about 100,000 tons weekly above normal requirements, some drastic readjustments are in order.



Estimates of Production

(Net Tons)

BITUMINOUS

	1925	1926
Jan. 30	11,073,000	12,563,000
Feb. 6 (a)	10,910,000	12,167,000
Feb. 13 (b)	9,758,000	12,008,000
Daily average	1,626,000	2,001,000
Coal yr. to date (c)	415,187,000	472,190,000
Daily av. to date	1,551,000	1,759,000

ANTHRACITE

Jan. 30	1,730,000	34,000
Feb. 6 (a)	1,909,000	27,000
Feb. 13	1,824,000	32,000
Coal yr. to date (c)	75,720,000	40,713,000

BEEHIVE COKE

Feb. 6 (a)	276,000	367,000
Feb. 13 (b)	265,000	357,000
Cal. yr. to date (c)	1,669,000	2,103,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

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Middle West Hails Pessimists

Middle Western coal men are viewing the outlook with jaundiced eye. The retirement of several wholesalers and reports and rumors of pending mine consolidations convince many that the new coal year will be a bad twelvemonth for the optimists.

Further comfort for the pessimists is given in the exceedingly dull state of the current market. Shippers say there is a fair movement of Franklin County lump at the $3 level and a seasonable demand for furnace and egg, but admit that there are hundreds of "no bills" in the southern field. So serious has this situation become that railroads serving the Illinois district are complaining of depleted car supply.

Mines in the southern Illinois district proper are not averaging over three or four days a week. Many are doing less and some are down for the rest of the season. Like conditions prevail in the Duquoin district.

Commercial demand has been cut sharply in the Mt. Olive field, but railroad fuel requisitions have been somewhat heavier. There, too, "no bills" of all sizes plague. The Standard district still is held down in the same old rut of selling too near cost to be profitable. Only the exceptionally situated mine is working better than three days.

Eastern Invasion Grows Stronger

Eastern coals are invading the Middle West in increasing volume—and at decreasing prices. The termination of the anthracite strike lopped off about 50c. from the quotations on high-grade eastern coals. Choice eastern Kentucky domestic sizes are to be had at $2.25@$2.75; less favorably known 4-in. block is down to $2.

Conditions in the St. Louis local market are no better than those ruling in Chicago. Mild weather has squeezed down the domestic demand; industrial movement is light. There is some movement of steam coals to the Missouri River, but the tonnage is disappointing. Local domestic demand, limited in quantity, largely ignores the more expensive fuels.

Profiting—for the time being at least—by the bitter experiences of the past few weeks, Kentucky producers are keeping consignment coal out of the Louisville market. As a result of this self-restraint, less is heard of distress sales and the prices on screenings have shown a slight advance. This increase has had a beneficial influence upon other steam grades.

Kentucky Steam Coal Prices Up

Two weeks ago western Kentucky screenings were quoted at Louisville at 50@80c.; the present range is 80@90c. Slack from eastern Kentucky, offered ten days ago at 60@95c. in the Louisville market and at 40c.@$1.10 in Cincinnati, is now quoted at 60c.@$1 in Louisville and 65c.@$1.10 in Cincinnati. Even wagon-mine western Kentucky mine-run, which sold down to

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	Feb. 23 1925	Feb. 8 1926	Feb. 15 1926	Feb. 22† 1926
Smokeless lump	Columbus	$3.85	$4.35	$4.60	*$4.25@$4.50*
Smokeless mine run	Columbus	1.90	2.55	2.55	*2.40@ 2.65*
Smokeless screenings	Columbus	1.15	1.85	1.85	*1.50@ 1.75*
Smokeless lump	Chicago	3.60	4.60	4.50	*4.00@ 4.25*
Smokeless mine run	Chicago	1.60	2.35	2.10	2.00@ 2.25
Smokeless lump	Cincinnati	3.75	4.60	4.25	**4.25@ 4.50**
Smokeless mine run	Cincinnati	1.85	2.50	2.35	2.25@ 2.50
Smokeless screenings	Cincinnati	1.35	1.25	1.25	**1.25@ 1.50**
*Smokeless mine run	Boston	4.45	4.85	5.00	*4.75@ 5.00*
Clearfield mine run	Boston	1.95	2.05	2.15	*1.85@ 2.15*
Cambria mine run	Boston	2.30	2.35	2.45	*2.15@ 2.50*
Somerset mine run	Boston	2.10	2.15	2.30	*1.95@ 2.25*
Pool 1 (Navy Standard)	New York	2.70	3.05	3.05	2.85@ 3.25
Pool 1 (Navy Standard)	Philadelphia	2.80	3.05	3.20	*2.70@ 3.15*
Pool 1 (Navy Standard)	Baltimore	2.25	2.30	2.30	2.25@ 2.35
Pool 9 (Super. Low Vol.)	New York	2.05	2.55	2.60	*2.40@ 2.75*
Pool 9 (Super. Low Vol.)	Philadelphia	2.20	2.60	2.70	*2.50@ 2.60*
Pool 9 (Super. Low Vol.)	Baltimore	1.85	2.15	2.15	2.10@ 2.25
Pool 10 (H.Gr.Low Vol.)	New York	1.75	2.25	2.30	2.20@ 2.45
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.85	2.35	2.40	*2.00@ 2.30*
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.70	1.95	1.95	1.90@ 2.00
Pool 11 (Low Vol.)	New York	1.55	2.10	2.10	2.00@ 2.25
Pool 11 (Low Vol.)	Philadelphia	1.65	2.20	2.25	*1.90@ 2.00*
Pool 11 (Low Vol.)	Baltimore	1.50	1.70	1.70	**1.75@ 1.80**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.50	1.60	1.60	1.50@ 1.70
Pool 54-64 (Gas and St.)	Philadelphia	1.50	1.60	1.65	*1.50@ 1.70*
Pool 54-64 (Gas and St.)	Baltimore	1.65	1.65	1.65	**1.70@ 1.80**
Pittsburgh scr'd gas	Pittsburgh	2.50	2.65	2.65	2.60@ 2.75
Pittsburgh gas mine run	Pittsburgh	2.20	2.10	2.10	2.00@ 2.25
Pittsburgh mine run (St.)	Pittsburgh	1.95	2.05	2.05	2.00@ 2.10
Pittsburgh slack (Gas)	Pittsburgh	1.30	1.20	1.20	*1.00@ 1.15*
Kanawha lump	Columbus	2.35	2.25	2.25	2.00@ 2.50
Kanawha mine run	Columbus	1.50	1.60	1.55	1.40@ 1.75
Kanawha screenings	Columbus	.75	.65	.65	*.50@ .75*
W. Va. lump	Cincinnati	2.15	2.75	2.50	*2.00@ 2.50*
W. Va. gas mine run	Cincinnati	1.35	1.50	1.45	**1.40@ 1.60**
W. Va. steam mine run	Cincinnati	1.30	1.30	1.25	**1.25@ 1.40**
W. Va. screenings	Cincinnati	.75	.80	.75	**.75@ 1.00**
Hocking lump	Columbus	2.40	2.50	2.50	2.25@ 2.75
Hocking mine run	Columbus	1.50	1.65	1.65	*1.35@ 1.70*
Hocking screenings	Columbus	1.10	1.05	1.05	*.80@ 1.00*
Pitts. No. 8 lump	Cleveland	2.30	2.30	2.30	1.90@ 2.75
Pitts. No. 8 mine run	Cleveland	1.85	1.85	1.85	1.85@ 1.90
Pitts. No. 8 screenings	Cleveland	1.30	1.10	1.00	**1.05@ 1.15**

Midwest	Market Quoted	Feb. 23 1925	Feb. 8 1926	Feb. 15 1926	Feb. 22† 1926
Franklin, Ill. lump	Chicago	$3.10	$3.50	$3.00	$3.00
Franklin, Ill. mine run	Chicago	2.35	2.50	2.50	*2.35@ 2.50*
Franklin, Ill. screenings	Chicago	1.85	1.55	1.55	1.40@ 1.75
Central, Ill. lump	Chicago	2.85	2.85	2.60	2.50@ 2.75
Central, Ill. mine run	Chicago	2.20	2.10	2.10	2.00@ 2.25
Central, Ill. screenings	Chicago	1.85	1.10	1.10	1.00@ 1.25
Ind. 4th Vein lump	Chicago	2.85	3.00	2.85	2.75@ 3.00
Ind. 4th Vein mine run	Chicago	2.35	2.30	2.30	2.25@ 2.35
Ind. 4th Vein screenings	Chicago	1.80	1.70	1.70	1.65@ 1.75
Ind. 5th Vein lump	Chicago	2.50	2.55	2.35	*2.00@ 2.35*
Ind. 5th Vein mine run	Chicago	2.10	1.95	1.95	1.85@ 2.10
Ind. 5th Vein screenings	Chicago	1.55	1.10	1.10	**1.10@ 1.25**
Mt. Olive lump	St. Louis	2.85	2.85	2.75	2.75
Mt. Olive mine run	St. Louis	2.35	2.05	2.15	2.15
Mt. Olive screenings	St. Louis	1.50	1.75	1.40	1.40
Standard lump	St. Louis	2.50	2.45	2.50	2.50
Standard mine run	St. Louis	1.80	1.80	1.80	1.75@ 1.85
Standard screenings	St. Louis	1.25	1.05	.80	**1.10@ 1.25**
West Ky. block	Louisville	2.25	2.00	2.00	1.85@ 2.15
West Ky. mine run	Louisville	1.50	1.30	1.25	**1.25@ 1.50**
West Ky. screenings	Louisville	.95	.65	.75	**.80@ .90**
West Ky. block	Chicago	2.35	2.35	2.35	*1.85@ 2.05*
West Ky. mine run	Chicago	1.35	1.50	1.50	1.25@ 1.75
South and Southwest					
Big Seam lump	Birmingham	2.85	2.75	2.75	*2.25@ 2.50*
Big Seam mine run	Birmingham	1.75	2.00	1.85	*1.50@ 2.00*
Big Seam (washed)	Birmingham	1.75	2.25	2.10	2.00@ 2.25
S. E. Ky. block	Chicago	2.75	2.85	2.60	2.25@ 3.00
S. E. Ky. mine run	Chicago	1.50	1.85	1.85	1.75@ 2.00
S. E. Ky. block	Louisville	2.35	2.75	2.75	2.50@ 3.00
S. E. Ky. mine run	Louisville	1.35	1.55	1.55	1.35@ 1.75
S. E. Ky. screenings	Louisville	.80	.55	.75	**.60@ 1.60**
S. E. Ky. block	Cincinnati	2.25	3.00	2.50	*2.00@ 2.75*
S. E. Ky. mine run	Cincinnati	1.40	1.45	1.35	**1.25@ 1.60**
S. E. Ky. screenings	Cincinnati	.80	.80	.75	**.65@ 1.10**
Kansas lump	Kansas City	4.75	5.00	4.75	*4.50*
Kansas mine run	Kansas City	3.10	3.10	3.10	*2.75@ 3.00*
Kansas screenings	Kansas City	2.50	2.35	2.30	**2.35@ 2.50**

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in heavy type; declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Feb. 23, 1925 Independent	Feb. 23, 1925 Company	Feb. 15, 1926 Independent	Feb. 15, 1926 Company	Feb. 22, 1926 Independent	Feb. 22, 1926 Company
Broken	New York	$2.34	.....	$8.00@$9.25			$9.00@10.50	$8.25@$9.25
Broken	Philadelphia	2.39	.....	9.15			9.00@10.50	8.25@ 9.25
Egg	New York	2.34	$8.50@$9.00	8.75@ 9.25			9.25@15.00	8.75@ 9.25
Egg	Philadelphia	2.39	9.45@ 9.75	8.80@ 9.25			9.25@10.40	8.75@ 9.25
Egg	Chicago*	5.06	8.17@ 8.40	8.08			‡	‡
Stove	New York	2.34	9.25@10.00	9.00@ 9.50			9.60@15.00	9.25@ 9.50
Stove	Philadelphia	2.39	10.10@10.75	9.15@ 9.50			9.60@10.65	9.25@ 9.50
Stove	Chicago*	5.06	8.80@ 9.00	8.53@ 8.65			‡	‡
Chestnut	New York	2.34	9.50@10.25	8.75@ 9.40			9.25@15.00	8.75@ 9.15
Chestnut	Philadelphia	2.39	10.00@10.75	9.25@ 9.40			9.25@10.40	8.75@ 9.15
Chestnut	Chicago*	5.06	8.61@ 9.00	8.40@ 8.41			‡	‡
Pea	New York	2.22	4.50@ 5.50	5.50@ 6.00			6.50@ 8.50	6.00@ 6.35
Pea	Philadelphia	2.14	5.75@ 6.00	6.00			6.50@ 7.00	6.00@ 6.35
Pea	Chicago*	4.79	5.36@ 5.75	5.36@ 5.95			‡	‡
Buckwheat No. 1	New York	2.22	2.25@ 2.85	3.00@ 3.15			4.00@ 5.50	3.00@ 3.50
Buckwheat No. 1	Philadelphia	2.14	2.50@ 3.00	3.00			3.50@ 4.25	3.00@ 3.50
Rice	New York	2.22	1.90@ 2.25	2.00@ 2.25			‡	2.00@ 2.25
Rice	Philadelphia	2.14	2.00@ 2.25	2.25			2.25@ 2.75	2.00@ 2.25
Barley	New York	2.22	1.40@ 1.65	1.50			‡	1.60@ 1.75
Barley	Philadelphia	2.14	1.50	1.50			1.75@ 2.50	1.60@ 1.75
Birdseye	New York	2.22	1.40@ 1.65	1.60			.....	2.00

Due to suspension of mining in hard-coal fields and practical stoppage of shipments, quotations for this date were only nominal and are not printed.

*Net tons, f.o.b. mines. ‡ No quotations.

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90c., is now commanding $1.25@$1.50 for the better grades. Nut-and-slack is scarcer because many operators are screening out the nut coal.

There are some reports of sales of eastern Kentucky block at $3.25@$3.50, but $2.50@$3 is the range at Louisville. Two-inch lump is $2.25; egg, $2; nut, $1.75; mine-run, $1.35@$1.75. Western Kentucky block is $1.75@$2.10; lump and egg, $1.60@$1.90; nut, $1.35@$1.50. Retail buying is on a hand-to-mouth basis. Middle houses are starting to seek contract renewals.

The coal trade at the Head of the Lakes is debating the question of the future of anthracite in the Northwest. It is estimated that 20 per cent or more of the normal hard-coal tonnage in this territory was replaced by other fuels the present season, but anthracite dock interests hope to recover lost ground and arrangements are under way to move the normal quantities up the lakes during the navigation season.

Shipments from Docks Decrease

Compared with January, there has been a falling off in shipments from the docks this month. Nevertheless, there is a substantial reduction in the stocks on hand. Although retail buying has been reduced to a minimum, the docks do not expect to carry over any smokeless coal into the new season and prices are firmly held. Demand for coke exceeds the supply.

There is a better movement of gas and steam coals to industrial consumers. March bookings show satisfying increases over February orders, notwithstanding the fact that the iron mining companies have been buying lightly. Stocks of screenings are melting down and prices on fine coal are stiff.

Domestic trade at the Twin Cities is a weather proposition. With the end of the anthracite strike, steam coal buyers have settled back into their old rut of indifference. Prices are weakening and the appearance of distress coal has not improved the situation from the seller's standpoint.

Milwaukee Demand Light

Milder weather has slackened the demand for coal in the Milwaukee market. Retail prices on nut and range coke are off $1. This may be attributed to the end of the anthracite strike. The local trade, however, does not look for any early heavy shipments of hard coal to this territory, but the supply of other acceptable fuel for domestic consumption is ample.

The southwestern market is growing weaker. No prepared grade of Kansas coal now brings above $4.50 and many operators are glad to receive $4.25. There are approximately 300 "no bills" of lump and nut on track and about 125 cars of screenings. Prices on the latter, however, are firm. Most shippers ask $2.35 and demand $2.50. Retail stocks are light. Few mines are doing better than three or four days a week.

There has been no increase in domestic demand for Colorado coals. Running time has been cut to an 80 per cent basis, but "no bills" continue to accumulate. Prices, nevertheless, are unchanged and no reductions are contemplated. Transportation conditions are excellent and there is an oversupply of labor.

"Rotten" is the way Utah operators describe business. There has been a heavy slump in demand for all prepared sizes, with nut the chief victim. The backbone of current movement is the consumption by the mining industries. "No bills" are a troublesome handicap, but no changes have been made in prices. Short running time is stiffening the market on slack.

Cincinnati Market Seesawing

In this period of readjustment, there is considerable seesawing of prices in the Cincinnati market. This movement has every appearance of continuing until some firm ground for future business is reached. High-volatile slack, for example, is stronger, but prepared sizes are weaker. Smokeless mine-run also is softer, but the low-volatile market as a whole seems to be holding its ground.

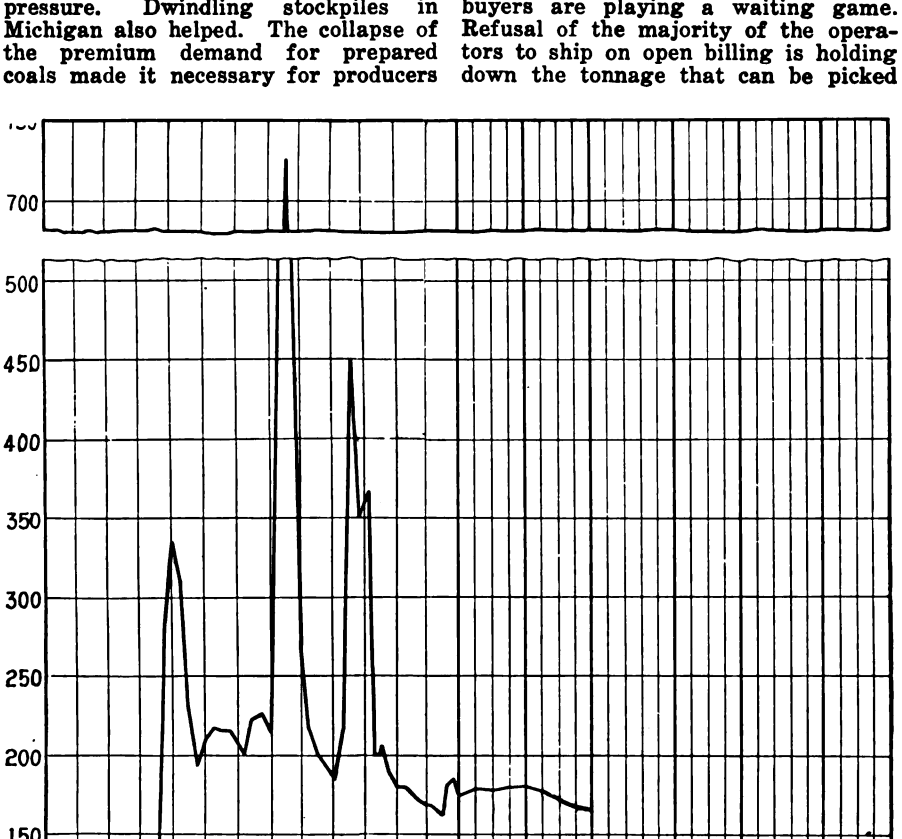
A number of factors have entered into the market on slack. The diversion of several hundred cars to Lake Erie ports for lake loading lessened the pressure. Dwindling stockpiles in Michigan also helped. The collapse of the premium demand for prepared coals made it necessary for producers to hold to higher figures for slack coal. This same necessity strengthened mine-run quotations.

The present week probably will see a change in smokeless quotations. Weakness already is in evidence in Detroit and Chicago and there is no reason to believe that Cincinnati will escape. Lump and egg toward the close of last week were offered at $4.25@$4.50. Mine-run was off 25c., but this loss was made up in the prices asked for slack.

Movement of coal through the Cincinnati gateway dropped sharply last week. The total number of cars interchanged, according to the American Railway Association, was 12,120—a decrease of 1,223 cars. The greater part of the decrease was on the Chesapeake & Ohio Ry.

No Life to Central Ohio Trade

The coal business in central Ohio is featureless. Retail trade has been less active—the result of warmer weather—retail prices, however, are well maintained. There is little distress coal to upset the market. Steam buyers are playing a waiting game. Refusal of the majority of the operators to ship on open billing is holding down the tonnage that can be picked



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926				1925	1924
	Feb. 22	Feb. 15	Feb. 8	Feb. 1	Feb. 23	Feb. 25
Index	170	173	177	178	168	184
Weighted average price	$2.06	$2.10	$2.14	$2.16	$2.03	$2.23

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.

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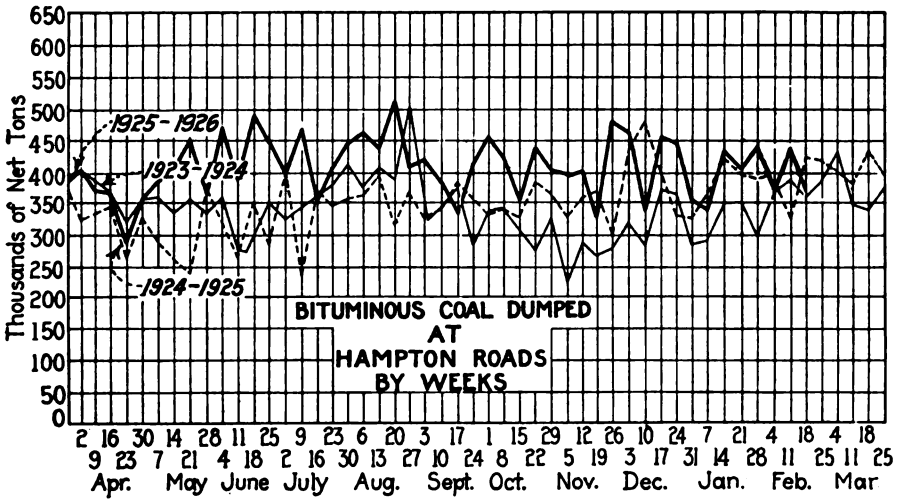


up at bargain-counter figures. A few industries are beginning to make inquiries about contract renewals.

Production in the southern Ohio field is under 20 per cent of capacity. Some of the larger mines have closed down and will not reopen until the lake season is under way.

Northern Ohio shippers, like their more southerly breathern, also complain of poor domestic demand. Nominally, prepared coal prices are unchanged, but distress offerings are having a depressing effect upon the actual spot transactions. Quotations on screenings, on the other hand, have advanced a dime as a tribute to decreased production arising from the lessened movement of prepared sizes.

The No. 8 field produced approximately 270,000 tons during the week ended Feb. 13. This was 38 per cent of capacity. Compared with the preceding week the output decreased 26,000 tons.

Pittsburgh Returns to the Husks

Predictions that the end of the anthracite strike would mark the end of eastern retail buying of Pittsburgh district egg coal have been swiftly verified. It is now forecast that the $2.75 @$3.25 range on that size will sink to $2@$2.25. Demand from regular customers also has lightened. Slack has been under increasing pressure and quotations weakened to 90c.@$1 on steam and $1@$1.15 on gas slack. Decreased lump production, however, may soon change this drift. The district as a whole is producing about 30 per cent of capacity.

Central Pennsylvania quotations have slumped and the future is uncertain. Pool 1 was offered last week at $3.10 @$3.45; pool 9, $2.60@$2.75; pool 71, $2.85@$3.10; pool 10, $2.35@$2.45; pool 11, $2@$2.10; pool 18, $1.85@$1.90. Slack is $2; prepared coals, $3.50@$4.50. District loadings the week ended Feb. 13 were 22,385 cars, as compared with 21,137 cars the week preceding.

Buffalo bituminous shippers are still struggling to recover from the effects of the sudden termination of the anthracite strike. Slack has sold at Canadian points within the past ten days at 10c. and it is difficult to get $1 at the mines. Nominally, however, the price range is unchanged from that of recent weeks.

New England Still Favors Anthracite

In spite of the official ballyhooing for bituminous coal, the anthracite settlement has taken all the starch out of the market for substitute fuels for domestic consumption in New England. Retail dealers are more anxious to unload stocks on hand than to order forward more cars. On top of this, the industrial consumer is again showing a lack of interest in the market.

Prices dropped off over night. Prepared smokeless fell from $8 net, f.o.b. mines, to $4.75, with some central Pennsylvania offerings at $3.25. All-rail Pennsylvania is back in the doldrums of last summer. Shippers, of course, will try to hold a market for screened coal, but the success of their efforts appears very dubious.

F.o.b. Hampton Roads, the prices have softened to $4.75 per gross ton for everything except Navy Standard, which is $4.85@$5. Contract tonnage is moving in fair volume, but inquiry for spot cargoes is light. For inland delivery the price on cars at Providence has dropped from $7 to $6@$6.15. At Boston, the slump has been less pronounced.

Cancellations Swamp New York

There has been such a wave of cancellations of orders received by the New York trade that some shippers question whether the retailer is not over-estimating the capacity of the hard-coal mines to make prompt deliveries. Coke has been the hardest hit. Sized coke is down to $6.50, with some reports that business could be booked at $4.50. Local retailers, however, paid $15@$18 for loaded boats in New York harbor.

Bituminous mine-run is holding its position. The best coals are well sold up and prices are steady. Cheaper grades were slightly easier. Prepared sizes of high-volatile, on the other hand, dropped $1, and smokeless nut and egg declined $2.50@$3.50. Congestion at the piers has given the tidewater market a strong tone.

Delays in transportation retarded the slump in the Philadelphia bituminous market last week. Prices declined about 25c., but further recessions are expected after the rail congestion has been cleared up. The local coke market has gone to pieces. Oven prices on sized coke are down to $5@$6, with no demand.

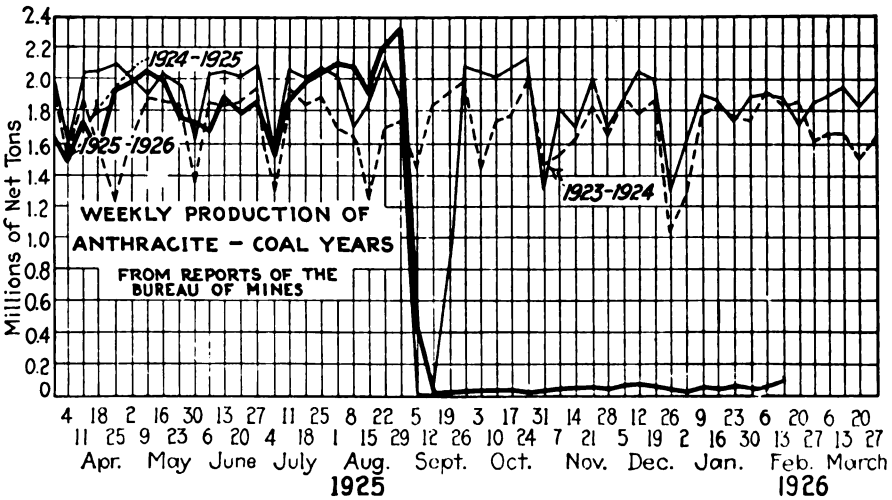
Interest in Contracts Revived

The end of the domestic boom has diverted the interest of the soft-coal producers to industrial contracts. Both buyer and seller, however, will do considerable sparring on prices before closing. The position of the operators on slack has been strengthened. The slump in demand for prepared sizes means less slack at bargain figures and the resumption of operations at the cement mills means a broader market.

Gas-coal shippers, who enjoyed an overflow business when low-volatile mines were unable to keep up with domestic demand, are now trying to line up railroad contracts to take care of production.

Except for a flood of cancellations of orders for sized bituminous coal, the end of the anthracite strike has had little effect upon the Baltimore soft-coal market. Industrially a moderate to fairly brisk call for ordinary runs of coal continues. Prices show no material change.

There has been a slight weakening in demand at Hampton Roads. Mine prices on prepared sizes of bituminous coal have dropped approximately $2, but retail quotations are unchanged. Foreign business is subnormal. Coastwise movement also is off. Bunker trade is about holding its own.



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Car Loadings and Supply

	Cars All Cars	Loaded Coal Cars
Week ended Feb. 6, 1926	914,904	175,964
Preceding week	925,263	183,071
Week ended Feb. 7, 1925	928,244	192,655

	Surplus Cars All Cars	Surplus Cars Coal Cars	Car Shortages All Cars	Car Shortages Coal Cars
Feb. 7, 1926	240,424	93,207	.....	.....
Jan. 30, 1926	250,935	92,040	.....	.....
Feb. 7, 1925	199,210	63,561	.....	.....

Demand for the cheaper grades of steam coal in the Birmingham market is easier and some concessions have been made in prices. There is still a good movement of the better coals from the Cahaba and Warrior fields, but no overwhelming activity in any section of the trade. Contract customers are taking their full quotas. Spot bunker business showed an increase.

The most cheering news is that some consumers already have signed up contracts for the new year at prices above those written in the expiring agreements.

Domestic demand has been affected adversely by weather conditions. Medium and high-grade coals have a spotty strength, but the cheaper grades are sluggish. There has been no break in the coal market. Some reduction in price, however, is anticipated with the resumption of anthracite mining, but it is believed that demand will absorb the output for some time to come.

Rush to Unload Substitutes

The first shipment of anthracite reached the Jersey terminals in less than twenty-four hours after the whistles had blown at the mines and was soon on its way to retailers in New York and Westchester County. The retail distributors, however, were more concerned with the problem of clearing out stocks of substitute fuels in their yards than in clamoring for immediate deliveries of hard coal.

The majority of the larger old-line producers announced that their prices would be the same as the schedule in effect prior to the strike. Independent egg, stove and nut were held at $10.50 @$15; pea, $7@$8.50, and No. 1 buckwheat, $4.50@$5.50. Some of the early shipments of independent tonnage, it was reported, would be billed at March prices, as yet unannounced.

Reading prices, made public at Philadelphia last Thursday, were on the following basis: White ash steamboat, $9.50; broken and egg, $9.15; stove, $9.40; chestnut, $9.15; pea, $6.25; buckwheat, $3; rice, $2.25; barley, $1.75. Lykens Valley steamboat to nut for February shipment are held at $1 above the white ash schedule. On Lykens Valley pea, the price is $6.70; buckwheat, $3.75; rice, $2.70; barley, $2.10. Independent prices on domestic coals are 75c.@$1.25 above the Reading white ash basis; steam sizes, 50@75c.

Cancellation the Order of the Day

Philadelphia retailers were busy cancelling orders on soft coal and coke. Nevertheless there is still considerable tonnage in transit and in retail yards. Consumers are cutting down on their orders, hoping that a small quantity will carry them over until anthracite is received. Some retailers are trying to dispose of stocks of coke by forcing consumers to take it in combination with deliveries of buckwheat and pea.

Baltimore retailers who cancelled orders for prepared bituminous as soon as the anthracite strike was settled could not move fast enough to stop a flood of shipments released to forestall such action. It is doubtful whether they will be able to dispose of this tonnage before anthracite is moving in normal volume. Householders are losing no time in placing orders for their favorite fuel.

Buffalo was promised its first shipments of anthracite this week. The question now uppermost is how much of a hold substitutes have been able to get during the long suspension. Many consumers assert that they are "through" with anthracite, but these threats are discounted.

Connellsville Sinking Down to Normal

"Normalcy" is rapidly returning to the Connellsville coke market. "Normalcy" means, among other things, that the producer who had not supplied the eastern retail buyer or jobber with car numbers before the anthracite agreement was signed was out of the running.

There was no spot buying of any kind for several days. Late in the week there were some small orders for run-of-oven coke placed at $4@$4.25. A blast furnace covered for the rest of the month at $4. Crushed coke was offered at $5. There has been practically no demand lately for foundry coke except to fill out contracts.

Some operators with coal that will do for gas-making already are looking for a market. Ovens which have been enjoying the high-dollar trade, however, hardly will be able to curtail production fast enough to meet the coke situation and the possibility of coke accumulations in the field is far from remote.

The Connellsville *Courier* reports coke output in the Connellsville and Lower Connellsville regions for the week ended Feb. 13 at 120,200 tons by the furnace ovens and 124,860 tons by the merchant ovens. Compared with the preceding week, furnace oven output decreased 4,000 tons; merchant oven production, 1,780 tons.

Coal Produced in Illinois in 1924

(Exclusive of Product of Wagon Mines)

County	Net Tons: Loaded at Mines for Shipment	Net Tons: Sold to Local Trade and Used by Employees	Net Tons: Used at Mines for Steam and Heat	Net Tons: Total Quantity	Value: Total	Value: Average per Ton	Number of Employees a: Underground: Miners b	Underground: All Others	Surface	Total	Average Number of Days Worked a	Average Tons per Man per Day
Bond, Clinton, Gallatin, Jefferson and White	1,379,101	89,135	56,935	1,525,171	$3,040,000	$1.99	1,453	345	216	2,014	147	5.15
Bureau	335,448	54,330	27,464	417,242	1,421,000	3.40	976	266	125	1,367	126	2.42
Cass, Edgar, Greene, Hancock, Macon, Schuyler, Scott, Shelby and Warren	68,310	174,222	9,736	252,268	859,000	3.41	346	145	44	535	163	2.89
Christian	3,461,984	167,749	46,513	3,676,246	7,450,000	2.03	2,503	787	312	3,602	162	6.30
Franklin	12,625,266	114,714	170,582	12,910,562	31,520,000	2.44	8,682	4,029	1,464	14,175	177	5.15
Fulton	1,762,349	81,665	15,178	1,859,192	4,436,000	2.39	1,926	519	351	2,796	146	4.56
Grundy	358,390	15,179	11,713	385,282	1,095,000	2.84	414	155	57	626	222	2.77
Henry	16,291	26,819	1,802	44,912	163,000	3.63	136	38	21	195	185	1.24
Jackson	1,465,764	53,219	22,453	1,541,436	3,418,000	2.22	950	410	235	1,595	158	6.13
Knox	.....	7,731	616	8,347	23,000	2.76	23	3	5	31	142	1.90
La Salle	284,397	285,800	11,852	582,049	1,892,000	3.25	912	186	118	1,216	183	2.62
Livingston	.....	25,336	1,730	27,066	96,000	3.55	64	27	17	108	97	2.59
Logan, McLean, Putman, Will and Woodford	415,886	151,314	26,795	593,995	1,766,000	2.97	1,284	308	158	1,750	135	2.52
McDonough	.....	2,733	.....	2,733	11,000	4.02	14	.....	.....	14	157	1.24
Macoupin	5,632,873	81,774	125,972	5,840,619	12,442,000	2.13	3,807	1,664	454	5,925	163	6.04
Madison	2,980,098	206,351	87,097	3,273,546	6,922,000	2.11	3,011	1,051	323	4,385	119	6.26
Marion	299,014	36,875	32,427	368,316	773,000	2.10	559	185	89	833	118	3.76
Peoria	745,452	130,207	8,099	883,758	2,178,000	2.46	1,105	286	124	1,515	145	4.03
Perry	1,813,461	73,496	58,419	1,945,376	4,003,000	2.06	1,609	624	325	2,558	127	5.98
Randolph	1,087,865	31,044	33,724	1,152,633	2,986,000	2.59	1,202	458	148	1,808	114	5.58
Rock Island	1,200	18,118	452	19,770	57,000	2.88	29	10	7	46	99	4.35
St. Clair	3,078,399	385,613	81,506	3,545,518	6,875,000	1.94	4,059	1,215	463	5,737	113	5.49
Saline	4,725,394	72,390	102,373	4,900,157	11,229,000	2.29	4,276	1,789	659	6,724	146	5.00
Sangamon	5,637,737	349,377	89,175	6,076,289	13,054,000	2.15	6,971	2,025	646	9,642	139	4.54
Stark	.....	5,512	10	5,522	17,000	3.08	21	1	1	23	151	1.59
Tazewell	640,081	116,029	6,095	762,205	2,030,000	2.66	607	207	82	896	201	4.23
Vermilion	3,045,705	303,445	37,333	3,386,483	7,968,000	2.35	2,400	860	576	3,836	171	5.15
Washington	114,919	56,940	6,468	178,327	434,000	2.43	465	181	73	719	54	4.64
Williamson	9,049,509	86,656	185,462	9,321,627	20,657,000	2.22	7,046	2,528	1,146	10,720	145	6.00
Total	63,689,920	3,319,700	1,313,661	68,323,281	$155,260,000	$2.27	59,451	21,306	8,606	89,363	148	5.16

a Note that figures of men employed and days worked do not include mines that operated in 1923 but were idle the entire year 1924; they do include many mines operated for a short time only in 1924. The number of active mines of commercial size in Illinois was 575 in 1923 and 488 in 1924.

b Includes also loaders and shotfirers.

Statistics compiled by U. S. Bureau of Mines.

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Foreign Market And Export News

British Trade Retains Strong Position on Prices; Forward Bookings Heavy

The position of the British coal market generally is satisfactory. Exports are brisk and as orders are executed a steady replacement is taking place. An improving output, readily absorbed, testifies the underlying strength of the market. Demand from France shows revival, greatly due to the rise in native prices and the cheapness of British supplies.

Contract business is negligible, but buyers show a ready disposition to book up well over February, and also, in some cases, into March. Dry large coal supplies are adequate, but clearances are slow. Monmouthshire coals are firm. All the collieries are heavily sold over the month, particularly Black Veins.

The second week of February was not active on the Newcastle market either in actual business or in demand for forward contracts. Prices, however, remained stable, and in the case of best steam coals there has been an increase of about sixpence.

Cokes have been much quieter, but even there the quotations have not altered and are held firmly. Gas concerns both at home and abroad are inquiring freely for supplies. Though much of the inquiry is a safeguard against the consequences of a stoppage so far as home buyers are concerned, that is hardly the case in respect of foreign buyers, their business representing a genuine improvement in trade.

Output by British collieries during the week ended Feb. 6, according to a special cable to *Coal Age*, totaled 5,415,000 gross tons, compared with 5,495,000 tons in the preceding week.

Belgian Market Still Strong

The slight improvement in the Belgian market which began toward the end of January shows a tendency to steadiness, with prices still firmer. The fact that work has been resumed at Charleroi iron and steel plants has revived demand for industrial coals and the stocks of these grades are diminishing rapidly—particularly stocks of semi-bituminous and quarter-bituminous. Even in the Boringe district the situation is better owing to the continual lessening of foreign competition and the higher prices on French coals.

In domestic fuel, the situation remains good. Orders are still plentiful.

Greater firmness also is noticeable in coking smalls. The Coke Syndicate maintains the price of 125 fr., but it is a nominal rate as there are offers made at 115 fr. Reparation coke is quoted at 120 fr.

French Coal Market Sold Ahead; Keen Demand for Gas Coals

Paris, France, Feb. 6.—The situation from the seller's standpoint, is very satisfactory. The majority of the French works are behind in shipment. Flaming coals are particularly scarce.

The price increase on Nord and Pas de Calais fuel is accepted without difficulty. In this respect it should be pointed out that the screened 20 m/m. were quoted at 113 fr. in November, 1923; 110 fr. in March, 1924; 110 fr. 20c. in June, 1924; 119 fr. 60c. in October, 1925, 119 fr. 60c. in January, 1926.

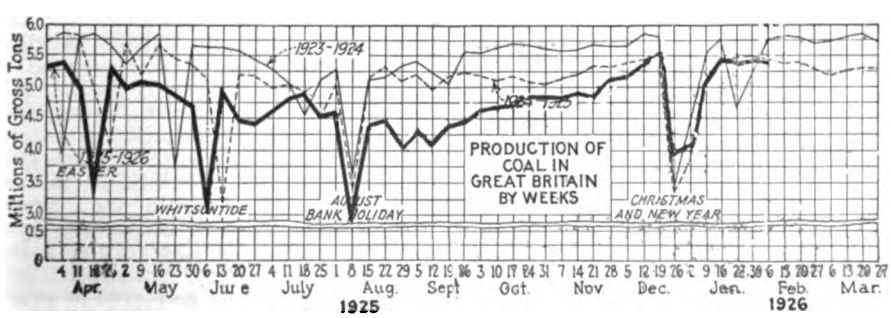
In the Loire coal field the wage question is not yet settled. The coal owners agree to grant the increases asked, but the amount is not yet fixed. The Loire collieries, however, have raised their prices 6 fr., as of Jan. 16. Prices on Belgian graded coals to France during February will be calculated upon the basis of 82.75 Belgian francs to 100 French fr.

	Semi-bitum.	Quarter-bitum.	Lean	Anthracitic
Lump	163.15	165.15	163.15	.....
Cobbles 80/120	174.	174.	184.90	201.25
Cobbles 50/80	217.50	217.50	223.55	241.50
Nuts 30/50	229.60	229.60	235.65	253.80
Beans 20/30	161.	161.	161.	.....

For semi-bituminous, second choice, 5 fr. less than the first choice.

German reparation fuel receipts are heavier than they were some time ago, when they were delayed or impeded through the flood of the Rhine, but exact figures for 1926 are not available. During 1925 France received 8,230,220 tons of reparation fuels from the Ruhr, or a monthly average of 686,000 tons.

From Feb. 1 the price on reparation coals shipped by sea was increased 4 fr. per ton; for those delivered via Jeumont and Givet (Franco-Belgian frontier), the anthracite sorts were increased 12 and 7 frs.; sized coals (including lignite briquets) 5 frs. Industrial coals delivered through the Rhine are up 4@19 frs. and domestic coals, 5 frs.



British Coal Exports Decline

British coal exports during January, 1926, totaled 4,148,042 gross tons as compared with 4,632,051 in December, 1925, and 4,337,768 tons in November.

January exports were valued at £3,821,336, or an average per ton of slightly less than $4.50. Exports to the United States totaled 121,100 gross tons of an average value of $10 per ton, while exports to Canada were 16,000 gross tons, averaging $8.75 per ton. These figures do not reflect recent good export orders. The subvention is reflected in the low average values of exports.

The collieries of Wales are heavily sold in anticipation of price increases and a still stronger market, as the situation in the United States and the reappearance of the Paris-Orleans Rys. in the South Wales market as a purchaser of coal after a year's absence, implies other orders.

Export Clearances, Week Ended Feb. 18, 1926

FROM HAMPTON ROADS

	Tons
For New Brunswick:	
Nor. Str. Facto, for St. John	1,629
Du. Str. Lekhaven, for St. John	6,555
For Italy:	
Ital. Str. Lodovica, for Trieste	4,517
Ital. Str. Valverde, for Bagnoli	6,375
Ital. Str. Armando, for Porto Ferrajo	6,908
For France:	
Nor. Str. Hektor, for Marseilles	1,256
For Brazil:	
Br. Str. W. I. Radcliffe, for Rio de Janeiro	7,720
For Argentine:	
Grk. Str. Ithaki, for Rosario	5,462
For Cuba:	
Br. Str. Berwindmoor, for Havana	9,837
Br. Str. European, for Havana	4,496

Hampton Roads Coal Dumpings*

(In Gross Tons)

	Feb. 11	Feb. 18
N.&W. Piers, Lamberts Pt.:		
Tons dumped for week	188,175	153,768
Virginia Piers, Sewalls Pt.:		
Tons dumped for week	90,181	73,718
C. & O. Piers, Newport News:		
Tons dumped for week	122,210	95,413

*Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shipper's protest.

Pier and Bunker Prices, Gross Tons

PIERS

	Feb. 13	Feb. 20†
Pool 1, New York	$6.00@$6.25	$6.00@$6.25
Pool 9, New York	5.50@ 5.75	5.50@ 5.75
Pool 10, New York	5.25@ 5.50	5.25@ 5.50
Pool 11, New York	4.85@ 5.25	4.85@ 5.25
Pool 9, Philadelphia	5.55@ 5.85	*5.30@ 5.55*
Pool 10, Philadelphia	5.35@ 5.50	*5.10@ 5.25*
Pool 11, Philadelphia	5.00@ 5.25	*4.75@ 5.00*
Pool 1, Hamp. Roads	5.00@ 5.10	**5.40@ 5.50**
Pool 2, Hamp. Roads	4.80@ 4.90	**4.90@ 5.00**
Pools 5-6-7, Hamp. Rds.	4.40@ 4.50	4.40@ 4.50

BUNKERS

Pool 1, New York	$6.25@$6.50	$6.25@$6.50
Pool 9, New York	5.75@ 6.00	5.75@ 6.00
Pool 10, New York	5.50@ 5.75	5.50@ 5.75
Pool 11, New York	5.10@ 5.50	5.10@ 5.50
Pool 9, Philadelphia	5.80@ 6.05	*5.55@ 5.80*
Pool 10, Philadelphia	5.60@ 5.75	*5.35@ 5.60*
Pool 11, Philadelphia	5.25@ 5.50	*5.00@ 5.25*
Pool 1, Hamp. Roads	5.10	**5.50**
Pool 2, Hamp. Roads	4.90	**5.00**
Pools 5-6-7, Hamp. Rds.	4.50	4.50

Current Quotations, British Coal, f.o.b. Port, Gross Tons

Quotations by Cable to *Coal Age*

Cardiff:	Feb. 13	Feb. 20†
Admiralty, large	23s.@ 24s.	23s.6d.
Steam smalls	14s.6d.	14s.6d.
Newcastle:		
Best steams	17s.	17s.
Best gas	17s.6d.	17s.6d.
Best bunkers	17s.@ 18s.	*17s.*

Advances over previous week shown in **heavy type**; declines in *italics*.

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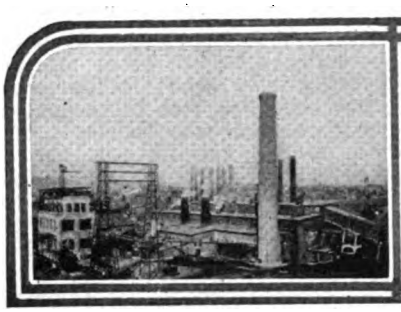
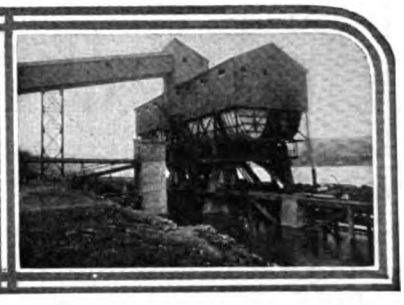


News Items From Field and Trade



ALABAMA

Gen. T. Q. Ashburn, executive officer of the Inland Waterways, has been in the Birmingham district making an inspection of the Warrior River service and terminal facilities at Birmingport. A large amount has been appropriated by the federal government for improvements at the terminals on the Warrior River and a number of additional steel barges which are now under construction will soon be placed in commission and the embargo against Cordova and several other ports will be lifted. General Ashburn stated that the Inland Waterways Corporation probably would take over the Ensley Southern Ry., which recently was bought from the Southern Ry. by the Port of Birmingham Co. This line extends from Birmingham to Birmingport. It is understood that the line will immediately be rehabilitated and additional rolling stock and motive power provided and it will be operated for the Port of Birmingham Co. by the Tennessee Coal, Iron & Railroad Co., affording an independent rail connection between Birmingham and the river. This probably will bring about a large increase in the movement of coal from the district by water to the southern ports.

The Pratt Fuel Co., which recently purchased and took over the holding of the Alabama By-Products Co. at Dora, is preparing to mine coal on a large scale at Kershaw Mines, near Dora. A mammoth coal washer will be constructed.

COLORADO

The new mining law which requires all coal mines to install air circulating systems and have a licensed man in charge was tried out in court by Fred Sevcik of Colorado Springs, and he won the case against James Dalrymple, state mine inspector, in the lower court. The case probably will be carried to the state Supreme Court.

J. B. Marks, who for the last year has been assistant to J. F. Welborn, president of the Colorado Fuel & Iron Co., recently was appointed vice-president in charge of sales, traffic and purchase for that company. He has been with the company since 1901.

ILLINOIS

Between thirty and thirty-five coal drilling outfits are now being worked daily on two tracts of land immediately west of Duquoin, having been started the latter part of January by an Indiana concern. No official announcements have as yet been made. The coal at the location is of good quality, averaging from 25 to 55 ft. under the surface and is about 6½ ft. thick. With progress being made at the present rate of speed, it is estimated that the owners will begin to move machinery and material toward the site by April 1 or earlier.

By-Products Coke Corp., Chicago, reports for year ended Dec. 31, 1925, net income of $874,570 after taxes, charges and reserve for contingencies. This is equivalent, after allowing for dividend requirements on nine per cent preferred stock, to $7.76 a share earned on 94,953 shares of common stock, and compares with deficit of $498,222 in 1924.

Some community co-operation has meant more than a year of reasonably steady work at Mine No. 4, owned by the Illinois Fuel Co. and under lease at the present time to the Wall Coal & Mining Co., at Sparta. Through the co-operation of employees of the mine with the Randolph Club of Sparta, options were obtained the last week in January on forty acres of coal land which was necessary to continue operation of the mine. Since the option was obtained, miners and business men have advanced more than $4,000 for the purchase of the coal and will lease the land to the Wall Coal & Mining Co. for operation purposes as soon as the deal is completed. For some time the coal company endeavored to secure the coal underlying this particular forty-acre tract, but declined to buy it outright. The owners refused to sell the coal on a royalty basis and a shutdown of the mine on May 1, 1926, was threatened. The Randolph Club learned of this condition and after consulting officials of the coal company obtained an option on the coal from the owners of the land.

M. E. Pervier and C. C. Pervier, Annawan, have opened a new coal mine southeast of that town.

The Chicago Title & Trust Co. on Feb. 16 filed a foreclosure suit in the Williamson County Court under a mortgage on the property of the Sunnyside Mining Co. amounting to $450,000. The company's mine has been shut down since January, 1925. Recently its tipple was damaged by fire. The company owns more than 100 acres of coal lands.

The airshaft for the coal mine of the Galesburg Coal Co., at Galesburg, was completed Feb. 1 and is now connected up with the entry. The air shaft is 120 ft. deep and passes through a number of seams before reaching the No. 1, which is the one of commercial value. Steps will be built in from top to bottom, so that there will be a way of escape from the mine.

INDIANA

The final chapter in the history of the Rockville Coal Mining Co., which attracted considerable capital in that section some years ago, was written Feb. 11 when all the properties of the company were sold under the sheriff's hammer for $2,506. The mine, although located near the big bituminous fields of western Indiana, was a losing enterprise from the start and has been shut down for nearly a year.

Mining rights to coal seam No. 5, in Riley Township, near Terre Haute, have been granted to Donald Faulkner for a term of twenty years. The lessors are to receive 15c. for each ton of coal mined and an amount equal to at least 6,000 tons annually. The land is just northeast of the town of Riley.

Clem Richards, coal operator of Terre Haute, Ind., is expected to be a candidate for state chairman of the Republican party in Indiana. Mr. Richards always has taken an active part in politics and has held many appointive organization offices in western Indiana.

The Old Knox Mining Co., Indianapolis, which operates the Knox Mine, in Knox County, has been placed in the hands of a receiver. Jacob S. White, Indianapolis attorney, was named receiver and placed under bond of $25,000. The receiver was ordered to continue operation of the company's business. The company owns approximately 3,500 acres of land in Knox County. The petition for a receiver was filed by George B. McKibbin, a stockholder, who alleged the company to be in danger of insolvency.

KENTUCKY

Unionization activities carried on in southern Indiana during the last few weeks by the United Mine Workers will be extended to include western Kentucky about March 1, according to William Thompson, of Ft. Branch, Ind., chairman of the organization committee of District 11. Approximately 3,000 miners recruited from Illinois, Indiana and Ohio will compose the "army" which, it is planned, will march from mine to mine in the Kentucky field during the campaign, Thompson said. Similar tactics were employed in south-

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ern Indiana, where all but two non-union mines, the Crescent and Sunnyside of Evansville, are now closed. Tyler Lawton, president of District 11, denies that any such unionization movement is contemplated in Kentucky.

Another effort was made in the Kentucky Legislature on Feb. 16 to bring out a coal tonnage tax bill. However, at the opening of the legislative season this year a rule was made that if a bill is defeated, no similar bill shall be taken out of committee or acted upon, and if a bill is killed in one house, the other division of the Legislature will not waste time with it, as the matter would be under the heading "Disposed of." A vote on the ruling went 68 to 20, in sustaining the rule, and the bill of Representative Strange, of Bowling Green, is dead. As usual, Representative Jones, of the Harlan-Leslie district, led the arguments favoring the coal operators.

KANSAS

Contrary to early predictions of mine union officials following the recent run-off election between Pittsburg and Frontenac for headquarters for District 14, United Mine Workers, the offices will remain in Pittsburg. Early returns from the election, which was held Feb. 2, indicated the miners of the district favored Frontenac, but the final canvass of ballots, Feb. 10, gave Pittsburg a majority of 393. The run-off election followed a special election in December to choose between Arma, Frontenac and Pittsburg. In that election Arma was eliminated. Frontenac received more votes than either of its competitors, but did not obtain a majority of all votes cast, necessitating the run-off of Feb. 2.

NORTH DAKOTA

North Dakota mines produced 1,357,408 tons of lignite valued at $2,601,807.47 in 1925, it is shown in the annual report of A. Waddington, state mine inspector. This is the second largest annual tonnage mined in the history of the state. In 1923, 1,435,605 tons were produced. The production increase over 1924 is 327,959 tons, and the valuation increase is $325,985.47.

OHIO

At a meeting of the stockholders of the Peerless Elkhorn Coal Co., which had headquarters in Columbus, held Feb. 11 the company was dissolved. The property has been taken over by the Hatton, Brown & Co., Inc., of which concern it was a subsidiary. The property consists of an operating mine in the Elkhorn district of Kentucky. F. G. Hatton was president and George F. Schwartz, secretary of the corporation. No change is being made in the management of the concern and the mine will continue to operated as in the past.

Following a cave-in in the main entry of the Union Mine, near Pomeroy, work has been resumed by about 100 miners. None was injured and work was suspended for about 10 days.

Orders have been given by the Sauters Coal Co. for the cleaning up of the Gaylord mine, near Martins Ferry, preparatory to starting operations after a long idleness. It is planned to give employment to about 175 men and to operate at full capacity.

W. K. Field, president of the Pittsburgh Coal Co., who had been confined to his home in Columbus for a few weeks, owing to a severe attack of influenza followed by a heart attack, is recovering and again able to be out. He will soon take up his duties at the company's main office in Pittsburgh.

Jerome Watson, head of the Ohio Department of Mining made a personal investigation of the explosion in the shaft of the Powhatan mine, near Bellaire, which occurred Feb. 15 causing the death of one man and injury to 18 others. He was assisted by several deputy inspectors in the eastern Ohio district. The results of the investigation have not been made public but it is believed that a short-circuit was responsible. The main shaft and tipple were wrecked by the explosion, which occurred soon after the day force went to work. The men had gone on a strike because the Powhatan Coal Co., the owner, paid by check, but had voted to return to work. The mine was formerly owned by the Cleveland & Western Coal Co. Several of those injured, principally burned, are not expected to recover.

PENNSYLVANIA

The Clearfield Bituminous Coal Corporation will launch a large reforestation program this spring with the planting of 1,030,000 seedlings in Indiana, Cambria and Clearfield counties, under the direction of R. D. Tonkin, the coal company's forester. Several years ago the company established a forestry department on a large scale. Since the spring of 1920, including last year, approximately 1,115,550 trees have been planted on lands of the corporation, which owns the surface rights of some 26,000 acres suitable for the growing of timbers. The state forestry department has furnished about 50 per cent of the trees planted thus far.

Jones & Laughlin is completing the construction of 122 new byproduct coke ovens at its Aliquippa works and hopes to have them in operation by March 1. This will add 1,800 net tons to the daily capacity of the plant. By May 1, Jones & Laughlin hopes to have completed the erection of 60 other ovens at the Pittsburgh works, these to have a daily capacity of 600 tons.

The Lehigh Coal & Navigation Co. reports for the year ended Dec. 31, 1925, net income of $1,794,796 after charges and taxes, equal to $3.06 a share. This compares with $2,548,067, or $4.35 a share, in 1924. There was a deficit of $544,676 against a surplus of $208,595 the preceding year.

The Buffalo & Susquehanna Coal & Coke Co. is in a queer lawsuit. Some time ago an agreement was made with the miners in one of its mines at DuBois that they should continue to work at unchanged wages till a certain contract was filled and they should forfeit $1 a day if they quit work previous to that. Some of them did leave and were docked in their pay. Now two of them, Harry Carns and Dominic Stephanowski, are suing the company for the recovery of $20 each so withheld.

In a suit just filed in federal court at Scranton, Warren T. Acker asks for an injunction to restrain the South Penn Collieries Co. from proceeding with a $2,000,000, bond issue, alleging that a contract he has with the concern has been broken in that he has

Pennsylvania Coal & Coke Corp. Starts No. 18 Mine After Two-Year Shutdown



This mine, at Barnesboro, Pa., was opened in 1917 as colliery No. 3 of the Watkins Coal Mining Co. It is in the Lower Kittanning or Miller seam. The picture at the left shows an empty trip about to enter the mine. The stone building in the background is a combination office, shop, substation and lamp house. The tipple, shown in the other picture, is about 2,000 ft. from the mine opening. The cars are handled in a cross-over dump, and the coal is elevated by an apron conveyor.

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been virtually forced out as general manager. The local man asks the court to order the company to restore his former rights to him, that he also receive permission to inspect the books of the company and that the court order the company to pay him for whatever money damage it deems he is entitled to. Mr. Acker at one time was owner of the Von Storch mine, in Scranton, which he sold to the South Penn company for more than $2,000,000 several years ago. He alleges that in this deal the company unloaded much worthless stock on him and that coal holdings of the concern in other parts of the anthracite field were misrepresented. Former Governor Sproul of Pennsylvania is president of the South Peen company, and R. H. Buchanan, for years identified with the Hudson Coal Co., is general manager.

UTAH

George W. Evans, consulting coal mining engineer, of Seattle, declared in a recent address at Price that Utah coal fields are 100 per cent overdeveloped at present both in mines and man power. He said, however, that just as soon as Carbon County coal can be placed on the Northwest market at a price less than crude oil, there will be a huge demand and production will be greatlv increased. It is understood that Mr. Evans was in the Utah field for the purpose of looking over the situation on behalf of certain interests of Seattle that will open mines there as soon as they feel the demand justifies such action.

Five coal companies in nearly as many cities in the state have been awarded reparation by the Public Utilities Commission in connection with coal shipped in 1921 and 1922 in intrastate commerce. The payments were made on domestic lump coal which had been charged at the straight lump rate. The commission held that the mine-run rate should have been charged.

WEST VIRGINIA

More general development of coal lands in Nicholas County is presaged by the organization of the Camp Fork Coal Co., with chief works at Greendale. Only recently the Gauley Fuel Co. was organized to operate in the same county. Organizers of the Camp Fork Coal Co., which is capitalized at $200,000, include George C. Backus, E. M. Johnson, C. D. Burgess and G. R. Krebs, all of Charleston.

The Supreme Court of West Virginia declined on Feb. 11 to issue a writ of error in connection with the fines and jail sentences imposed on certain union miners in Barbour County for contempt of court in picketing after an injunction had been granted. The men appealed to the higher court on technical grounds, declaring the picketing was done in connection with their membership in the United Mine Workers. Plaintiffs in the case where the Bear Valley Coal Co., Tresler Coal Co., Cambria Coal Co., Brown Coal Co., Grier Gas Coal Co., Bear Mountain Gas Coal Co. and the Blocky Pittsburg Coal Co.

More than 100 employees of the Wood Sullivan Coal Co. were present at a safety rally of the company at Vanwood on Feb. 12, held in connection with the general safety campaign now being inaugurated by the West Virginia Department of Mines. District Inspector Rumberg outlined the program of the state department and asked for the co-operation of the men in the mines. Co-operation on the part of officials of the company was assured and it was pointed out that safety rules were being placed in effect at the several plants of the company.

The plants and property of the Wake Forest Mining Co., operating on Cabin Creek, have been purchased by the Wyatt Coal Co., headed by John Laing. The transfer of the property became effective Feb. 1. The Wake Forest company was owned by J. C. Grimm, Charles Cabell, John L. Dickinson and the late J. R. Thomas, Mr. Grimm being the president of the concern. The company owned two mines on the line of the Chesapeake & Ohio. These mines had a capacity of 400 tons a day, but it is planned by the purchasing company to increase the capacity to 1,000 tons a day and James Martin, who has for some time been the manager of the Wyatt Coal Co., will take over the management of the two additional mines.

Among the new equipment to be installed at the Fordson Coal Co.'s mine at Nuttallburg, W. Va., is an automatic feeder to the crossover dump.

The New England Fuel & Transportation Co. is installing an automatic scale and dump feeder at the No. 3 mine, Lowesville.

CANADA

The Rocky Mountain branch of the Canadian Institute of Mining and Metallurgy is supporting Lewis Stockett of Calgary for president for the Institution year 1926-27. Mr. Stockett is a mining engineer of over forty years' active experience. He has been associated with the mining industry of Alberta and southeastern British Columbia for over thirty years and for the past twenty-one years has had the direction of the development and operation of some of the largest mining projects in Alberta and southeastern British Columbia.

British Columbia produced 2,438,052 gross tons of coal in 1925, compared with 1,964,469 tons in 1924. The output of Crow's Nest Pass increased from 273,170 tons in 1924 to 853,502 in 1925.

The Royal Commission appointed to inquire into the conditions leading to the recent strike of the miners employed by the Minto Coal Co. at Minto, N. B., held its first sittings at Frederikton on Feb. 10. In a statement of the miners' grievances they complained of long working hours and requested the adoption of legislation providing for an 8-hour day. A minimum wage scale also was requested.

Traffic

Illinois Intrastate Rates Cut

The Illinois Commerce Commission on Feb. 16 announced reductions in coal freight rates amounting to 11c. per ton to East St. Louis, Ill., from all Illinois points except from Group No. 2 mines, within a twenty-mile radius. On the latter mines the reduction is 21c. per ton.

The decisions were in the Perry Coal Co. and the Illinois Coal Traffic Bureau against the Alton & Southern R.R. et al. The new rates are to be established within forty-five days from Feb. 8, or on or before March 25. The interstate rates to St. Louis, Mo., will not be disturbed, thereby increasing the differential from 25c. to 33 to 46c. per ton.

The coal affected originates principally in the Nos. 2, 6 and 10 groups of mines.

The new rates, the reduction and the interstate rate to St. Louis, Mo., follow:

	New Rate	Reduction	St. Louis Rate
No. 2 (Belleville) within 20 miles	.70	21	$1.16
No. 2 beyond 20-mile zone	.80	11	1.16
No. 5 (Nilwood-Taylorville)	.84	11	1.16
No. 6 (Duquoin)	.90	11	1.27
No. 7 (Centralia)	.90	11	1.27
No. 8 (Chatham)	.90	11	1.24
No. 9 (Murphysboro)	.96	11	1.35
No. 10 (Herrin-Zeigler)	.99	11	1.385
No. 15 (Springfield)	.93	11	1.26

Association Activities

The Fayette-Greene Coal Producers' Association will hold its third annual dinner meeting at the White Swan Hotel, Uniontown, Pa., Saturday evening, March 6, when U. S. Senator David A. Reed, of Pennsylvania, will be the principal speaker. Charles W. O'Neill, secretary-treasurer of the Central Pennsylvania Coal Producers' Association, also will speak. About 300 coal and coke producers of western Pennsylvania are expected to be present. G. Carl Areford is president of the Fayette-Greene Coal Producers' Association; J. Fred Shean is secretary, and T. J. McClernan, chairman of the meeting committee.

Obituary

John Robertson, Labor Member of the British Parliament for the Bothwell division of Lanarkshire since 1919, died at Glasgow, Scotland, Feb. 14. He went to work in a coal mine at the age of 13 and followed that calling for many years before he became one of the champions of labor in British politics. He was chairman of the Scottish Miners' Union and a strong advocate of nationalization of the mines.

Frank Nichter, 69, who for 20 years was mechanical engineer for the D. L. & W. Coal Co., now the Glen Alden, died Feb. 10 at Scranton, Pa., after a brief illness. During his long service with the Glen Alden he supervised the construction of many modern breakers, among them the Truesdale, the Taylor and the Diamond. He retired from the service of the coal company a few years ago to go into business for himself, and met with much success. He was born in Austria-Hungary, but had lived in Scranton 42 years.

M. C. Walker, 45 years old,—for many years superintendent of the Pittsburgh & West Virginia Coal Co.'s Echo Point mine, near Wheeling, W. Va.,—died suddenly at his home Sunday, Feb. 14. Heart trouble was given as the cause of his death. He is survived by seven brothers and four sisters. Mr. Walker came to Echo Point from Galley Valley, near Charleston, W. Va., several years ago.

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Coming Meetings

Canadian Institute of Mining and Metallurgy. Twenty-eighth annual and general meeting, March 3-5, at the Windsor Hotel, Montreal, Quebec, Canada. Secretary, G. C. Mackenzie, 603 Drummond Bldg., Montreal, Que., Canada.

New England Coal Dealers' Association. Annual meeting at the State Armory, Worcester, Mass, April 7 and 8. Secretary, E. I. Clark, 141 Milk St., Boston, Mass.

The American Mining Congress. Annual Exposition of Coal Mining Equipment, May 24-28, at Cincinnati, Ohio, in conjunction with the annual meeting of practical operating officials. Assistant secretary, E. R. Coombes, Washington, D. C.

International Geological Congress. The fourteenth congress will be held in Madrid, Spain, commencing May 24, 1926. From May 5 to 22 excursions of interest to the visiting delegates will be arranged. Information concerning the congress can be obtained from the secretary of the organizing committee, Enrique Dupuy de Lome, Plaza de los Mostenses, 2, Madrid, Spain.

Western Canada Fuel Association. Annual meeting at Winnipeg, Manitoba, Can., May 27 and 28. Secretary, W. H. Morrison, Winnipeg.

American Wholesale Coal Association. Annual meeting, June 7-9, at Toledo, Ohio, Treasurer, R. B. Starek, Union Fuel Bldg., Chicago, Ill.

Association of Iron & Steel Electrical Engineers. Exposition and convention at Hotel Sherman, Chicago, Ill., June 7-10. Secretary, J. F. Kelly, 1007 Empire Bldg., Pittsburgh, Pa.

American Society of Mechanical Engineers. Spring convention at San Francisco, Calif., June 28-30. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

Midwest Retail Coal Merchants Association. Annual meeting, May 25 and 26, at Kansas City, Mo. Secretary, James P. Andriano, St. Joseph, Mo.

New Companies

The Colson Coal Co. was incorporated early in February in Denver, Colo., with a capital stock of $250,000, by H. W. Colson, Bessie Colson, George Stewart and others.

The Coal & Clay Producers, Inc., has been incorporated at Terre Haute, Ind., with a capital stock of 7,500 shares of no par value, to do a general coal and clay mining business. The incorporators are A. J. Beasley, L. M. Springer and H. Derby.

The Gauley Fuel Co., which was incorporated late in January, with a capital stock of $50,000, by S. M. Auston and John B. Laing, both of Lewisburg, W. Va., will operate in Nicholas County, Kentucky.

Publications Received

Superpower, by William S. Murray. McGraw-Hill Book Co., Inc., 370 Seventh Ave., New York City. Price, $3. Pp. 237; 6 x 9 in.; illustrated. Some of the points discussed are the benefits to be expected from a national adoption of superpower, the economic aspects of the movement, its effects upon transportation.

True Value of Reading Coal Stock and Effect of Coal Asset Upon Reading Stocks and Bonds. Philadelphia Company of Philadelphia, Huguenot Park, New York City. Pp. 16, 6 x 9 in.

Sampling and Examination of Mine Gases and Natural Gas, by George A. Burrell and Frank M. Seibert; revised by G. W. Jones. A revision of Bulletin 42. Bulletin 197. Pp. 108; 6x9 in.; illustrated. Price 25c. Bureau of Mines, Washington, D. C.

Organization and Courses of Study in Anthracite Coal Mining for Mine Foremen and Assistant Mine Foremen. Department of Public Instruction, Harrisburg, Pa. Bulletin No. 6. Pp. 24; 6x9 in.

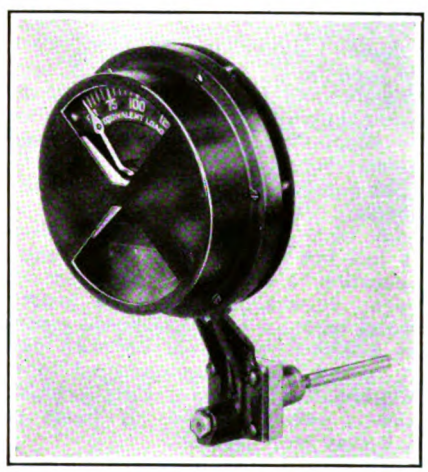
Discovery Depletion in Relation to the Mining Industry. General Tax Committee of the American Mining Congress, Washington, D. C. Pp. 76; 6x9 in.; illustrated. A discussion of the history, economic base and justification for the discovery depletion principle.

New Equipment

New Thermotel Registers Transformer Conditions

Accurate knowledge of the conditions under which electrical equipment is operating is always important. The type B-2 thermotel as manufactured by the General Electric Co., of Schenectady, N. Y., is a new load indicator for 60-cycle, 2,300-volt current. It is applicable to the subway type distribution transformers ranging in size from 15 to 200 kva. inclusive. It is similar to the thermotel for the pole type of transformers and was designed as a convenient and reliable means of making load surveys.

This instrument is designed to evaluate the sum of all of the several



The Transformer Watchman

This little instrument which may be attached to the side of the transformer shows the percentage of capacity which the unit is carrying and also indicates when the full capacity is exceeded. This latter indication constitutes virtually a danger signal.

variables on which the output of a transformer depends. These include the kva. rating of the transformer, the load, the duration of the load, and the temperature of the surrounding air, usually referred to as the ambient temperature. The percentage of available transformer capacity being utilized is also indicated.

This instrument shows when the transformer is underloaded as well as overloaded, together with the load conditions existing at the time of resetting. Furthermore, it exposes an easily distinguishable danger signal when safe load conditions are exceeded. An important detail of its construction is its ability to accurately differentiate ambient temperature variations.

This device consists essentially of two thermometers connected in series. One is of the capillary tube type and is immersed in the oil of the transformer; the other is of the bimetallic type and is located in the external case and acts as a corrective for the ambient temperature. The combination of the two actuates an index and danger signal.

The external case is of brass, finished in black japan and thermally insulated from the radiant heat of the transformer by a metal screen and air space. This case is riveted to a bronze casting through which the capillary tube passes. Installation requires only the removal of the lower oil-sampling plug, after which the thermotel, which is provided with the necessary fitting, is screwed into place. An auxiliary sampling plug is provided on the instrument to permit the checking of the oil level in the transformer.

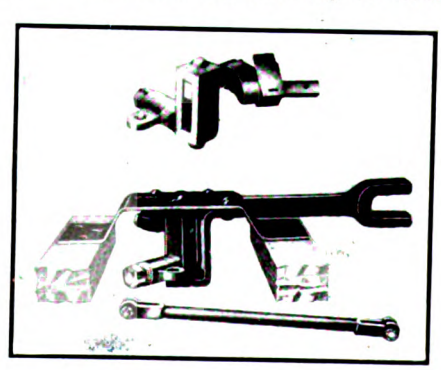
The index is of the maximum reading type and records the maximum percentage of the transformer's capacity that has been utilized since the last resetting, the scale being graduated to read between 50 and 100 per cent of transformer capacity. The semaphore indicating an overloaded transformer is normally not visible until 100 per cent of the capacity has been exceeded. When this occurs, it drops into view.

Low Parallel-Throw Switch Stand Is Adjustable

An inexpensive, double-bearing, parallel-throw switch stand called the "Durabil" that is claimed to be positive in action and smooth in operation recently has been developed and patented by the L. A. Green Railway Equipment Co., of Pittsburgh, Pa. The accompanying illustration shows this switch throw in some detail.

All parts of this switch stand are below the housing and thus are protected from damage. The entire stand is compact, rising only 2 in. above the ties. The throw of the lever is parallel to the track assuring safety to the operator. The stand is non-automatic and self locking, being on dead center when in normal position.

All parts of this device are made of rolled or die forged steel. The length of throw is adjustable, being capable of variation from 3 to 5 in. by the mere transference of shims or washers Thus this stand can not only be used



Details of the Switch Stand

It is built entirely of forgings no cast parts being employed. It is low and compact and the movement of the hand lever is in a direction parallel to the track assuring safety. Actual length of throw may be adjusted to suit local requirements.

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with switches of differing lengths of throw but by changing the position of a shim or two it can be adjusted for worn switch points thereby obtaining positive contact of these parts. The connecting rod may be either made rigid or be fitted with a spring.

Saves Time in Splicing

Trolley lines have a way of failing at inopportune moments. In the accompanying illustration is shown the type SL bronze, set-screw splicer as recently developed by the Westinghouse Electric & Mfg. Co., of East Pittsburgh, Pa. This splicer permits repairs to the trolley wire to be made in a minimum of time, thus saving both direct and indirect losses, the latter frequently far overshadowing the first in magnitude. The approach lips point upward forming a firm yet gentle underrun. The wires may be inserted without bending and each is held firmly in place by two set screws.



Firm Grip is Assured

In this 10-in. splicer which accommodates all sizes and cross sections of trolley wire, the four set screws hold the two ends of the wire firmly. The greater the tension on the wires, the tighter will the set screws bind.

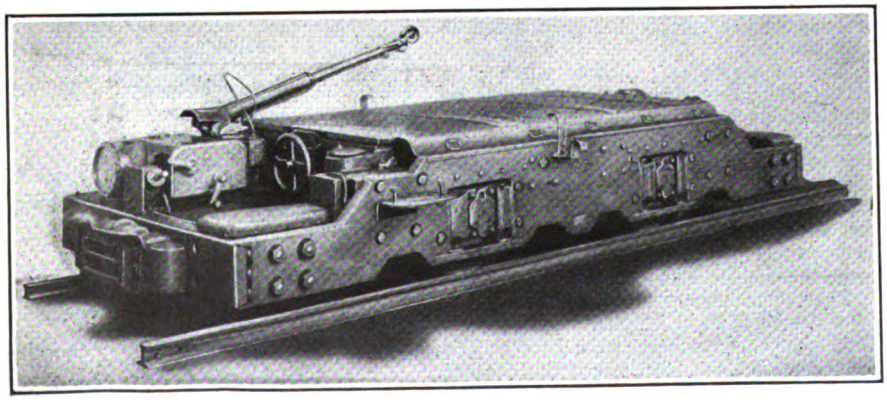
These set screws are inserted in a slanting direction and are mounted in square nuts that are capable of rocking. Each nut thus acts like the fulcrum of a pinch bar to which the set screw forms the active end. As soon as tension is applied the set screws wedge tight and take hold of the wire so that it cannot slip. This splicer is 10 in. long and one size will accommodate all trolley wires from 1/0 to 4/0 round, grooved or of figure-8 section.

New Cable-Reel Locomotive Is But 25 In. High

In the accompanying illustration is shown the low, cable-reel locomotive recently placed on the market by the Jeffrey Manufacturing Co., of Columbus, Ohio. This machine is built with either inside or outside drivers. The overall height of the inside wheel type is 26 in. with a trolley pole mounted on an outrigger. The overall height of the outside wheel type is 25 in.

This low type of locomotive permits the trolley pole to be placed on top of the machine, yet keeps the minimum height of the trolley wire down to 29½ in. The motor equipment consists of two low speed motors giving a maximum traversing speed of 4 m.p.h. at full load. The machine may also be built for a speed of 6 m.p.h.

The cable reel diameters for the inside-wheel type of locomotive range from 42 to 48 in. They are fitted with 850 ft. of No. 3, single-conductor cable. This reel is motor driven. The motor equipment on this locomotive was designed especially for it, and is much more liberal in dimensions than has formerly been the case on similar machines. The frame is of the plate type 2½ in. thick, and the controller is of the non-stubbing finger variety, on contact cylinder as well as on the reverse. All fingers have renewable burning tips.



Low Cable Reel Locomotive

The total height of this machine ranges from 25 to 26 in. depending upon whether the drivers are outside or inside the frame. The height of the trolley wire may be as little as 29½ in. The motor-driven reel will hold 850 ft. of cable, permitting the locomotive to proceed this distance beyond the end of the trolley line.

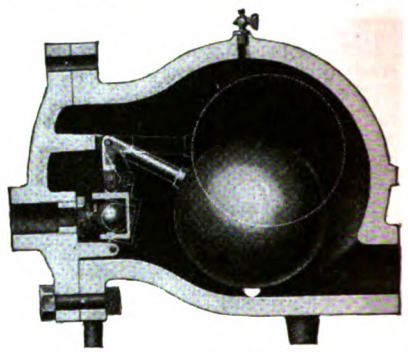
Trap Prevents Wire Drawing

When a steam trap is open it should be wide open, and when it is closed there should be no leakage. Furthermore, any device of this kind should be simple in construction and readily accessible.

In the accompanying illustration is shown a steam trap that is said to embody these three important requisites. It has but few working parts and in operation is either shut tight or wide open. It was designed by a practical steam engineer to overcome the troubles he had experienced in his own plant. It is now being manufactured by the Williams Gauge Co., of Pittsburgh, Pa., and is known as the "Williams new ball-seat trap No. 4B."

This trap is held closed and tight when the float is in the position shown in the accompanying illustration. This float is made of welded chrome nickel, and is tested to a pressure of 600 to 1,200 lb. As the water in the chamber rises the float, of course, rises with it, but the trap does not open immediately. The ball cage is purposely made sufficiently large so that there is approximately ⅛ in. of lost motion or play between the ball valve and the cage. Consequently, the ball is held in place by the pressure within the trap until the float rises to the position shown by the dotted line. When this position is reached the cage pulls the ball away from its seat, and the trap is wide open.

As soon as the ball leaves its seat the pressure is equalized and the ball moves to the back of the cage, leaving the outlet fully open so that discharge is quickly accomplished. No wire drawing across the seat can occur. As the water is blown out, the float sinks, and when the water level reaches a point 3 or 4 in. above the outlet the float has assumed the position shown in the picture. This tips the cage forward to a point where the ball is caught by the water being discharged and the valve closes with a snap. Once closed there is no possibility of leakage. Inasmuch as the ball and seat fit each other accurately, and both are made of Monel metal, tightness is assured. Both the ball and the seat are removable and may be easily renewed. Every part is quickly accessible and although there is but slight possibility that repairs need be made, the time and cost of making them should they ever be necessary will be only trifling.



Part Section of Trap

This device is intended to overcome the usual failings of steam traps, chief of which is a liability to steam cutting. When this trap opens it opens wide; when it closes it closes tight. There is thus small danger of its developing a leak.

Industrial Note

A merger of the financial interests of the **Hewitt Rubber Co.**, of Buffalo, N. Y., with the **Gutta Percha & Rubber Mfg. Co.**, of New York and Brooklyn, recently was effected. At a reorganization meeting held in Buffalo, F. E. Miller was elected president of the Gutta Percha & Rubber Mfg. Co.; John H. Kelly and Amadee Spadone were elected vice-presidents, and W. J. Magee, secretary and treasurer. The reorganization is the first step in the removal of the company's plant, office and other facilities to Buffalo.

Trade Literature

W. C. Lipe, Inc., Syracuse, N. Y., has issued an 18-pp. 8½x10½-in. bulletin illustrating and describing its products, among which are its speed reducer, electric hoists, flexible couplings, internal geared conveyor pulley, gear tooth rounding machine and coil winder.

Measurement of Water. Republic Flow Meters Co., Chicago, Ill. Bulletin No. W-31. Pp. 15; 8½x11 in.; illustrated. Describes the metering of water electrically.

Standard Chain Drives. Hans Renold, Ltd., Didsbury, England. Pp. 47; 4x6 in.; illustrated. Describes both the Bush roller and inverted tooth type chain drives up to 50 hp. Prices are included.

Metallo Gaskets. Metallo Gasket Co., New Brunswick, N. J. Catalog 26. Pp. 32; 6x9 in.; illustrated. Describes the styles of gaskets manufactured by this company and gives price lists.

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Automatic Pumping Shows Recent Improvements—P. 321

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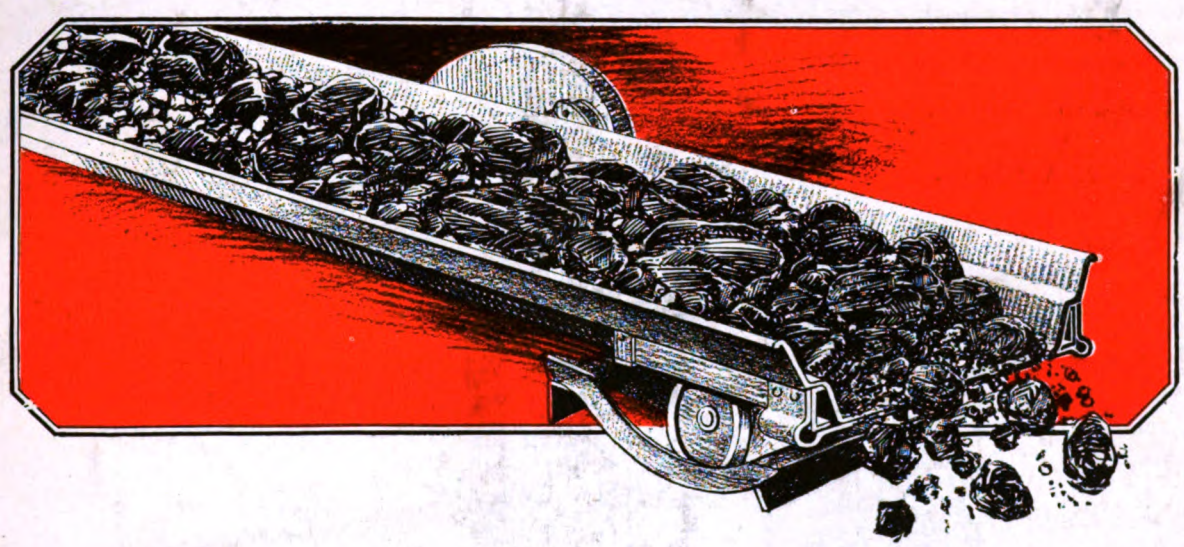

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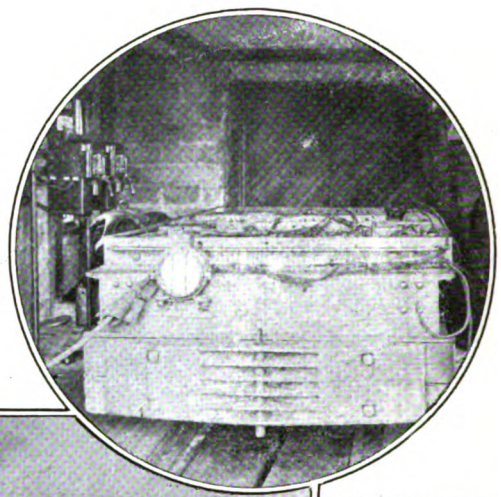

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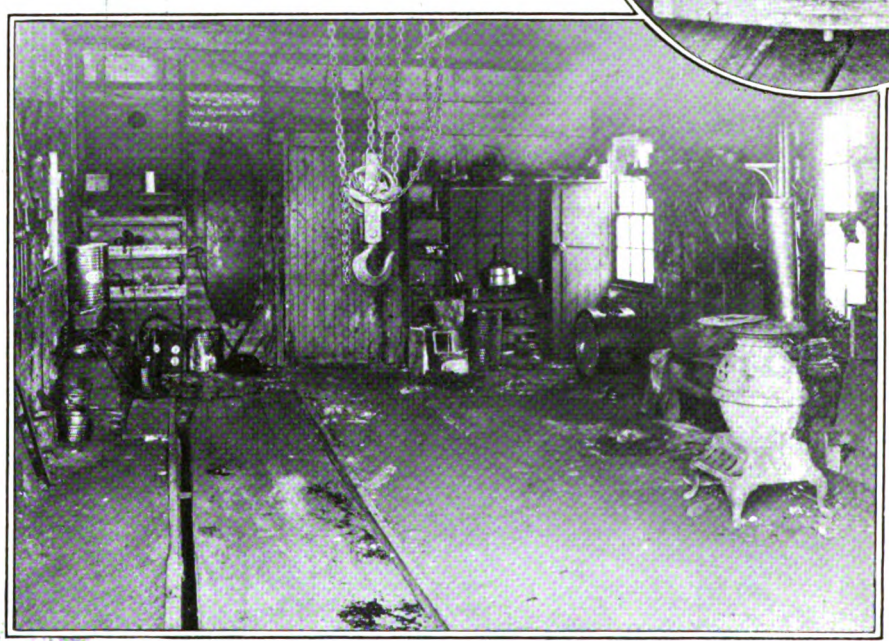

When miners have to wait for cars it's bad for their morale and it's bad for company profits. When Exide-Ironclad Batteries are on the job to hustle the empties in and the loads out, there's very little waiting for empties done. The speed and pep of this battery holds up all day long.

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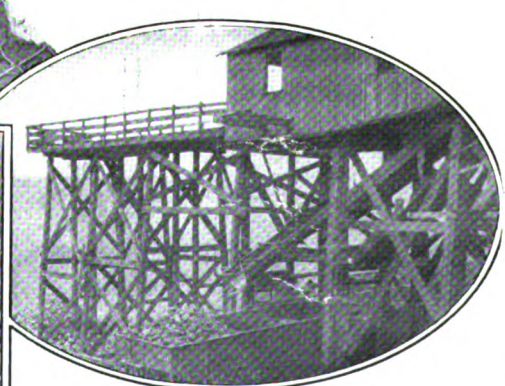

How quickly the car will be loaded and how many loaded cars there will be at the day's end depends largely upon the speed with which the haulage motors can haul the coal. If there are Exide-Ironclad Batteries in those motors, more cars are going to pass under the tipple each day.



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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 29 — New York, March 4, 1926 — *Number* 9

COAL AGE

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Recent Improvements in Automatic Centrifugal Pump Control Simplify Apparatus 321
BY R. S. SAGER.

A Few New Minor Changes Improve Automatic Pumping Service 323
BY E. J. GEALY.

Artificial Storm of Air-Sand Floats Coal on Its Upper Surface, Leaving Refuse to Sink 325
BY THOMAS FRASER AND H. F. YANCEY.

Rocky Mountain Men for Three Long Days Steep in Their Safety Problems 328

Sentiment for Coal Legislation Has Cooled 336
Fan and Foreman Not Needed in One-Man Mine 337
Favorable Report on Bill Expanding I.C.C. to 13 337
Coal Stocks for 49 Days in Industrial Bins 337
British Empire Corporation Agrees to Check-Off 337
Distribution Census Plan May Be Tried in 1928 337
National Guard Keeps Peace in Southern Indiana 338
Hudson Coal Co. to Erect $2,000,000 Breaker 338
U. S. Steel Corporation Observes 25th Birthday 338
Plan New Union Drive in Northern West Virginia 338
Did Electric Arc in Firedamp Cause Jamison Blast 339
Urges Body to Maintain Industrial Peace 340
State Mine Chiefs to Confer 340
318 Killed in January Mine Accidents 340

Editorials 319
Underground Operation 334
Practical Pointers 335
News Items from Field and Trade 341
Traffic 343
Weekly Review and the Market 345
Foreign Market and Exports News 350
New Equipment 351

To Lower Haulage Costs

WE USUALLY think of a shoveling machine as a mechanical device used for loading coal into mine cars. These machines, however, may and frequently do find other application underground.

Next week Frank H. Kneeland will describe how shoveling machines are being used to load out cuts and fills on the main haulage entries of a group of mines in Kentucky. By this means the work of bringing an undulating bottom to grade is greatly simplified. Furthermore, this dead work can be performed at a less cost by shovel than the same work could be done by hand.

Best of all the shovel does the work rapidly. Changing grades on a main haulage may be an extremely expensive operation, because in most cases such a change entails a more or less pronounced interference with haulage operations. With two power shovels, one at either end of the cut, such changes can frequently be made over a week end and with no interference with haulage.

* * *

ALABAMA is making headway with rock dusting, as is the rest of the country. The Alabama engineers are thinking the problem out for themselves, and J. H. Edwards during his visit to that state recorded what the outcome of this thinking has been. His observations will appear in next week's issue.

* * *

ANOTHER article will describe the results of investigations as to liquid oxygen as an explosive. This rock-shattering material familiarly known as LOX, can be used by coal men only in surface work. It seems well adapted to employment in strip pits.

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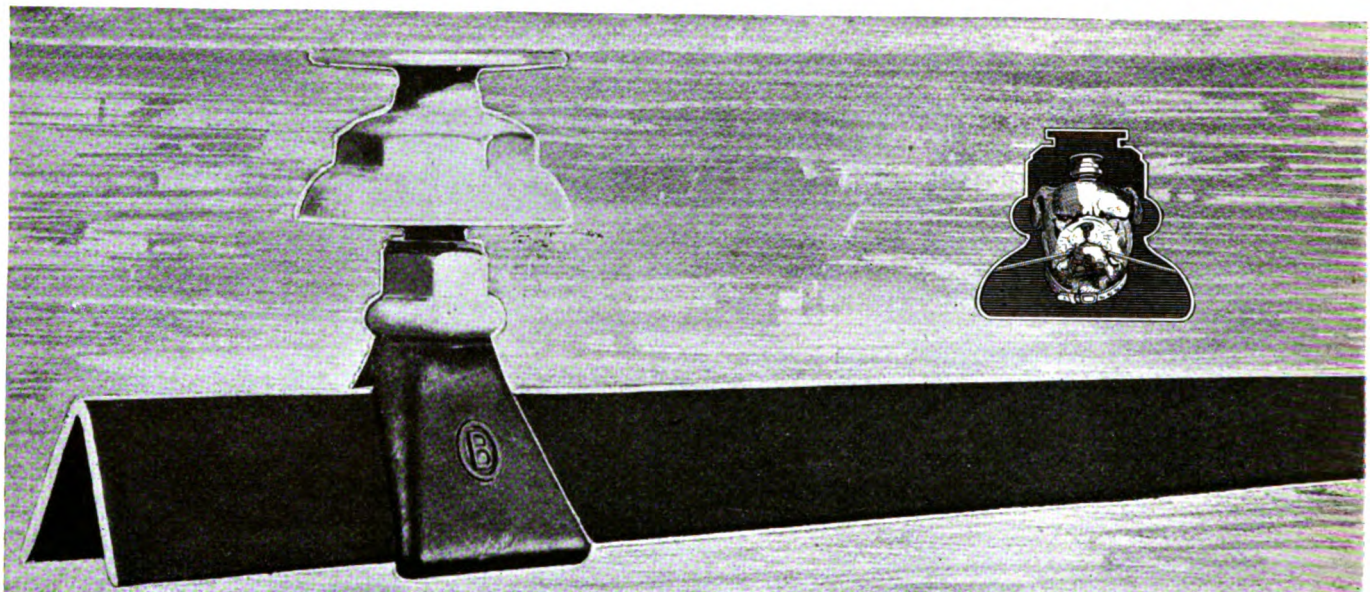

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COAL AGE

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 29 | NEW YORK, MARCH 4, 1926 | Number 9

Coal as an Ice Remover

NONE of the modern problems in cities is more perplexing than that of removing snow and ice. In one storm in 1920 New York City spent $5,500,000 for the service and yet did not do the work either speedily, thoroughly or without hindrance to traffic. The ideal way to remove the ice would be by heat. By this method the snow would in fact not be removed, it would melt as it falls and the sidewalk would be kept clear, saving labor and the suits that follow falls on the icy pavements, keeping the walks free for loading operations or for business and making trading at the stores attractive.

A foot of snow just freshly fallen weighs from 5 to 12 lb. per cubic foot. The latent heat of fusion for snow is about 143 B.t.u. per pound, and as snow may fall at a temperature of 10 deg. below freezing 165 B.t.u. of heat will serve to raise the temperature enough not only to assure melting but the transfer of the water over the curb or to cause it to evaporate into the dry air. Taking the heavier weight of snow per foot of fall and assuming a foot of precipitation, the number of British thermal units needed to melt the snow and give it a final temperature of 10 deg. above freezing, having fallen at 20 deg., would require 1,980 B.t.u. per sq.ft. Assuming that there is a waste in heat such that twenty times as much coal is used as the thermal capacity of that fuel would indicate, the quantity of heat needed would be 39,600 B.t.u., or about the heat in three pounds of coal. If the cost of the coal as stoked into the furnace was $10 per ton the cost of melting by steam in the manner indicated would be 1½c. per sq.ft. and a pavement 16 ft. wide and 100 ft. long would be cleared for $24.

Probably in most cities there would be but three such storms in a year and a cost of $72 would not be excessive. Such a pavement would supply enough snow to fill five wagons for a precipitation of one foot, and the cleaning of the sidewalk, the loading of the snow on the wagon and the transfer of it over slippery, drifted streets to the wharf might easily cost $25, or $75 for three such snows. However, as the municipality pays for the cartage there probably would be an apparent total loss in such melting because the city would be relieved at the cost of the owner.

Perhaps municipalities might be disposed to allow a reduction in taxes where such cleaning by steam pipes is provided. It might be arranged also that the owner would keep the snow off the street to its center and thus help in the general clearing of the roadway. Perhaps it would not be unconstitutional to require newly constructed buildings ten stories or more in height or buildings of over five stories constructed for manufacturing purposes to provide pipes and boiler capacity for the removal of snow on the sidewalk and in the road. Such high buildings create an unusual density of traffic and an obligation rests on the owners to relieve in part the congestion which the intensive use of their building space makes inevitable.

What an assistance to communication it would be if, at least, two main thoroughfares in New York City were provided in some such manner with complete equipment for removing the snow as fast as it fell.

High Discovery Depletion Builds Up Oil Competition

THE NEW TAX LAW revises the depletion clauses relating to "discovery" of mines and of oil and gas wells. In the case of metal mines more liberality is shown than in the past in that the law requires that "discoveries" shall include ore in commercial quantities contained in a vein or deposit discovered in an existing mine or mining tract if the vein or bed thus discovered is not merely an extension of a vein or bed already known to exist. In other words, a disconnected commercial orebody in a known mineralized zone is eligible for discovery valuation for depletion purposes, provided it has not been included in a former valuation.

The revision of the discovery depletion allowances in no way benefits the coal industry. The only depletion that this industry can get is based on cost, or March 1, 1913, value. The coal beds of the United States have been accurately mapped by state and federal surveys, and this fact is held to preclude discovery, coal lands being purchased or leased only when commercial coal is known to exist.

The discovery depletion allowed oil in 1921 to 1923 averaged 70c. per barrel (30 per cent) on the total production, while the total depletion on coal (based on cost and March 1, 1913, value) was approximately 6c. per ton, or only about 2 per cent of the selling price of coal. This disparity is still greater when it is realized that the heating value of a barrel of oil is only a quarter to a third that of a ton of coal. The wide variation in tax-free allowances for those two competing industries is a question that the National Coal Association might well consider.

In the amount of depletion allowable in the case of oil and gas wells the new tax law is definite. Discovery depletion, as such, is not mentioned, but the law specifically states that "In the case of oil and gas wells the allowance for depletion shall be 27½ per centum of the gross income from the property during the taxable year. Such allowance shall not exceed 50 per centum of the net income of the taxpayer (computed without allowance for depletion) from the property except that in no case shall the depletion allowance be less than it would be if computed without reference to this paragraph."

As between the discovery depletion allowable for

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mines, and the 27½ per cent deduction for oil wells, the oil industry has by far the greatest advantage, for the depletion deduction will cover an entire pool even more effectively than did the discovery clause in the earlier laws. The average percentage of discovery depletion for oil wells in 1921 to 1923 was approximately 30 per cent of gross income. There is, therefore, a slight reduction, but the rate is entirely too high, for it means that practically 50 per cent of the net income will be tax-free. The average depletion on cost is about 5 per cent of gross income, leaving 40 to 45 per cent of net income as development appreciation to be written off as depletion, after all exploration and production costs have been deducted.

Mine Mapping Reduces Dangers

MINE maps should always be kept up to date. By this means only can the superintendent and other general operating officials make frequent eye-surveys of mine workings to determine the degree of safety of new development. These men do not have the time to make personal inspections of a mine as thoroughly or as often as might be desired. Between times they must rely upon the mine map to convey knowledge of extensions of workings. To serve this purpose, consequently, the map must be reasonably accurate.

A daily extension of the map will aid in the avoidance of many dangers. A weekly correction will reduce the probability of an impending danger. No working map should stand uncorrected for periods greater than a week.

The importance of accurate map-keeping has been proved by private and state investigations of a number of explosions which have taken place in the past few years. Entries have been driven far ahead of fresh air, crosscuts outby of the last have been left open, doors omitted, etc., unknown to the superintendent and more frequently to the general management.

Not so long ago a number of men worked under conditions more dangerous than they at the time realized, while taking part in the rescue after an explosion in a mine in which a "bleeder" entry was allowed to remain open long after it had ceased to serve a specific and safe purpose. The opening was not plotted on the map nor was the management aware of its existence. The oversight might have caused a second explosion.

A danger or an approach to such a condition ought to be indicated on the map on the day it is noted. Underground officials could facilitate this procedure by jotting down in a notebook abnormal conditions in any place, which at the end of each shift should be indicated so far as possible on the map in the outside mine office.

Those Fortunes in Anthracite

IN THE year 1925 the reports made by the several anthracite companies to the Treasury showed the aggregate of the net incomes in the previous year, fiscal or calendar, as the case might be to total $28,611,281. They also showed a total of the net losses sustained to be $6,791,469. Deducting net losses from net income the whole of the anthracite industry made a net earning, excluding Federal taxes, of $21,819,812.

No wonder when the secret was revealed by the publication of the tax returns, the public was convinced that the producing of anthracite was a poorly compensated business. The United Fruit Co., for instance, in which no one but the stockholders are interested showed a profit of $26,218,015.55 before payment of income tax. It would be futile to compare that twenty-two million made in the anthracite industry with the $120,982,-531.89 made by General Motors or the $165,000,000 and more made by the U. S. Steel Corporation. Still less will it stand comparison with the earnings of Mr. Ford.

The output of anthracite in 1924 deducting what was used at the mines for steam and heat was 80,291,438 net tons. So the profit per marketed ton was 27.1c. and for whole tonnage produced 24.8c. Truly a lot of pother has been made about a most niggardly profit, and the pity of it is that many who if they were in the business would want a return four or five times as large are among the persons who have been most voluble in criticism. If industry generally was conducted on margins comparable with those on anthracite the cost of living would make a notable decline.

Diesel-Electric Transportation

JUST what place the Diesel-electric engine, with its replacement of oil for coal, is going to take in the railroad industry remains to be seen. The disposition is to say that it is any man's guess, but back of it all is a belief that as means are adapted to ends it may have an increasing place in the transportation industry, especially for yard work and for traffic not dense enough for true electrification but near enough to cities to make smokelessness important. It has good powers of acceleration because of its high horsepower at low speeds, but it is not suited for use where stops are frequent because it constitutes such a huge weight to be accelerated. This all seems to be conceded. What is not clear is what place it has in main-line operation, especially for freight service.

The Diesel-electric engine in itself alone is not exceedingly heavy but it needs heavy foundations and therefore a heavy truck beneath it. Much electric equipment goes with it, also adding seriously to the weight and to the weight of the carriage. A steam locomotive will weigh 140 lb. per horsepower, but the present Diesel-electric equipment will weigh from 250 to 300 lb. per horsepower. Some are hoping that 200 lb. will be the figure ultimately obtained.

The cost of the Diesel-electric unit is three or four times that of the steam locomotive, but the fuel cost is only 30 per cent as large and the Diesel-electric engine should easily work twice as many hours as a steam locomotive, for it fuels seldom and takes water even less frequently, runs without repair and has no firebox to clean out. For these reasons, as C. A. Stein, the general manager of the Central Railroad of New Jersey, has said, its cost of operation should be one-fifth that of the steam engine working on anthracite and one-third of the same prime mover working on bituminous coal.

The large outlay, the weight on the drivers and conservatism will hold back the Diesel-electric locomotive. Samuel M. Vauclain may have been right when he said at the Midwest Power Conference at Chicago, Ill.: "It is my opinion that considerable time must elapse and many millions of dollars be expended in the development of an oil-electric power unit in the shape of a locomotive before machines of this type will figure to any great extent in transportation service."

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Recent Improvements in Automatic Centrifugal Pump Control Simplify Apparatus

Time-Delay Relay Takes Place of Notching Type—Adjustments Are Made to Suit Pumping Conditions—In Case of Trouble Pump Is Locked Out of Service

By R. S. Sage*
Schenectady, N. Y.

THE DRAINAGE problem of a coal mine is one of the most important the operator has to solve. In the anthracite field there are many instances where an average of twenty tons of water must be pumped for every ton of coal produced and this ratio in some cases is much greater. It is highly important, therefore, that the pumping apparatus be adequate in every particular and, at the same time, its operation should be carried on as economically as possible. Mine pumps usually have to operate intermittently over long periods and therefore require either manual attendance or an automatic system which accomplishes the same results with complete reliability.

Rapid progress has been made during the past two or three years in the application of automatic control equipment to mine pumps, and the system has now been brought to a point which assures success in handling all operating conditions which arise in such service. Manual attendance, where automatic apparatus is used, has been almost completely dispensed with, and best of all, without in any manner compromising the dependability of the plant. As a result large savings in operating expense have accrued to the operators. Fortunately, the automatic system involves no excessive capital outlay for additional apparatus and yet is not complicated.

Some publicity already has been given to the automatic pumping systems which have been adopted with great success in the anthracite fields. Therefore, the present article will deal with a recent improvement in the control equipment, particularly in the manner of securing successive restarts of the pump.

Automatic control equipment described in this article refers to centrifugal pump installations only, there being no particular problem attending the automatic starting and stopping of plunger type pumps. When centrifugal pumps are operated with a suction lift, it is necessary that the pump be primed before it will deliver water. The use of foot valves often makes priming unnecessary, but such valves are not always considered dependable, as they are likely to leak from one cause or another. Therefore, in automatic installations operating under a suction lift, a priming pump is an essential part of the equipment.

The sketches in Figs. 1 and 2 are included so as to illustrate the apparatus involved and the functions they perform. Referring to Fig. 1, the apparatus comprising the complete equipment will be found listed in the drawing. Fig. 2 is a simplified wiring diagram reference to which should be made in connection with the explanation which follows.

When the sump fills with water to a predetermined height, the float switch, *5*, closes its contacts and establishes a circuit through contact *b* of the time relay and the interlock *a* of the master contactor, *A*, to the solenoid-operated valves *9* to the contactor starter, *8*, of the priming pump motor, and to the motor, *M*, of the time relay, *B*. The priming pump then starts and proceeds to exhaust the air from the main pump casing through the valves, which are held open by the energized solenoids.

The air is drawn through the vacuum breaker, *6*. As the air is being exhausted, water rises into the pump casing and eventually is drawn through the priming pipes and into the vacuum breaker. As the water level in the vacuum breaker rises, a float causes electric contacts mounted thereon to close.

The closing of the contact, *6*, completes a circuit through the operating coil of the master contactor, *A*, which closes its contacts, *e*, and opens its interlock contacts, *a*, with the following results:

(a) A shunt circuit around *6* is made through *10* and *11* (when these latter are closed).

(b) A circuit is made to the magnet, *S*, of the time relay, *B*, and its timing action begins to function from this instant. The energizing of this relay magnet causes the contact, *d*, to close at once, establishing for itself a holding circuit.

(c) A circuit is made to the starter, *7*, for the main pump motor, which is brought up to its normal running speed.

(d) Contacts *a* open, thereby de-energizing the starter, *8*, shutting down the priming pump and de-energizing the solenoid-operated priming valves, causing them to close.

As soon as the main pump has reached a sufficient speed high pressure is developed which closes the contacts of the pressure regulator, *11*, which completes the parallel circuit to the coil of the master contactor. When the priming of the main pump is completed and the solenoid valves are closed, no more water is drawn over into the vacuum breaker. This device is so con-

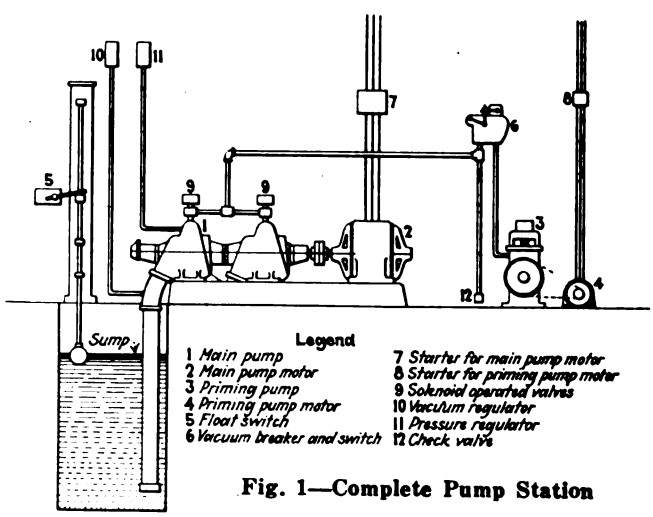

Fig. 1—Complete Pump Station

*Mr. Sage is of the industrial department, General Electric Co.

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structed that, when its compartment is filled, the rising of its float opens a valve to atmosphere, thereby allowing the water to drain out through the pipe and check valve shown in Fig. 1. This also causes the switch *6* to open again, but not until *11* has closed so that a circuit to the master contactor coil is maintained.

The interval between the closing of the solenoid-operated priming valves, indicating completion of the priming operation and the opening of the vacuum breaker switch, *6*, is approximately fifteen seconds. This is normally ample time for the main pump to build up pressure and close the pressure switch *11*.

The timing relay, usually set for a period of about two minutes, releases its contact *b* after a predetermined time delay and closes the contact *c*. Normally this operation has no result whatever, as the master contactor is already closed and the opening of contact *b* does nothing except disconnect the small motor *M* or relay *B*.

The starting cycle is now completed and the main pump continues to run until the level of water in the sump has been lowered to a predetermined level, when the float switch *5* opens and the apparatus stops.

Consideration should now be given to the way in which the apparatus functions when, for some reason, the pump does not go into service as intended. If, for instance, the pressure switch *11* fails to close, indicating that the pump did not build up its proper pressure—as would be caused by a broken discharge pipe, leaks in the suction pipe, etc.—the master contactor will be de-energized when the vacuum breaker switch opens and the pump will be shut down. The pump would then be reprimed and the starting procedure would be repeated as previously explained. Such starts and restarts would occur until the time relay *B* opened the circuit at *b*. This happens at the expiration of the period for which the relay is adjusted. The timing of this relay may be adjusted to allow three, four or more restarts before it will permanently disconnect the pump control apparatus from the power supply. When the circuit is broken at *b* a circuit is established at *c* for the alarm bell which serves to indicate that inspection of the equipment is necessary.

It may frequently be the case that more than one start is necessary before the pump is properly brought into operation. For instance, if a long discharge line must be filled, the vacuum breaker switch may open before the pressure regulator closes on the first trial, or enough air may remain in the pump casing on the first attempt to prevent the pressure regulator from closing before the vacuum breaker switch opens and thus shuts down the main pump.

The vacuum regulator *10* protects the pump against operation with an excessive suction lift such as could result from a clogged intake on the suction pipe or failure of the float switch to stop the pump when the predetermined low water level is reached. In some cases the operation of the vacuum regulator instead of the float switch is relied upon to shut down the equipment at low sump level. Also, some outfits are installed so that they may be stopped or started by a push button located at a remote point instead of by a sump float switch. In such instances a throw-over switch may be used to permit operation by the float switch or from the push-button station, as desired.

It is common practice to provide reverse-phase and phase-failure protective devices in the main motor circuits in addition to overload and under-voltage relays, thus insuring against improper electrical conditions. It is also recommended that all equipments include bearing temperature relays for the main motor and the pump. These relays would then be connected into the control circuit to stop the machines in case bearing temperatures became excessive. With the installation of these simple devices practically every conceivable emergency is provided against.

If the priming pump fails to prime the main pump, the vacuum breaker will not close the master contactor, with the result that the priming pump will continue to operate unless some means is supplied to prevent it. This can be taken care of by providing an additional time-delay relay so adjusted as to open the circuit to the priming pump motor after the lapse of 20 or 30 minutes. If this relay is not provided, no harm can result, as the type of priming pump generally used is suitable for continuous operation. Moreover, such a condition would soon be brought to the attention of someone by the ringing of another bell alarm indicating a high sump level.

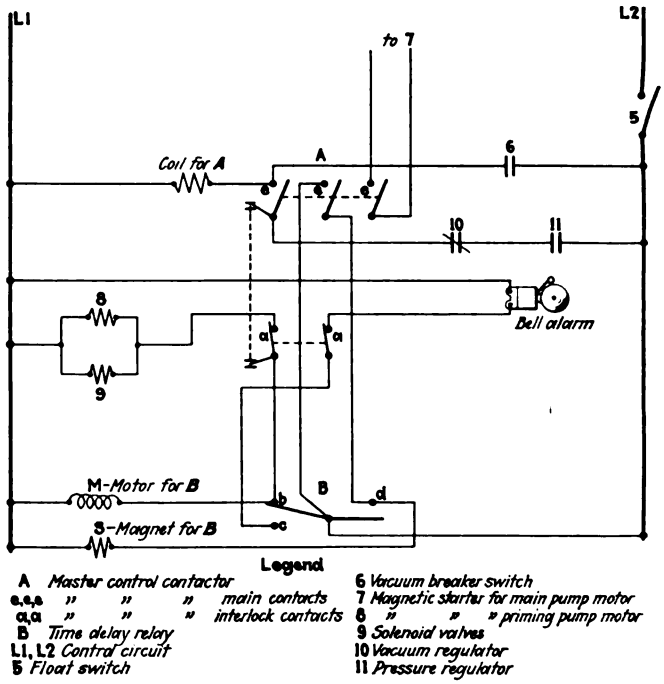

Fig. 2—Wiring and Control Devices Used With Automatic Apparatus Are Simple and Reliable

A time-delay relay is used to limit the number of restarts the equipment will make before the control circuits are automatically locked out. This simplifies the protective and control apparatus.

In case the automatic equipment is shut down by the action of either of the time-delay relays it is necessary for the operator, after he has corrected whatever fault exists, to reclose the time relay so that automatic operation can be resumed. A reset push button is provided for this purpose.

It is by the application of relay *B* that this system differs from the original control equipment developed for this service. Previously, the system included a form of notching relay which permitted the apparatus to make a definite number of restarts, usually three, before permanentlty locking out the control devices. The substitution of the time relay somewhat simplifies the circuits and increases the dependability of the system as a whole, because the relay employed is a standardized product used in large numbers on motor starters and other control apparatus.

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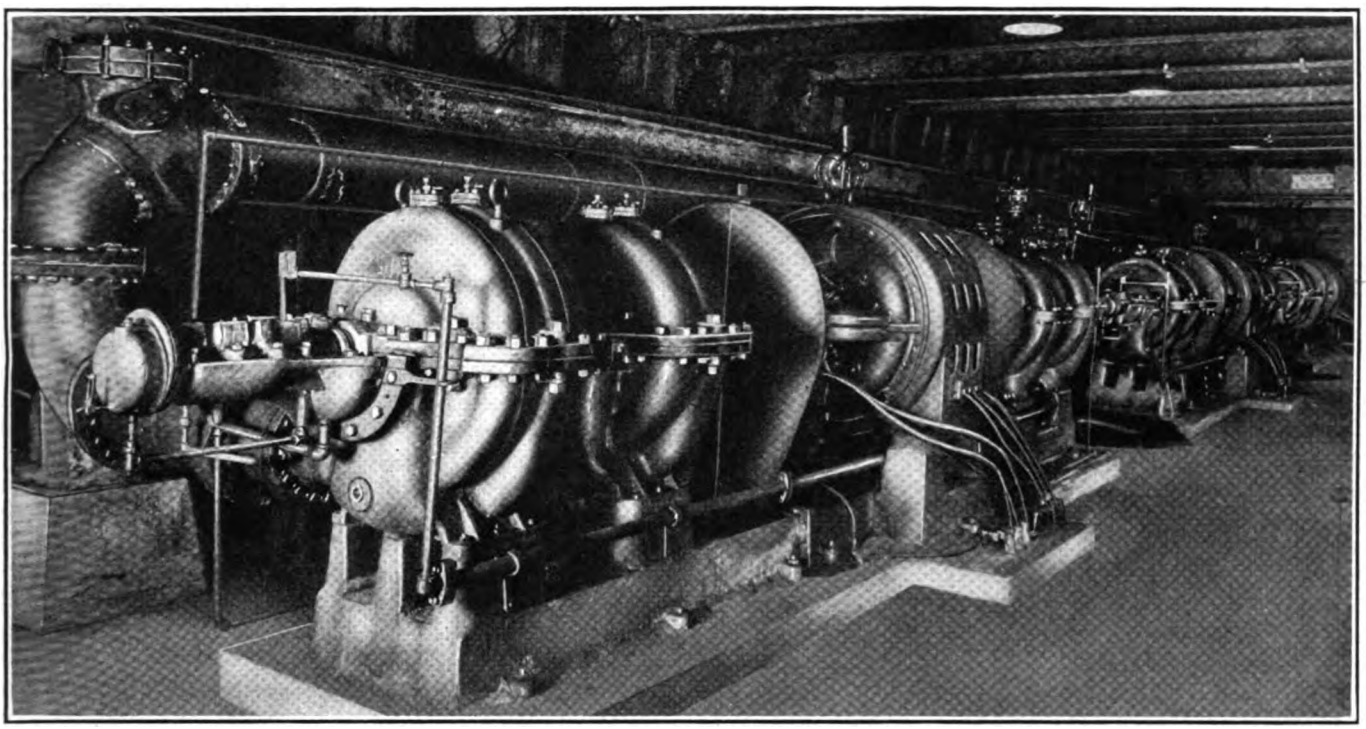

A Few New Minor Changes Improve Automatic Pumping Service

By E. J. Gealy
New York, N. Y.

IT IS a remarkable fact that ever since the first complete automatically primed, started, protected and stopped centrifugal pumping outfit was designed and put in operation only a few minor changes or improvements have been found necessary. Most of the installations recently made are primarily the same as those described in the Sept. 13, 1923, issue of *Coal Age*. However, a few improvements have simplified and perfected the operation of the original automatic features.

Where a single centrifugal pump is primed by an automatic motor-driven priming pump a spring-operated valve illustrated in Fig. 1 may be used. The valve itself is constructed the same as the original solenoid-operated type but is actuated by means of a spring instead of a solenoid.

The spring-operated valve is held closed against a spring by the pressure developed in the centrifugal pump. When the pump is stopped the power of the spring is sufficient to open the valve.

Air easily passes through the passages of the valve, but when the centrifugal pump is primed and develops pressure the valve closes. Once closed in this manner it stays tight and does not leak, because the plunger is held on its seat by the pump pressure.

Headpiece
These three eight-stage 2,000-gal. per minute centrifugal pumps at the Greenwood Colliery of the Lehigh Coal & Navigation Co. automatically come into service as required. When the water level in the sump rises to a predetermined level one of the units starts. If the water level continues to rise, another unit automatically steps in to help. Should these two pumps fail to prevent the water from rising further, the third unit gets under way. As the water recedes each unit is stopped in its proper sequence. All these operations are automatically controlled without any manual attendance whatsoever.

A leather washer on the end of the valve stem is used to seal the valve against air leaks while it is open. This feature obviates the necessity of packing the valve and also reduces its friction.

Equipment For Two or More Pumps

The electric control equipment of automatic pumping outfits has been slightly improved by changes designed to handle two or more pumping outfits from one priming pump. Fig. 2 shows a wiring diagram of a two-pump control system operated from two float switches. The second pump is prevented from coming into operation by means of a timing relay in the circuit of the first pump. A triple-pole, double-throw switch is provided to make the starting sequence of the two pumps selective.

Quite similar control apparatus has also been designed to start, as required, any number of pumps in the same station. If the water level in the sump unduly increases after the first pump has operated for a time, the second pump is automatically put into service. If the water still continues to rise, a third pump is automatically started and placed in operation. As the water level recedes the pumps go out of service in their proper sequence. Such a station located at the Greenwood Colliery of the Lehigh Coal & Navigation Co. near Lansford, Pa., is shown in the headpiece.

Another feature of control relating to the rate at which the starting contactors of the motor controller are closed has been improved. In this connection when sufficient time was not permitted before the pump motor was thrown directly on the power line for the motor

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to come up nearly to full speed, the pump seemed to lose its water. The column of water in the suction line or in the pump appeared momentarily to part when the motor speed was suddenly increased from a low value to full speed. Lately this difficulty has been removed

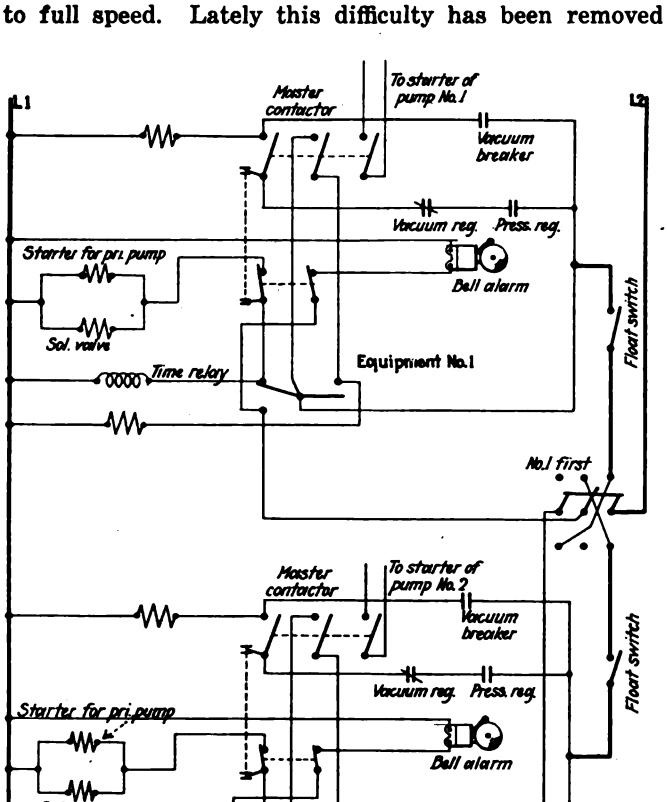


Fig. 1—Two-Pump Control System

This diagram shows the wiring circuits used when two pumps are primed by one motor-driven priming pump. Each centrifugal unit is controlled by its own float switch

by adjusting the contactor switches on panels connected to wound-rotor induction motors so that the motor nearly reaches full speed soon after the first contactors are closed. Thus there is no sudden jerk when all the motor resistance is cut out and the motor brought up to full running speed.

Economies of operation, maintenance and repair are rapidly popularizing these recent innovations in centrifugal pump control and interest in the system is already spreading to other industries.

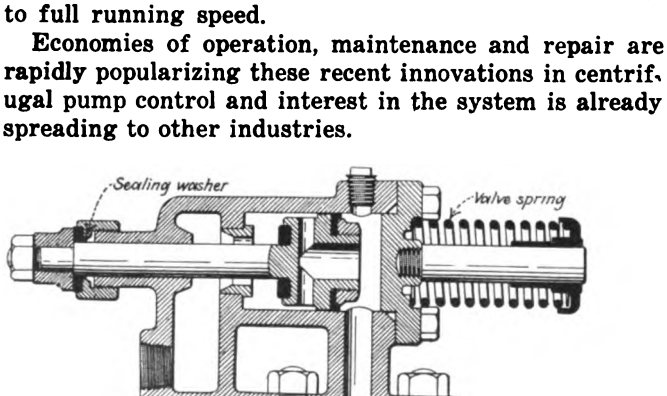


Fig. 2—Spring-Operated Priming Valve

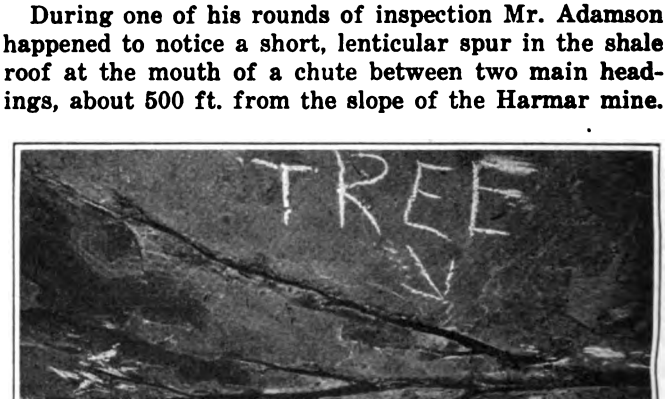
The valve itself is the same as the solenoid type. The spring is connected to the valve through a crosshead and tie rods

Mine Roof Reveals Unusual Fossil of Carboniferous Tree

A COALIFIED fossil, which from a scientific point of view is probably the most valuable specimen of a tree of the Carboniferous period ever discovered, because it combines so many hitherto unknown or only suspected characteristics of the tree it represents, is now on exhibit at the Carnegie Institute of Technology, Pittsburgh, Pa. The U. S. Bureau of Mines classifies this fossil as that of the extreme tip of a *Lepidodendrum lanceolatum* (meaning a family of ancient, fern-like trees with a bark composed of overlapping scales and leaves which are lance-shaped). The fossil was discovered recently by Superintendent James Adamson in the Harmar mine, in the Double Freeport seam, of the Consumers Mining Co., Harmarville, Pa.

Back about 200 million years ago a fern-like forest grew in a bed of mud which lay over a thick deposit of peat-like material in the vicinity of what is now Harmarville. The tip of one of these trees fell undamaged into this mud which later was submerged by a sea and then covered by a thick deposit of limestone. During a later period these deposits were uplifted and in subsequent years eroded to the topography of the region in the present day. The pressure subjected by the heavy overburden changed the peat deposit into coal, which is now known as the Double Freeport seam, and coalified the tip of the tree in the mud above the bog without changing the surface structure of the tree tip, such as the leaf scars and bark patterns.

During one of his rounds of inspection Mr. Adamson happened to notice a short, lenticular spur in the shale roof at the mouth of a chute between two main headings, about 500 ft. from the slope of the Harmar mine.



Mine Chief Found This Fossil

Carboniferous period tree imbedded in the roof above the Double Freeport coal seam in the Harmar mine near Pittsburgh, Pa. The fossil is somewhat distorted because of the angle at which the photograph was taken.

Suspecting that the exposed spur might be a projection of a large fossil body hidden by a slab of shale, he pried down the latter and uncovered a fossil roughly measuring 4 ft. in length from tip to tip. A *Coal Age* camera was focused on the fossil as it hung in place in the roof, with the result shown in the accompanying illustration.

Mr. Adamson appreciated the scientific value of his find and set a crew to work removing the fossil. This was finally accomplished by drilling close together a series of holes on a rectangular border. The slab was then reinforced with cement in a protecting box and loosened.

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Artificial Storm of Air-Sand Floats Coal on Its Upper Surface, Leaving Refuse to Sink

By Thomas Fraser* and H. F. Yancey†

THE air-sand process is one in which inferior material is removed from coal by means of a body of dry sand artificially fluidized and maintained in that condition by a continuous stream of air bubbles flowing through the sand body. By proper regulation of the rate of air flow, this fluid air-sand body may be maintained at such a density that coal will float near its surface and the refuse, which is heavier, will sink through the sand to the bottom of the container. This separation is a float-and-sink operation similar to the separation of wood chips and stones in water; the one floats and the other sinks, irrespective of the size of the pieces. This was the objective sought in the development of this method of cleaning coal—a dry process which requires no preliminary sizing. Fig. 1 shows the cast-iron cell used for testing at the Central District Experiment Station of the Bureau of Mines, Urbana, Ill. This consisted of two castings: a rectangular box 12 in. square in cross section and 18 in. tall, open at both ends and flanged on the bottom and a cubical box also 12 in. square inside, with a closed bottom and flanged top. A porous diaphragm is bolted between the flanged ends of the two castings.

SO FAR the air-sand process is in its laboratory stages, but it seems to have possibilities on a commercial scale. The efficiency of its separation is 87.3 per cent on laboratory tests. The coal does not need close sizing before treatment, as the process is practically a "float-and-sink" determination based on gravity alone and in no way dependent on size. The coal floats on the sand cloud.

The upper part of the cell above the diaphragm is filled with river sand that has been passed through a 20-mesh screen without the removal of the dust. Air under suitable pressure is admitted to the lower part of the cell below the diaphragm, passes through the diaphragm and bubbles up through the sand, distending the mass and throwing the sand particles into motion.

Obviously the diaphragm is the essential feature of this machine. It must act as an air-diffusing medium to distribute the rising air bubbles evenly over the cross section of the cell so as to agitate the sand body uniformly and produce thereby an homogeneous fluid. For this purpose perforated metal plates, Filtros plates and porous concrete slabs have been used successfully. The last named have been given preference in the experimental work because of facility with which special shapes may be made.

The sand bath, when correctly adjusted, "boils" uniformly on the surface and feels much like a fluid; it is easily penetrated and stirred with the hand, and offers little resistance. When ordinary silica sand is used, just enough air to produce a free flow makes an air-sand bath of about 1.45 specific gravity, as indicated by a spindle hydrometer. Coal will float in this medium in the upper part, but almost entirely submerged. Refuse material such as shale and pyrite sink to the bottom of the cell and accumulate on the diaphragm. An accumulation of coarse material 2 or 3 in. deep apparently does not interfere with the operation but helps to break up and distribute the air; a thicker bed is disadvantageous.

To obtain a specific gravity of 1.45 with silica sand, a pressure equal to the weight of 1½ to 3 in. of mercury is required in the air chamber. This depends primarily upon the porosity of the diffusing medium. No measurements of air consumption have been made, but the volume used is comparatively small; the function of the air is to agitate and distend the sand body, not to lift the coal load by impact. No irregularity of flow is observed in the sand chamber as might be expected on a cell of such shape. This is probably because of the small quantity of air used and the low velocity through the diaphragm. The simple apparatus by which the operation of the process may be demonstrated, can be assembled in a few minutes in any laboratory where the material is available. It consists of a 3-in. porcelain Büchner funnel, and an open glass cylinder of approximately the same diameter as the funnel and 12 in. or more long. The two are fitted together, sealed by wrapping the joint with electrician's tape and supported by an upright ringstand. Sand is placed in the cylinder, and air is introduced through the stem of the funnel. Any source of air the pressure of which is fairly constant, is suitable. In a small tube of this kind only a small quantity of air should be admitted the admission being controlled by the "cracking" of the valve.

As an example of the separation made by the method Table I gives the results of a test on coal from No. 6 bed in central Illinois. The coal was of nut size (2 by 3 in. round-hole screen) and was taken from a 10-ton sample collected at the mine. It contained the natural proportion of impurities, as it had not passed over the picking table in the tipple. The cast-iron cell shown in Fig. 1 was used to make the separation.

Table I—Results of Air-Sand Cleaning Test

Products	Weight, Pounds	Yield, per Cent	Ash, per Cent	Sulphur, per Cent
Raw coal	62.3	100.0	14.3	6.09
Cleaned coal	54.4	87.3	9.9	4.57
Refuse	7.9	12.7	44.9	16.56

The results of this trial are very satisfactory, as may be judged by comparing them with a test made of a much larger but identical sample of the same lot of nut coal in a two-compartment jig. In the jig test 82.6 per cent of washed coal was recovered containing 10.3 per cent ash. A specific-gravity analysis, made by the

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float-and-sink method on another part of the 10-ton sample used in all the work, showed it to contain 90.4 per cent of float coal with 9.9 per cent ash, the same quantity of ash as that of the cleaned coal obtained in the air-sand test. The efficiency of the separation between coal and refuse in the air-sand cell is, therefore, 87.3, which is the yield of cleaned coal, divided by 90.4, the yield theoretically possible under ideal conditions, or 96.6 per cent. The ash content of the refuse obtained may appear on casual inspection to be too low, but considering that nut coal 2x3 in. was treated, and that the refuse contained about 30 per cent of pyrite, which loses about one-third of its weight on incineration, the 44.9 per cent ash in the refuse is quite acceptable.

In the development work on this problem, only the cast-iron cell shown in Fig. 1 was used. A gravity method suitable for the removal of refuse from the machine was developed. A bar screen made of sheet iron was placed in the cell just above the porous diaphragm and inclined at an angle of 45 deg. to it. One side rested on the diaphragm.

The slope was continued outside the cell by making an opening through the side of the diaphragm frame, constructing a special diaphragm of porous concrete, and providing an outside chute that reached to the same level as the bottom of the air chamber. When in operation, the opening of this chute is sealed with sand so that it does not act as a bypass for air. This arrangement provided a satisfactory means for removing refuse with no interference with, or alteration of, the air-sand medium within the cell.

The transition of this process from the laboratory test unit to regular plant operation will require the solution of various problems. Trials with various laboratory units have reached a stage of development wherein the main factors governing the separation between coal and refuse by the air-sand process have been satisfactorily controlled, and apparently no problems incapable of solution stand in the way of full-scale application.

Fig. 2 shows a cross section of the arrangement for a proposed general plant using this process. The operation is more or less self-evident. The air-sand medium is produced with 20-mesh river sand in the cell, which might be from 8 to 24 in. deep. Air is supplied by a high-pressure blower through the expanding approach to the diffusing slab that forms the bottom of the air-sand cell.

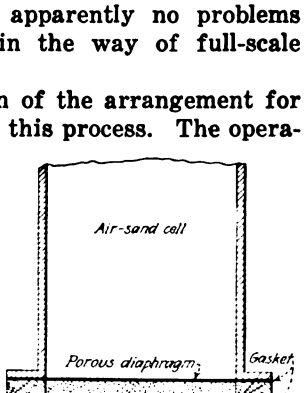

Fig. 1—Air-Sand Coal Cleaner

Apparatus as used at Central District Experiment Station, U. S. Bureau of Mines, Urbana, Ill.

This slab is inclined to one side to facilitate the discharge of refuse and avoid the use of a moving element for that purpose. The tendency of the rising air to favor the high side is compensated by increasing the resistance of that part of the diffusing medium. Refuse is swept out by a continuous slow movement of sand over the cell bottom and out through the refuse chute as shown. The rate of discharge is controlled by the outside revolving gate.

Coal is fed to the upper part of the air-sand cell, dragged across it and discharged by an endless chain scraper line. Discharge of coal is also aided by continuous rise and overflow of sand, any excess over the quantity removed by the slate gate being supplied from the sand storage tank. A stirring device to promote uniform agitation of the sand may be found advisable

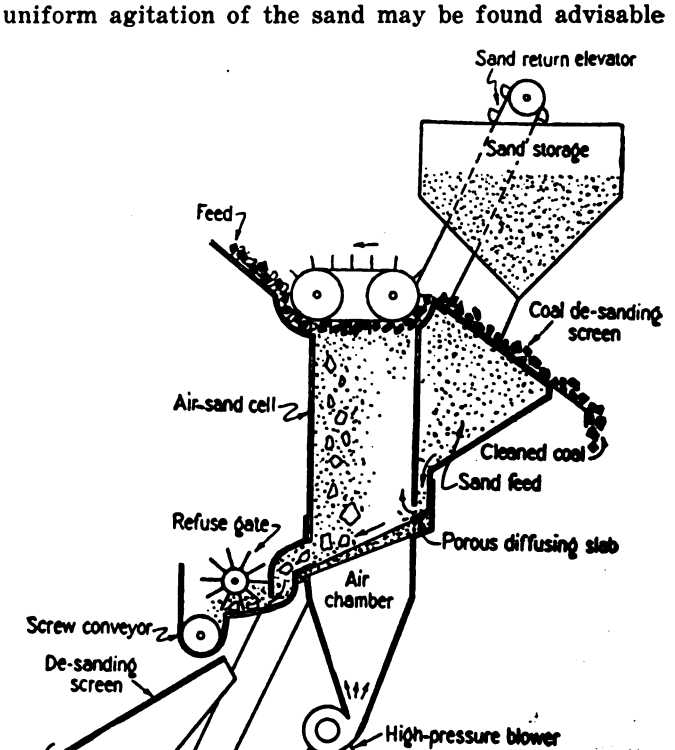

Fig. 2—Proposed Plant for Air-Sand Process

This shows plan for supplying sand to the air-sand cell, floating the coal on the sand, removing it by a conveyor, de-sanding it, removing the refuse and collecting what sand passes out of the refuse gate.

in a large-scale operation, although it has not been necessary in the experimental cell.

Heavy refuse such as shale, pyrite and bone particles drop out of the coal stream as it traverses the separating cell, and fall through the sand to the inclined cell bottom. Cleaned coal and overflow sand pass immediately over a de-sanding screen, and the sand returns directly to the sand feed chute. The refuse, which carries a larger circulating sand load, is gathered by a screw or drag conveyor to a central point where it is de-sanded by a screen and the sand is returned to the general sand storage bin by an elevator.

Suction dust hoods are not shown in Fig. 2, but will probably have to be placed over the separators and screens in order to keep the plant clean. However, on account of the small quantity of air used to agitate the sand, the air load on the dust-collecting system will not be heavy.

The only preparation that the feed will require is de-dusting or removal of fine material of the size of the sand or finer. Obviously the cleaned coal could not be de-sanded by a simple screening operation if the contained coal were as fine as the sand. Bypassing of the fines is coming to be almost standard practice at many coal-mining plants.

It is expected that the coal dust produced by attrition in the system after preliminary de-dusting of the feed will be taken up by the dust-collecting system, as there is a classifying action at the suction hood favoring the

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induction of the light coal particles; the position of the hood and direction of air flow at the top of the separating chamber especially favor this action.

Degradation of the sand, if appreciable, may form a dust that will be difficult to separate from the coal, but it is expected that the quantity will be so small that it can be absorbed by the coal dust product without contamination of the latter. In tests made with new sands containing slime, it has been observed that the dust that is finer than desired for the air-sand bath is carried away by the air so that after a few minutes operation the sand mass becomes free of dust.

The objectives sought in the design of a plant for cleaning coal by this method should be simplicity and low cost, in order to take full benefit of the three outstanding advantages of the process, which are: (1) dry operation; (2) positive and immediate float-and-sink separation; (3) the treatment of an unsized feed.

It may be added that the air-sand process was developed to its present stage by the Bureau of Mines, but it is patented (U. S. Patent No. 1,534,846, April 21, 1925, a process of separating loosely mixed materials), and the patent is privately owned.

Drill Rig Mounted on Auto Truck Does Fast Work

In stripping operations where the overburden must be drilled and shot before it can be removed, rapidity in moving the drill rig from one hole to another is important. The accompanying illustration shows the drill rig which W. N. Chandler, Jr., of Tulsa, Okla., placed on the body of an old White truck. The drill rig proper is operated by a kerosene engine.

With this outfit Chandler and his father are now sinking shotholes on contract for the Hinde Mountain Coal Co. Such shotholes are drilled 45 ft. deep and are placed 30 ft. apart each way. They are shot ten at a time. There is no loss of time in starting a new hole as it is merely necessary to drive the truck with the drill equipment from one hole location to the next. The speed and convenience of this method are important factors in this class of work and it is said that Chandler and his automobile outfit are much in demand. The equipment may also be employed in drilling oil or other wells where the depth does not exceed 800 to 1,000 ft. It is most advantageous, however, in work on shallow drillholes where frequent moves are necessary.



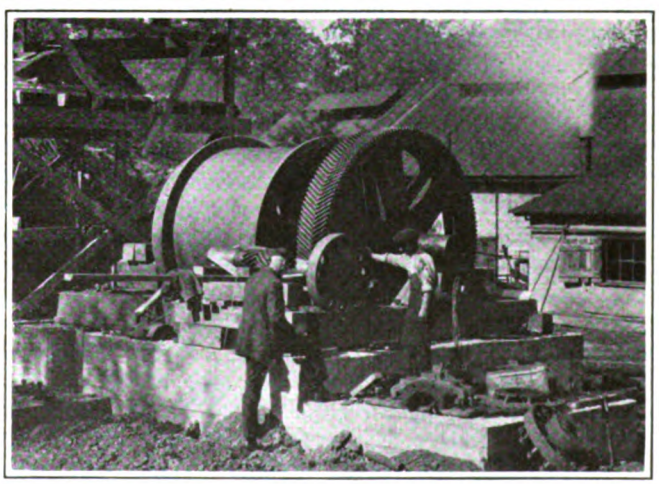
It Moves Swiftly

This drilling rig, mounted on an automobile truck, shifts rapidly over a track to be drilled ahead of a stripping operation enabling the owner to drill the overburden at several strip pits within a few miles of each other. This speed of transport seems to work to the advantage of everybody concerned and removes some of the cumbersomeness of the process of sinking shot holes. Naturally this rig would speed up drilling for any purpose.



Cost Keeping—at a "Super's" Desk

Orderly detailed records of mine operation costs from day to day may be computed and filed in such manner as this. The "super" is so well acquainted with each phase of his operation that a vast array of figures may mean something to him. But if the most is to be derived from them, through his own studies and those of his superiors, the figures must be grouped and condensed on graphic charts.



Big Alabama Hoist Under Construction

This is said to be the largest electric hoist in the Alabama coal field south of Birmingham. It has been installed by the Montevallo Coal Mining Co., at Aldrich, to replace the steam hoist now used to pull cars up the slope. The new hoist, which is driven by an 800-hp., 2,300-volt wound-rotor induction motor, will wind 3,600 ft. of rope at a speed of 1,250 ft. per minute. B. C. Moore (left), master mechanic and outside foreman, is discussing with C. H. Brill, the mine electrician, some point regarding the installation.

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Rocky Mountain Men for Three Long Days Steep in Their Safety Problems

Concentrated Mining Conceded to Enhance Safety but Canvas Tubing Is Warmly Attacked—Harrington Condemns Open Switches—Stray Currents a Hazard—At Acme Accidents Decreased with Mechanicalization

MEATY and intensely interesting discussions of coal-mine problems marked the twenty-second meeting of the Rocky Mountain Coal Mining Institute at Denver, Colo., Feb. 23, 24 and 25. The dangers attending the use of electricity underground and what can be done to offset them, the ventilation of workings opened under modern mining methods, safe shot-firing and other subjects were treated at length during the three days of technical sessions and "good time gatherings." The meeting brought 300 members from the four mountain states of Colorado, Wyoming, New Mexico and Utah. This was the largest attendance the Institute has ever assembled at any of its conclaves.

After members had renewed acquaintance President John B. Marks called the first morning meeting to order. The question of a division of the membership into active and associate members was discussed and later referred to a committee for study. E. H. Weitzel of the Colorado Fuel and Iron Co. and W. F. Murray of the Coal Leasing Division of the U. S. Geological Survey as founders of the Institute were elected life members. The convention then, upon the suggestion of George B. Pryde of the Union Pacific Coal Co. and James Dalrymple, Colorado chief mine inspector, decided to change its official emblem from a replica of the old miner's oil lamp to that of an approved magnetically locked safety lamp.

A paper entitled "Spiralizing Plant of the Spring Canyon Coal Co." by George A. Murphy, general superintendent of this company at Spring Canyon, Utah, was read by Mr. Gibson. This plant is one of only two installations of the sort in the West. It was installed to clean the smaller coal of the refuse made by a 2-in. bony band near the bottom of the seam which necessarily gets mixed with the coal in mining. By its use approximately 90 per cent of the refuse is separated and the ash reduced from an original content of 8 per cent to approximately 5 per cent.

The plant is a 5-unit spiral capable of handling from 35 to 40 tons per hour of pea coal (through 1¼ in. and over ¾ in.). Four of these units handle coal from the distributor and a fifth a re-spiralizer handling the "middlings." In operation it was found that after the surfaces of the spiralizer flights and chutes attained the necessary smoothness from wear, the chief difficulty encountered was from wet coal which tends to clog the chutes. One attendant runs the plant. Mr. Murphy considers the installation now a success.

Discussion developed the fact that the spiralizing plant proper cost about $50,000 when it was built with the new tipple of the Spring Canyon Coal Co. In a country where water is not readily available such a spiralizing plant takes the place of a washery.

C. H. Trik of the Jeffrey Manufacturing Co. next

The panorama at the top of the page shows the members of the Rocky Mountain Coal Mining Institute lined up before the photographer. The man on the bottom step with his hands clasped on a perfectly good Fedora and his feet spread to assure entire stability is Horace Moses, the new president.

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presented a paper on the "Ventilation of Working Faces Under the Various Systems of Concentrated Mining." Nobody questioned Mr. Trik's conclusion that concentrated systems of mining offer opportunity for much better ventilation of working faces than do the old scattered system of workings but sharp exception was taken to his advocacy of the use of canvas tubing and auxiliary blowers for the ventilation of narrow work preliminary to the mining of blocks.

Line Brattice vs. Blowers

Mr. Trik declared that there were two methods of sending air to the face of dead ends: one by the use of line brattices and the other by auxiliary blowers with canvas tubing. Blowers and tubing permit the ventilation of headings 100 to 1,000 ft. long and when such headings are finally connected some operators move the blowers up to the face and use them to blow fresh air along the face. Concentrated systems of mining, if successful, he said, show a reduction in cost of production per ton over former systems. Any additional saving in cost of ventilation is just so much velvet and the mine operator may expect, if his permanent airways are kept clean and wide, to have a decreased cost of total ventilation because of lowered mine resistance and consequently a decreased use of power.

Inspector Dalrymple said that thus far in concentrated systems of mining the main consideration seemed to be cost reduction with no thought of safety. It seemed to him little short of murder in a gaseous mine to place electrically driven blowers along the working faces. In his opinion these blowers presented a serious hazard when used to ventilate headings 200 ft. or more in length, due to recirculation. He said they would not be allowed in a gaseous mine in Colorado. He also opposed carrying air such distances by line brattice.

William Littlejohn of the Utah Fuel Co. and James Struthers and G. D. Jones of the Victor American Fuel Co. also felt such auxiliary fans to be a distinct hazard. E. H. Denny of the U. S. Bureau of Mines said that the Bureau considered that the use of such electric-driven fans whether intermittently or for the full 24 hours of a day involved grave hazards from air recirculation if fans were not truly placed in intake air. They also created a certain amount of fire hazard. He said that the Bureau accordingly had withdrawn its approval of the proposed American Engineering Standards Committee Code. Anemometer readings showed measurable velocities in places ventilated by line brattice only for 50 to 75 ft. from the outer end of the brattice.

Daniel Harrington declared that auxiliary fans had no place in a coal mine and cited cases to prove the hazard from gas ignition involved in their use. He declared inadequate ventilation from a health standpoint was also possible due to a rechurning of the air. He had found a working place supposedly ventilated by fan so deficient in oxygen that a match would not burn and men could not work properly.

Glenn Knox of the Gunn-Quealy Coal Co., Rock Springs, Wyo., discussed the concentrated system of mining with conveyors as described in Oct. 15, 1925, issue of *Coal Age*. He pointed out that by driving three entries in this system no use of blowers or of narrow work without crosscuts was necessary.

Crosscuts Suited to Any Method

Mr. Harrington voiced an apparently general sentiment when he said that it was possible to work any of the concentrated systems which he had seen or heard of without violating the law or safety practice with reference to crosscuts, and the elimination of crosscuts and consequent use of blowers was merely a cost-saving scheme not vital to the systems themselves.

At the Wednesday morning meeting, discussion of Mr. Trik's paper of the previous day on "Ventilation of Working Faces Under the Various Systems of Concentrated Mining" was resumed. Mr. Trik pointed out that the manufacturers of the small auxiliary fans

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could furnish with them a right angle connection which would permit of the fan being placed in fresh air. He thought that the installation of these fans should not be necessarily condemned just because the mine officials did not place them in the proper position.

Mr. Harrington's paper on "Danger from Electricity in Coal Mines" was then taken up and occupied the attention of the Institute for the balance of the morning and a good part of the afternoon session. Mr. Harrington declared that electricity was a growing source of danger as a cause of mine explosions and that accidents from contact with exposed wiring and the like were only a small portion of the sum total properly attributable to it.

He said that, over a 25-year period, 30 disasters and approximately 100 serious mine fires involving a total loss of 1,660 lives have been caused by electricity. In 1924 and 1925 eleven out of the twenty coal mine disasters were of electrical origin. All electrical equipment used in coal mines has inherent dangers. Even 110 volts alternating current has killed men by contact. Explosions have been caused by the rupture of pick-proof cable in a coal dust cloud, by trolley arc and gas, by incandescent globe, by mining machines at the face, by machine nips, by pump and hoist motors, by electric drill, by open switch, by booster fan, by face conveyor motor and by stray currents, all in the presence of gas, as well as by trolley line and black powder. New intensive systems of mining with the increased use of loading, scraping and conveying machinery at or near working faces means a heavy increase in the amount of electrical equipment underground.

Mr. Harrington stated that continued and increased use of electricity in coal mines is a necessity and therefore that the problem is to formulate and make use of safe electrical underground practice. He then raised thirty-five specific questions relating to underground electrical practice with his viewpoint on these.

D. C. McKeehan, electrical engineer of the Union Pacific Coal Co. whose new electrical and other safety standards have been published recently in *Coal Age*, discussed Mr. Harrington's questions in detail. He favored the use, for power lines, of lead-covered, armored cable properly grounded supported on a steel messenger wire. He would keep these out of returns of gaseous mines. He understood that a receptacle with plug is now in use by one company to replace the usual "nips" for attachment of machine cables to power lines.

No Open-Type Switch Safe

He is of the opinion that no open type of switch is safe in any mine and that in nongaseous mines a safety type with quick-make-and-break blades, the box of which cannot be opened except when switch is out, should be suitable. In gaseous mines oil circuit breaker switches should be used.

Mr. Harrington brought up the danger of stray currents in electrical blasting. Mr. McKeehan thought the use of rubber-clad shooting wire and the keeping of lead wires short circuited and away from coal and rock would minimize premature shots. Mr. Harrington and Mr. McKeehan both believed that new systems of mining presented an extra electrical hazard of gas ignition and the latter advocated the use of totally enclosed motors. They also favored keeping of mining machines and trolley line voltages down to 250 volts d.c. and 220 volts a.c. Frequent inspections of underground electrical equipment by competent persons are desirable. While there is a considerable variety of approved electrical equipment available, careful supervision and inspection are essential to see that it remains in a safe condition.

C. B. Officer of the Sullivan Machinery Co. submitted written discussion of Mr. Harrington's paper. He thought that with the concentration of mine work it was entirely possible for mines to make their electrical installations more carefully and more permanently. He believed that under certain conditions an open type electrical switch was safe for mine use. He thought that there was little choice as to safety between direct and alternating current. He knew of many mines using pressures of 500 volts or more without, in his opinion, increased hazard, as men paid more respect to such higher voltage installations and were more careful around it.

Underground Wires Removed

Regarding storage battery equipment in mines he cited an eastern mine in which all underground wires have been removed and all electrical equipment operated by storage batteries, every part of the installation being of approved type. A careful study would have to be made in a gaseous mine before the feasibility of replacing wiring by storage batteries for the transporting of electrical energy can be decided, he said. In mines using or contemplating mechanical loading the placement of loading machine storage battery track would be a difficult problem.

Mr. Jones of the General Electric Co. thought Mr. Harrington's paper very much overdrawn and that the dangers cited were more attributable to carelessness than to electricity. Suitable electrical equipment was on the market and rules for good practice in its installation had been formulated. He believed that some of the accidents for which electricity was blamed were really from other causes.

The discussion of Mr. Harrington's questions by L. C. Ilsley, electrical engineer of the Bureau of Mines, was read by K. H. Marshall of the Bureau. In the main, Mr. Ilsley's views as to safe practice coincided with those of the previous speakers. He believed that in general power lines should be installed in intake entries and that rooms should not have power lines in them other than the properly designed trailing cables. Greater safety could be obtained by the use of junction boxes in place of "nips" or by the use of storage battery power trucks but with "nips" designed so that there was no likelihood of electric shock when attaching them seemed to have no special hazard.

Neither weatherproof wire nor rubber-covered wire should be relied upon in mines to prevent shock; all conductors except metallic armored coverings should be given the same respect as bare wire. Poor rail bonding is one of the greatest causes of stray electric currents in mines. Unless the amount of the stray current exceeds ½ of an ampere there will be little danger of premature firing of electric detonators; if stray currents of dangerous amperage are present the only remedy would be the hunting out of their source and the improvement of the return.

He believed that multiple shot-firing has a tendency to weaken the roof and that gas liberated by one shot might be ignited by a second shot. The danger from missed shots was reduced. Incidentally the Bureau of

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Mines knows of no multiple-shot electric battery of the magneto type which cannot ignite gas. The ordinary mine telephone can ignite gas through the ringer. He said two types of loading machine have already been approved by the Bureau of Mines as well as a large variety of electrical equipment.

Mr. Littlejohn thought that the dangers of power lines in intakes in the presence of coal dust overbalanced those of such installations in returns. He also thought the dangers from blowing up of long trailing cables in rooms were greater than those from the use of machine wires in rooms.

Edward Bottomley's paper on "Mechanical Loading at Acme, Wyoming" pointed out some of the difficulties and changes necessary when such a system of loading is installed. Results now being secured from production, cost, and lump coal standpoints were highly satisfactory. The mechanizing of the 3,500 ton Acme mine was described in the Jan. 28, 1926, issue of *Coal Age*.

Discussion developed that the good results obtained in this mine by the Goodman shoveling machine and Joy loaders were in 11 ft. of coal with coal roof and bottom and that no timbering was required in the working places. In the nearby mine of the Hotchkiss Coal Co. similar mechanical loading was being employed. To secure more lump in mechanical loading a 7-ft. undercut had been made. The mining machine was then set up on ties and a second 5-ft. cut made. When the slack from this double cutting was removed the effect of the old-time snubbing practice was secured and in 13-ft. coal with 7 holes in a 26-ft. room lump coal production was increased 12 per cent. There also was a saving of one-third in powder consumption as a result of careful supervision.

Mr. Bottomley stated that accidents per ton had been materially reduced in the Acme mine since mechanical loading was introduced.

Mr. Johnson of the Coloder Co. believed that mechanical loaders offered much opportunity for accident reduction on a man-day tonnage basis. He described the use of a breast type cutting machine mounted on a turret truck and cutting at an angle with the horizontal to produce a snubbing effect. A shot in the bottom below the beginning of the cut resulted in the desired snubbing.

Big Cars Help Hand Loading

Mr. Struthers believed that in the figures presented mechanical loaders were given none the worst of it, and that if cars were rebuilt to increase the capacity to three or more tons for the benefit of the machines that a similar enlargement might work to the advantage of hand loading. Mr. Dalrymple observed that the dependent shots involved in the shooting system and the lack of timber would be a violation of the mining law in Colorado. Although Mr. Bottomley found that an increased mine car supply or the equivalent in larger capacity was desirable, Mr. Knox found at Sweetwater, Wyo., that the concentration of working territory made fewer cars necessary.

A letter from F. N. Cameron, general manager of the Utah Fuel Co., was read, following Mr. Bottomley's paper, enclosing a description by Superintendent Jones of the new system of shooting and gas inspection at the three Castlegate mines. For nine months the fire bosses in the Castlegate mines have been taking charge of all shooting and gas inspections.

Under this system the fire bosses meet at the lamp room at 9 p.m. to prepare their lamps and receive their powder and caps. The foreman thus knows before he goes to bed that his fire bosses are on the job. The fire bosses have the opportunity and sufficient time, if the number of shots they have to handle is kept within reason, to examine the places before and after shooting, giving them more time and smaller districts to cover in the most important part of their work—the final examination of the mine before the men start in the morning.

By this system there is no powder or caps in the mine during the day shift. Powder and caps are handled only by certified men and there is an absolute check on all explosives. Every hole is loaded and tamped by qualified men and the fire bosses know, before they leave the mine for the electrical shot-firing from the surface, the condition of each place to be shot. After a little time these men know how to use the powder so as to get the maximum proportion of lump or maximum tonnage.

Cap Distributors Really Salesmen

In nearly all coal mines now there are the so-called shot inspectors whom Mr. Jones thinks could better be termed "cap salesmen" inasmuch as they are merely cap distributors. The system described by Mr. Jones is said to make for real safety and efficiency in the handling of powder.

Average cost of explosives at the three Castlegate mines, subject, Mr. Jones believes, to improvement, is as follows:

Tonnage 45,229		Cost per ton Cents
Powder	$1,906.25	4.2
Caps	436.56	1.0
Labor	1,401.45	3.1
	$3,744.26	8.3

	No. 1 mine	No. 2 mine	No. 3 mine
Tons per lb. of powder	9.33	5.47	4.31
Lb. powder per shot	.724	1.3	1.08

Mr. McLeod, chief mine inspector of Wyoming, thought there was possibility of fire boss passing up an unshot place on his last inspection under this system chalking it on his first round. Mr. Dyer of the coal leasing division of the U. S. Geological Survey and Mr. Harrington both thought the new system a good one. Mr. Dalrymple and Mr. Harrington, however, both took a crack at the system now in use at Castlegate and in other Utah and Colorado mines of paying fire bosses, upon whom the safety of every man in the mine depended, on a day basis.

At the Wednesday evening banquet the 600 guests forgot coal mine hazards and costs when confronted with the "Parisian Follies" by the Rocky Musicoal Players. A black face cast under the direction of Mr. Veatch and Mr. Krippner caroled and jested in an orange grove on the banks of "Bitter Creek, Wyo." Walter Tripp as "Private Sambo Bottomley" with a monologue on the late war was featured. Pliny F. Sharp officiated most efficiently as toastmaster. The principal speaker was the Rev. Wilson P. Ard of Denver whose eloquent address "The Challenge of a Great Adventure" held the undivided interest of his audience.

At the meeting of Thursday morning C. M. Billington criticized the new system of combined fire bossing and shot-firing described the previous day, declaring that it was inadequate because of the absence of fire bosses in the mine during the day shift. In case of a

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disaster, he said, the result would be similar to that of a shipwreck in which captain and crew escaped by boats but the passengers lost their lives. Daniel Harrington replied that the Castlegate mines had foremen and assistants on duty and that in general, in his opinion, there were in any event too many flame safety lamps in a mine on the day shift.

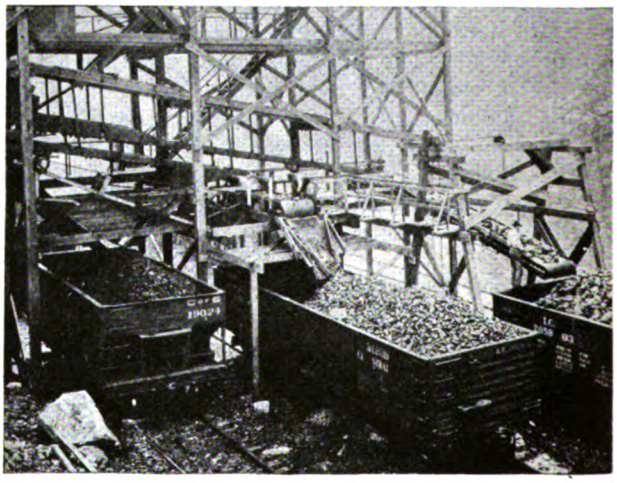
T. H. Butler, of the Union Pacific Coal Co., presented the suggested changes in the report of the Safety Committee of the Institute together with other additions suggested by George W. Pryde, chairman. Discussion at the afternoon meeting developed that some of the changes in the report did not meet the approval of various members of the safety committee itself. The recommendations that 500 volts direct-current be barred from underground installations; that mines having traces of gas be termed gaseous; that permissible powder and electric detonators be used exclusively in gaseous mines; that open lights be barred from all underground workings; that no dynamite be used in coal mines; these recommendations were among those causing little or no discussion. The recommendations that no gas accumulation be moved during the working shift aroused much question as to what constituted a dangerous gas accumulation; likewise a proposal that all men working about underground wiring wear rubber shoes brought criticism of the value of such shoes, rubber gloves, rubber mats, etc., as protective devices. The proposed changes in the safety committee report were finally referred back to the committee for further study and discussion at the next meeting.

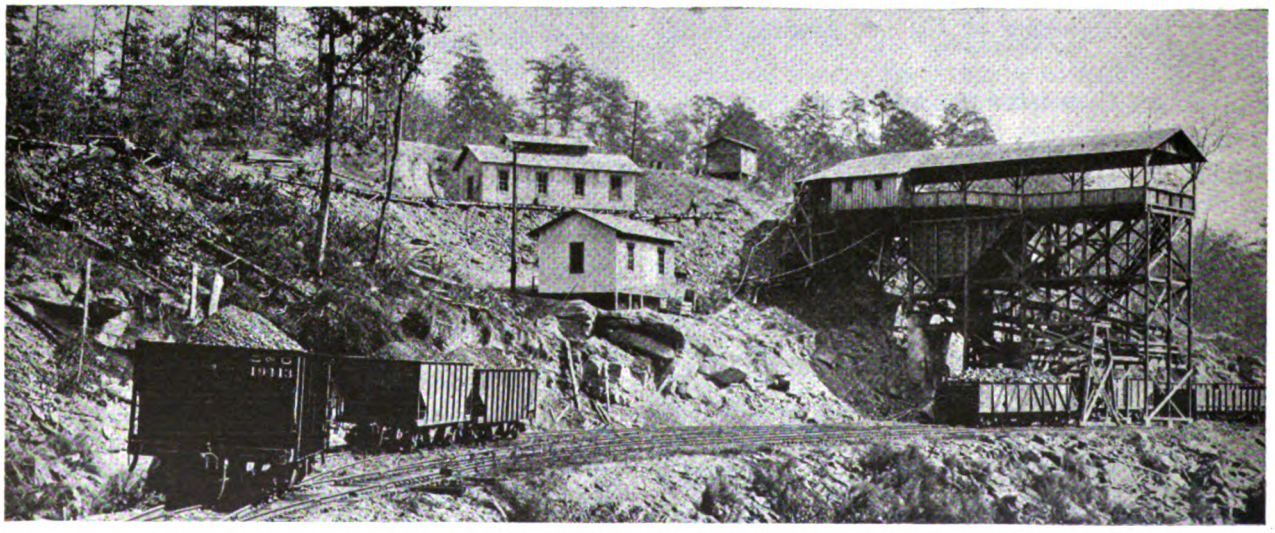
The final business of the session consisted in the election of officers for the year 1926. The new officers of the institute are as follows:

President—Horace Moses, general manager, Gallup American Coal Co., Gamerco, N. M.
Vice-Presidents—Robert L. Hair, Colorado; Virgil R. McKnight, New Mexico; A. E. Gibson, Utah; Thomas Foster, Wyoming.
Secretary-Treasurer—Benedict Shubart, Colorado.
Executive Committee—J. B. Dick and C. M. Billington, Colorado; W. C. Holman and Robert Wyper, New Mexico; R. R. Kirkpatrick and George Schultz, Utah; Edward Bottomley and Quince Rice, Wyoming.

Tipple Has Belts on Picking Tables and Loading Boom







No. 3 Mine, Alabama Fuel & Iron Co., in the Cahaba Field, at Acton, Ala.

The workings of this mine are in the Helena seam, and the coal is about 66 in. thick. Contrary to the impression conveyed by the name, the coal mined by this company in the Cahaba field is not utilized in the iron-and-steel industry. Of the 1,250,000 tons production about 1,000,000 tons goes for steam purposes, mostly to railway and steamship companies, and about 250,000 to domestic use. In the upper left-hand corner is the mine mouth and exterior slope. The coal cars are hauled up the slope in five-car trips by a single rope hoist. In the upper right-hand corner and in the bottom illustration will be found two views of the tipple. This structure was built about two years ago. It utilizes belts for the picking tables and loading boom. The smaller sizes are shipped to some of the central washeries of the company.

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Book Reviews

What Rock-Dusting Costs

Steady progress in the movement for the rock-dusting of bituminous coal mines as a means of preventing or limiting disastrous coal dust explosions is indicated as the result of an investigation conducted jointly by the Bureau of Mines of the Department of Commerce and Carnegie Institute of Technology, Pittsburgh, Pa. and recorded in Bulletin 18, Coal Mining Investigation Series, entitled "Methods and Costs of Rock-Dusting Bituminous Coal Mines." Whereas at the beginning of 1924 few coal mining companies operating in the United States had done thorough rock-dusting, by September, 1925, 102 companies in 12 states had rock-dusted 211 miles. The tonnage annually produced by these rock-dusted mines according to the bulletin, represents approximately 11 per cent of the annual production of all bituminous mines in the United States.

Rock dust has been found useful not only in preventing explosions but in subduing mine fires. Some mine operators are storing material at strategic points for fire fighting.

Limestone Dust Purchased

Limestone and shale are used almost exclusively for rock-dusting. Most of the purchased material is limestone, but shale from the mine roof, in which the free silica is less than 25 per cent, is used by the mine operator who has equipment to pulverize it at the mine. There are suitable materials such as gypsum and dolomite, also adobe clay and talc, where these contain less than 25 per cent free silica. The cost of rock dust, sacked, and unloaded, including freight, at the mine has ranged from $4.85 to $7.70 per ton, with an average of about $6. The cost of rock dust, chiefly shale dust, mined and pulverized at the mine, has ranged from $2.60 to $5.50 per ton, with an average of about $3.50.

Most of the rock dust used is purchased, but a few coal companies have their own pulverizing plants. Five types of pulverizers have been used for this work. These cost from $2,000 to $5,800 and pulverize 1,500 to 3,500 lb. of rock per hour at costs varying from $2.09 to $4.96 per ton.

There are two classes of rock-dust distributors—fixed discharge nozzle and flexible discharge nozzle. These machines must be adaptable to mine conditions, apply an effective coating to the roof, ribs, and floor, and be easy to operate. The machines cost from $370 to $4,800, and can move from 1,700 to 4,200 ft. per hour. Commercial machines distribute 1.28 to 3.5 lb. of dust per linear foot of travel.

Don't Omit Barriers

Rock-dusting, say the authors, C. W. Owings, assistant coal-mining engineer, U. S. Bureau of Mines, and C. H. Dodge, research fellow, Carnegie Institute of Technology, should be supplemented with effectively designed barriers, which are considered to be a secondary line of defense. Mines should be divided into zones and the barriers placed at strategic points. V-trough and concentrated barriers erected in the mine in sets of from 10 to 24 have cost from $1.75 to $5.70 per trough. However, experienced investigators of the Bureau consider that many V-trough barriers that have been erected in mines do not carry enough rock dust to extinguish an explosion unless supported by generalized rock-dusting in the vicinity. Concentrated barriers have cost $64.50 for a wooden barrier and $74.50 when of steel construction.

Further information is given in Bulletin 18, Coal-Mining Investigations series, "Methods and Costs of Rock-Dusting Bituminous Coal Mines." Copies of this bulletin may be obtained from Carnegie Institute of Technology, Pittsburgh, Pa., at a price of $1.50.

Making the Orsat Accurate

From an extremely simple rough-and-ready apparatus the Orsat is becoming rapidly an instrument both elaborate and accurate. It is also widening its sphere of usefulness. But without all this elaboration and accuracy it will serve many useful purposes, and perhaps only a few will have to use the exact methods that A. C. Fieldner, G. W. Jones and W. F. Holbrook describe in Technical Paper 320, of the U. S. Bureau of Mines, entitled "The Bureau of Mines' Orsat Apparatus for Gas Analysis."

The Orsat is operated by combustion and therefore there is a change in temperature and pressure to be corrected or eliminated. The water-vapor content changes, and the gases are dissolved in part by the confining liquid. Then there is the capillary error of the apparatus. "A change of 2.7 deg. C. during a determination makes a difference of about 1 per cent in the volume. As a gas analysis" say the authors "is actually a series of observations of changes of volume during treatment by different absorbents, a temperature change may indicate the presence of certain constituents which in reality are not present."

Early History of D. & H. Co.

To the coal-mining man the book entitled "A Century of Progress" published by the Delaware & Hudson Co. will be a great disappointment. He will feel that the coal industry on which the progress and success of the transportation department of the company has rested has been given inadequate consideration. Apparently the author, whose name is suppressed, is a railroad man. He has written a conservative but intensely interesting book—on the history of a railroad. Rarely does he have anything to say as to the mines or as to coal selling.

Romance of Selling

In the early days the selling of coal was a romantic enterprise. The coal company did not elbow itself into other coal markets, but it made new ones of its own. Anthracite, when it first came to New York, was regarded as a worthless product fitted for nothing except for filling or ballasting. Gradually it found itself, despite opposition, in places which everybody thought it could never attain. The imagination of the Wurts family, the pioneers in its marketing and in the building of the means of transportation to New York, proved sound, and the scoffers were silenced. To many, today, the new uses for coal being proposed seem as unwise and improbable as those advocated by Jesse Fell, the Delaware & Hudson Canal Co. and the Lackawaxen Coal Mine and Navigation Co. A little of the imagination and pluck of the Wurts family is all that is needed today to make the coal industry progressive instead of stagnant.

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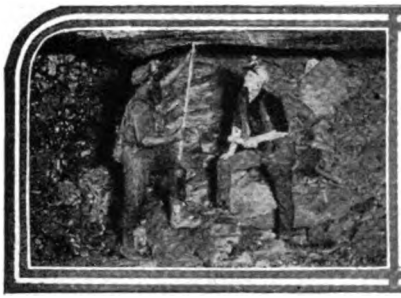
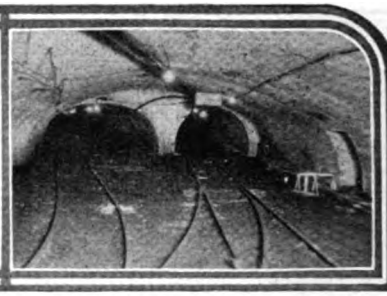


Underground Operation



Choosing Tie and Rail Sizes

Ties and rails are the very backbone of any mine track. Not only must the right size of rail be chosen to carry the required load, but ties of adequate size must be used under it, the ties must not be set too far apart, the proper number of spikes should be used, and the rails must be adequately fastened together at the joints. Concerning this phase of mine work James L. Libby says in the Union Pacific Coal Co. *Employees' Magazine:*

Ties furnish the bearing for the rails, as well as a means of fastening and holding the rails in place. Good, well-tamped ties are necessary in maintaining the alignment and grade on track work. It has been proved in practice that hewed ties are more satisfactory than those that are sawed, as the latter have a woolly surface which permits the retention of moisture and encourages fungus growth. Furthermore, in the shaping of the sawed tie the saw cuts in part across the grain and thus weakens the tie, giving it a tendency to split easily.

The dimensions of ties vary according to the importance of the haulage. Long ties give greater stability to the track and do not split as easily. On slopes or any main haulage a 6-in. hewed tie of a length sufficient to give at least a 12-in. projection on either side of the track should be used. The spacing of ties should be 18- to 24-in. centers. In secondary haulage and rooms 4x5-in. sawed ties spaced on 24-in. centers and with an 8- to 12-in. projection give satisfaction because of the short life of these working places.

Steel ties have not been extensively used, but will doubtless be improved in design and their use become more general as the price of wood ties increases. With the panel system of mining, they have the following advantages in room work: (1) They lower the height of shoveling and increase headroom from 2 to 4 in., (2) they lower the lift in replacing a car in case of derailment, (3) they keep the track always in proper gage, (4) they enable the miners to lay their own track, and (5) they have long life and can be used over and over again, whereas wooden ties become split and full of holes and consequently are useless.

Their disadvantages are: (1) Their higher initial cost, (2) the fact that they are ill suited for animal haulage because the hoofs of the animal slip on the steel, and (3) the track does not stay on grade or in alignment. The last objection can be remedied by lugs, or turning down the ends of the ties, and then cutting holes in the floor to hold them in place. Much grading or leveling of floor is necessary even when wood ties are used, so that the use of steel ties may not be so objectionable.

In the selection of rails for mine track it is false economy to skimp on first cost; too light a rail, while showing a saving in original outlay, will require an expenditure of the initial saving over and over again in repairs and maintenance. The life of the haulageway, the tonnage to be handled during this life, the type of haulage and the system of mining determine the weight of rail to be used.

Most manufacturers estimate the necessary weight of rail in pounds per yard to be numerically equal to twelve times the weight in tons on each wheel. It is better to use sixteen times this weight, and with four-wheel locomotives this equals four times the weight of the locomotive. Thus a 6-ton locomotive would require a 24-lb. or say a 30-lb. rail; a 10-ton machine a 40-lb. rail and a 15-ton machine would require a 60-lb. rail. A good rule to follow is to use 60-lb. rails on main slopes, 40-lb. rails on planes, 40- to 60-lb. rails on main haulages, 30-lb. rails on ordinary entries and 20-lb. rails in rooms.

If straight face arc wall machines are used, however, the minimum rail weight to employ will be 30 to 40 lb. Heavy rails are advantageous because of their greater rigidity. They thus retain their alignment and surface grade better, have a long life and a low maintenance cost.

A track is weakest at the joints where the rails have no vertical strength. The joints, therefore, require good fish plates or angle bars. Bolts should be used in all the holes in the angle bars or fish plates and lock washers employed to keep the bolts tight. Angle bars should be used where possible as they give a stiffer joint. Ties should be laid and firmly bedded on each side of the joint so as to give a short suspended joint. When cross ties are insecurely bedded so that track is allowed to move up and down under the wheels, the strongest and most effective fastenings soon become comparatively inoperative.

All rail sections for the different weights used should be standardized; this also applies to the fish plates or angle bars. The drilling of the rails and fish plates or angle bars should all conform to a definite standard made up for the different weights of rail.

The rails should be fastened to the ties with ample sized spikes; four spikes should be used to each tie. The two spikes on the inside of the track should be driven on one side of the tie, and those on the outside of the track on the other side of the tie, in order to keep the ties in the proper position with reference to the rails. This is necessary to preserve the gage.

Cars Smaller in Gassy Mines

Mine cars must not only be small enough to leave a safe passing width on one side of the roadway but in gassy mines must be of such size that an adequate airway can be provided by a brattice cloth hung so as to take air back from or to the face. This consideration often determines the width of the car where the roof is so poor that the span of the roadway is limited.

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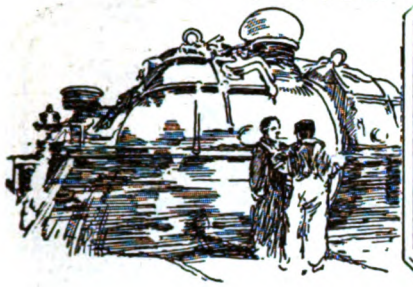
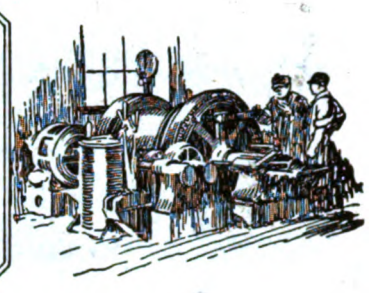
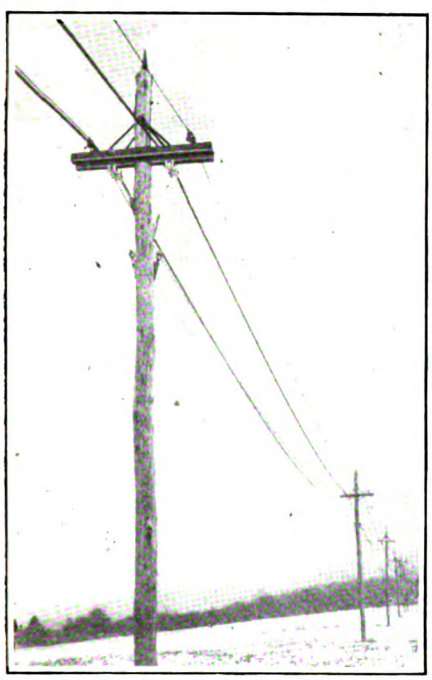


Practical Pointers For Electrical And Mechanical Men



Crossarms Are Installed Upside Down

Standard flat braces installed in the regular way on the under side of a wood crossarm add but little to the strength of the arm. Such braces will buckle under a comparatively slight compression. The chief use of flat braces, as generally installed, is to keep the arm in a horizontal position. It is true that if a heavy load is hung on one end of a crossarm the brace on the opposite end will be in tension, but the strain tending to break the arm at the center is not lessened by reason of the brace.



Supports a 1,500,000-Circ.Mil Circuit

With this construction, placing the braces above the crossarm and attaching the heavy cables close to the braces, there is but little tendency to bend or break the arm. The braces are in tension and the arm under compression

These facts were taken into consideration by J. F. MacWilliams, electrical engineer of the Pennsylvania Coal & Coke Corporation, when he was building a pole line to carry two 1,500,000-circ.mil copper cables of a 275-volt direct-current circuit. This line is shown in the accompanying illustration. It extends from a substation to the top of a borehole entering No. 3 mine, which is located at Ehrenfeld, Pa.

The normal weight of the circuit is close to 1,000 lb. per 100 ft. The cables are hung on the under side of the crossarms and flat braces placed above the arms. The suspension fitting is a Type C mine feeder wire insulator with a plain ⅝-in. bolt substituted for the expansion bolt. The point of attachment is close to where the brace is fastened to the arm. There is then but little bending moment on the arm, and the flat brace is in tension.

Double crossarms are used and there is a suspension insulator on each arm. On the upper side, a 2-wire, 2,300-volt circuit is carried on ordinary pin insulators and below, on pole brackets, is a telephone circuit. The line has been in use for several years and has survived heavy sleet storms.

Device Moves Chain Block With Ease and Safety

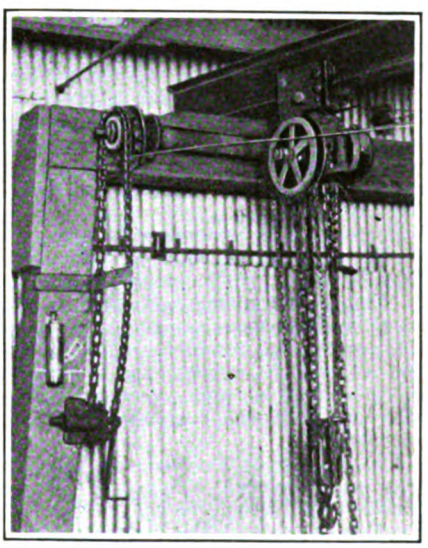
Often it is inconvenient and none too safe to move a loaded chain-block trolley by pulling or pushing directly on the load or its fastenings. This is especially true where the I-beam, supporting the trolley, is above a motor pit. An illustration of how easy it is to remedy such a condition can be seen in the machine shop and motor barn of the Fordson Coal Co., at Nuttallburg, W. Va. The accompanying illustration shows the trolley-moving mechanism which was built from odds and ends picked up about the shop and from the scrap pile.



Protects Unwary Heads

It is hard for a heedless person to get into contact with the trolley wire running into the main slope of the Pennsylvania Coal & Coke Co.'s No. 18 mine at Barnesboro, Pa. The board guards are bolted to straps depending from the trolley bracket. This mine was recently reopened after having been down for more than two years.

Mounted at one end of the I-beam is a small drum or windlass. From one end of this drum a ¼-in. wire rope goes directly to the trolley. From the other end a rope of the same size is carried over a sheave mounted at the other extremity of the I-beam, thence passing back to the trolley. In other words, the trolley is moved by means of a headrope and a tailrope, one unwinding from the drum as the other is wound onto it.



Windlass for Moving Trolley

The parts are odds and ends picked up on the job. With this device there is no struggle or danger in moving a heavy weight suspended by the chain block as the person doing the moving is at all times in the clear.

The trolley can thus be moved in either direction depending on which way the drum is rotated. The drum is turned by means of a crank which is mounted at a convenient height above the floor. An ordinary detachable-link chain connects this crank to the drum. With this windlass attached to the I-beam trolley, heavy or unsecurely attached loads can be moved with ease and safety.

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News Of the Industry



Sentiment for Coal Legislation Has Cooled in Congress Since Settlement of Anthracite Strike

By Paul Wooton
Washington Correspondent of *Coal Age*

Interest in coal on Capitol Hill seems to be evaporating. Just after the settlement of the strike the authors of coal bills in each house professed relief on the ground that they at last could go ahead deliberately and carefully to work out legislation when the situation was not surcharged with emotion.

Despite these professions no progress has been made, at this writing, since the settlement. Chairman Parker of the House Committee on Interstate and Foreign Commerce has not made good his promise to conduct coal hearings, and as this is written the committee has heard of no plan or approximate date on which the coal bills are to be taken up.

The display of fireworks in the District of Columbia Committee of the Senate was interrupted by the dawn of plentiful supply. Even the sub-committee of the Senate Committee on Education and Labor—consisting of the redoubtable Borah, with Senators Copeland and Metcalf as fellow members — admittedly has done nothing. This sub-committee was charged specially with the duty of examining and passing upon the merit of all coal bills pending in the Senate. Senator Borah himself stated on the floor of the Senate that his own coal bill soon would be forthcoming, but his office says other matters have been claiming his attention.

Administration Still Lukewarm

Senator Oddie has found the administration's interest in coal legislation to be quite as lukewarm after the strike as was the case while it was pursuing its popular hands-off policy. To his request for a report on his coal bill Senator Oddie received this reply from Secretary Hoover:

"The President has recommended to Congress that action should be taken on the report of the U. S. Coal Commission. In order to work out the details of your draft it would seem to me desirable that the members of that Commission, the various representatives of employers and employees, and the experts in the different government bureaus be called before the committee to give information to the committee rather than to attempt to anticipate in advance what the result of such an inquiry would be.

"I will be glad to appear before the committee if it is desired."

Since the Senate referred the Robinson bill to the Committee on Education and Labor, and since Senator Phipps, the chairman of that committee, has indicated that his committee will study the Robinson bill and all other coal bills now before the Senate, Senator Oddie will wait until that committee has concluded its work or has indicated that it will do nothing before he launches hearings. He sets forth his views in a letter to Secretary Hoover, which follows:

Oddie States Position

"I am in receipt of your letter of Feb. 13 in answer to mine of Dec. 10 last, in which I referred to you a copy of the bill S. 3 [for the creation of a Bureau of Coal Economics, and for other purposes] and asked that the Committee on Mines and Mining be furnished a report thereon.

"Your letter states it to be your judgment that, as the President has recommended to Congress that action should be taken on the report of the U. S. Coal Commission, it seems to you to be desirable, in order to work out the details of the above mentioned bill, that the members of that Commission, the various representaives of coal operators and employees, and the experts in the different government bureaus should be called before this committee to give it information, rather than to attempt to anticipate in advance what the result of such an inquiry would be.

"Inasmuch as the Senate, on the 6th instant, decided to refer to its Committee on Education and Labor a bill introduced by Senator Robinson of Arkansas, which undertakes to deal with the question of national emergencies arising in the production and distribution of coal, I am of the opinion that all interests would be best served if that committe should, in connection with its consideration of Senator Robinson's bill, hear yourself and those whom you have suggested with respect to Senate bill No. 3 and any other bills pending in the Senate relating to the general subject.

"The holding of hearings on this subject by two committees of the Senate at the same time is unnecessarily expensive and time-consuming and would greatly tend to confuse the issue in the public mind. Any provisions of the bill S. 3 failing to receive adequate attention in hearings before the Committee on Education and Labor could be covered in supplemental hearings before the Committee on Mines and Mining. If, after completing hearings on S. 3, the Committee on Education and Labor shall have become convinced that the merits of that measure are such as to make action by the Committee on Mines and Mining desirable, a recommendation to the Senate to that effect could be made. I have every reason for believing that such a recommendation would be promptly acted upon by the committee of which I am chairman."

The most casual survey of the legislative situation shows that coal merely is a subject of speculation among political wiseacres and professional specialists.

Chief interest centers on details now leaking out concerning the alleged under-cover agreement between the anthracite operators and the miners. At its face value this agreement with its provision for a modified check-off, to be worked out by the Board of Conciliation, seems to be a substantial concession to the miners. The miners' leaders, at least, are busy assuring their followers that the operators have promised the check-off.

Study New Agreement

Most observers, however, are very skeptical on this point. They point out that since the plan depends on joint agreement by the two sides and the Board of Conciliation, it is no more certain to be acted on than the provision for arbitration. The arbitration machinery in the agreement will work only if the miners want it to work. Similarly the Board of Conciliation will act on the check-off only when the operators want it to act. In view of the oft-repeated refusal of the operators to consider the check-off, it seems unlikely that they will accept it now through the Board of Conciliation until they feel assured the arbitration feature of the agreement can be made to work.

In short, the producers seem to feel that the arbitration provision is worth as much to them as the check-off is worth to the miners. Any other supposition would admit the defeat of the operators and victory for the men.

All of this tends to strengthen a growing impression that the fight was close to a draw and to confirm the conclusion that the real victor was the anthracite-consuming public.

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Fan and Foreman Not Needed in One-Man Mine, Colorado Judge Rules

District Judge Arthur Cornforth made permanent a temporary injunction in the case of Fred Sevcik, one-man mine operator of Colorado Springs, Colo., against State Coal Mine Inspector James Dalrymple, on Feb. 16. The court held that Dalrymple could not force Sevcik to install a fan in his property or to employ a foreman at the rate of about $225 per month.

The effect of the decision is to declare the state law requiring such things unconstitutional, and J. S. Breitenstein, of the Attorney General's office, representing Inspector Dalrymple in the case, said he would appeal to the Supreme Court.

The court holds that the law should not make the same provisions for a mine operated by but one man or employing only a few men as for a mine where a large number of miners are employed.

Favorable Report on Bill Expanding I. C. C. to 13 Appointed by Regions

Regional representation on the Interstate Commerce Commission is provided in a bill reported favorably by the Senate Committee on Interstate Commerce. The measure provides for increasing the membership from eleven to thirteen, eventually to be apportioned as follows:

New England Group—Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, one member.

Middle Atlantic States—New York, Pennsylvania, New Jersey, Delaware, Maryland, Ohio, District of Columbia, two members.

Lake Group—Michigan, Indiana, Illinois, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Kansas, Nebraska, three members.

South Atlantic Group—North Carolina, South Carolina, Georgia, Florida, Virginia, West Virginia, Kentucky, two members.

Gulf Group—Alabama, Mississippi, Louisiana, Arkansas, Oklahoma, Texas, Tennessee, New Mexico, two members.

Mountain Group—Montana, Wyoming, Colorado, Idaho, Nevada, Arizona, Utah, two members.

Pacific Group—Washington, Oregon, California, one member.

The committee's report has this to say by way of justifying regional representation:

"The object of this legislation is to bring together in the Commission as near as may be a personal knowledge of the transportation conditions and problems that exist in the different sections of the country. The combination of the local conditions produce the national conditions and proper administration of the national conditions must rest upon the intimate and accurate personal knowledge of the various local conditions.

"The very structure of our government is based upon local self-government and local representation in the general government.

"The several states are represented in Congress, bringing together the problems that arise in the several states that are to be solved under the federal Constitution.

"This vital principle is recognized and applied in the appointment of federal judges.

"It is applied in the appointment of the various boards and commissions created by Congress.

"The vastness of our territory and the varied forms and character of our articles of freight, the varied topography of the country, the differing degrees of development in the several parts of the country, the different degrees of possible development, the presence of actual and potential water competition in the form of river, lake and ocean transportation makes it the more imperative that there shall be represented in the semi-judicial body known as the Interstate Commerce Commission intimately and accurately these various factors. That these very vital differences exist is evidenced by the fact that the Interstate Commerce Commission has divided the country into what is called rate-making groups. This because it was imperative to treat each according to the condition therein existing."

Coal Stocks for 49 Days In Industrial Bins

Stocks of anthracite and bituminous coal in the hands of industrial consumers on Feb. 1, according to the National Association of Purchasing Agents, totaled 66,190,000 tons, or sufficient to last 49 days at the January rate of consumption. This compares with 68,399,000 tons on hand at the beginning of the preceding month and 50,028,000 tons on Feb. 1 a year ago.

During January, last, industries consumed approximately 41,892,000 tons of anthracite and bituminous coal, compared with 36,925,000 tons in December and 45,000,000 tons in January, 1925.

British Empire Corporation Agrees to Check-Off

The British Empire Steel Corporation has agreed to restore the check-off at its coal mines in District 26, United Mine Workers (Nova Scotia), in a proposal submitted to the union executives late last week. Another proposal made by the miners' executives will be passed upon by the directors of the steel corporation this week, when an agreement is expected to be reached. The proposals were not made public.

Signing of a two-year contract under wage rates agreeable to both parties was prevented two weeks ago because the corporation insisted upon abolition of the check-off. The district union rejected the agreement by a majority of 3,735 votes. The contract was drawn up on the basis of the recent report of the Sir Andrew Rae Duncan Royal Commission.

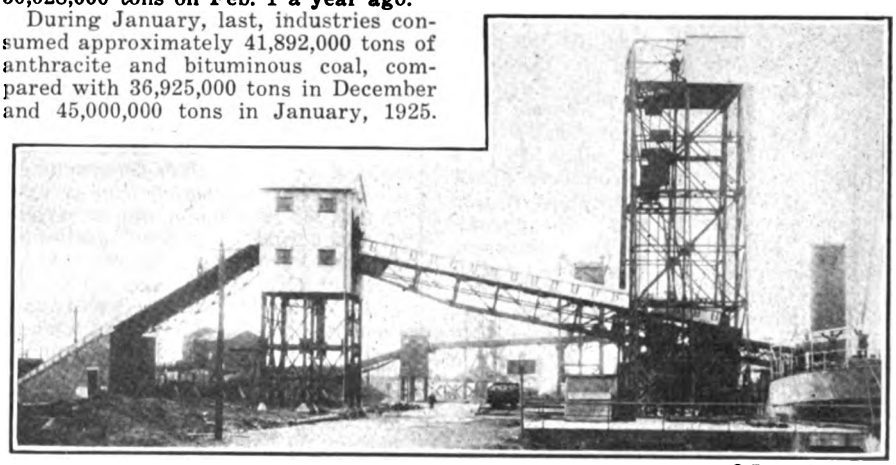
Distribution Census Plan May Be Tried in 1928

Before any effort is made to induce Congress to authorize a census of distribution, which would require a large appropriation, it is proposed to select two or three important lines for the purpose of giving the plan a trial.

The first opportunity for the experiment will be when the manufacturers census is taken in 1928. If the trial demonstrates the value of this expansion of the census statistics, the appeal then can be made to Congress for the full census of distribution or the work can be undertaken gradually. This plan will require legislation, but no large amount of money.

Union Gives Up in Kanawha

The United Mine Workers ceased to pay relief to strikers on Big and Little Coal River, in the Kanawha (W. Va.) field on March 1. The order affects 2,500 miners and probably 4,500 dependents in the entire Kanawha field. At the present time there is no union mine south of the Kanawha River. Ten or eleven union mines continue to work in northern West Virginia, chiefly along Scotts Run, but otherwise the union ceases to be a factor.



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Loading Welsh Coal for Export to the United States

This belt conveyor system at the Port Talbot docks, Wales, transports coal from railroad yards at the left, across the street and down to a vessel's hold. The elevating structure at the right, with its counterweights, enables an operator to hoist or lower the end of the delivery conveyor to meet the height of the vessel.

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U. S. Steel Corporation Observes 25th Birthday; Has Remarkable Record

The United States Steel Corporation, the world's greatest industrial organization, was 25 years old on Feb. 25. Judge Elbert H. Gary, chairman of the board of directors of the corporation, has been its chief executive officer since its formation.

During its corporate existence the Corporation has done a gross business of approximately $23,000,000,000, has disbursed to stockholders dividends aggregating $1,279,253,784, and has paid out in wages something like $6,496,-268,920.

When the corporation began business in 1901 it had fifty subsidiary and sub-subsidiary organizations, fifteen of them main subsidiaries. Now there are 130 subsidiary and sub-subsidiary companies, twenty-seven of them main operating companies.

The Steel Corporation was the first billion-dollar corporation to be formed in the United States and it has consistently held its position as the premier industrial enterprise. The balance sheet shows that it has total assets of $2,500,000,000. At the close of 1924 it had 246,753 employees, and the wages paid out in that year totaled $442,458,577.

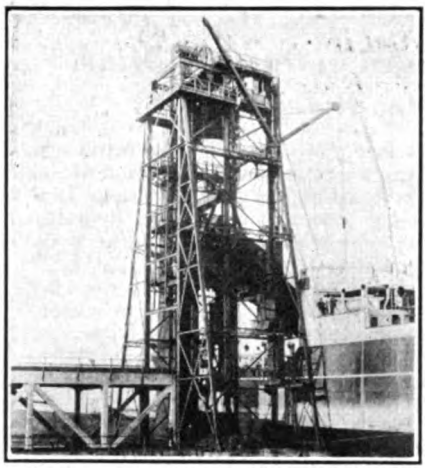
The net working capital at the end of 1924 was $427,661,627. The capital surplus provided at the date of organization was $25,000,000, and in the twenty-five years of the corporation's existence this has been increased to $517,061,308.

Charles M. Schwab, now chairman of the Bethlehem Steel Corporation, was the first president of the Steel Corporation, having served from April 6, 1901, to Aug. 4, 1903. He was succeeded by W. E. Corey, who served from Aug. 4, 1903, to Jan. 31, 1911. James A. Farrell, the present incumbent, succeeded Mr. Corey.

The original executive committee comprised some of the most prominent men of the time, including Judge Gary, Daniel G. Reid, William Edenborn, Edmund C. Converse, James Gayley, Charles Steel, Charles M. Schwab and George W. Perkins, the last two being ex-officio members.

The most important of the ten companies originally merged into the giant Steel Corporation was the Carnegie Steel Co., dominated by Andrew Carnegie and producing practically one-fifth of all the steel made in the United States. This company itself had earned in 1899 a profit of nearly $24,000,000, and in 1900 of approximately $40,000,000. The Carnegie Steel Co. represented a consolidation of the Carnegie and Frick interests, and in absorbing this combination the new corporation acquired control of the most successful steel organization of the time.

The steel-producing equipment controlled by the new corporation consisted of 149 steel works with an annual capacity of 9,400,000 tons of crude and 7,700,000 tons of finished steel; 78 blast furnaces with a pig iron capacity of 7,400,000; more than 500,000 acres of coking coal lands, more than 1,000 miles of railroad, and a fleet of 112 vessels engaged in traffic on the Great Lakes, in addition to extensive holdings of undeveloped ore-yielding property, docks, natural gas, limestone properties and so forth.



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English Car Dumper in Action

This is a machine at the Alexander Docks, Newport, England. The hoist can lift railroad "wagons" up to 20 tons capacity, dumping them at any height up to 76 ft. into chutes delivering into ship's holds or bunkers.

Sayers to Succeed Read

Dr. R. R. Sayers, Chief Surgeon of the U. S. Bureau of Mines, will likely serve as Acting Safety Service Director for a month or so after the present Director, Dr. T. T. Read, leaves the service. Dr. Read takes up his new duties with the American Institute of Mining and Metallurgical Engineers in New York March 8.

Stover's Smokeless Coal Bureau is now located at 858 Earle Building, Washington, D.C., the transfer from the Chicago offices having been made March 1.

Foresees Coal Economies In Britain

George E. Learnard, of New York, a manufacturer of boiler room equipment who has been a close student of the British fuel situation, is quoted in an interview with *Electrical World* as saying:

"Legislation will shortly be passed by the British Government forcing the development of a national power supply from a series of large and economical stations. As large water supplies are infrequently found at the mines, I believe the government will cooperate in the development of a plan to distill coal at the shaft mouth. The motor spirits, tar and oils will be removed and used in industry and the residual fuel sent to power plants and coal users in pulverized form in which it can be stored and transported. England now imports motor spirits to the value of sixty million pounds sterling."

Plan New Union Drive in Northern West Virginia

One of the most intensive drives ever attempted will soon be launched in an effort to unionize northern West Virginia, according to a statement issued last week by Van A. Bittner, international representative of the United Mine Workers in that district. This follows closely a recent announcement by R. M. Williams, international representative in Monongalia County, that the union would issue another strike call to open-shop miners some time between April 1 and May 15. John L. Lewis, president of the miners' international union, declared a short time ago that Mr. Bittner had full authority to direct the union's efforts toward organizing the field.

Declaring that the recent anthracite settlement was "a great victory for the miners, their families and the United Mine Workers," Mr. Bittner added that "for the time being the entire efforts of the United Mine Workers will be centered on northern West Virginia, and, with our plans perfected, our policy will be to go onward and forward and not rest until every contract-abrogating coal operator reaffirms the union wage scale."

The proposed strike call will be the third issued in this region since the beginning of 1925. The first call was effective April 1 and the second on Sept. 26.

National Guard Keeps Peace In Southern Indiana

Peace reigned unbroken in the southern Indiana coal field last week following the dispatch of national guardsmen to Evansville as a result of a demonstration against non-union miners by unionists Feb. 16, in which one man was seriously injured and scores beaten and clubbed.

Detachments from four units of the Indiana National Guard are on duty in Evansville, where they are being held ready for emergency calls. Two aeroplanes, one mounting a machine gun and both equipped for bomb dropping, make daily reconnaissance flights over the field. The infantry units are completely equipped with chemical warfare appliances.

Non-union mines in the region have practically all resumed operations since the arrival of the troops. The only activity on the part of union workers reported was the holding of a mass meeting at Boonville on Sunday at which T. N. Taylor, Indianapolis, president of the state Federation of Labor, was the principal speaker

Hudson Coal Co. to Erect $2,000,000 Breaker

The Hudson Coal Co. has decided to erect a breaker costing $2,000,000 at Olyphant, Pa., and in the near future the plans for the structure will be ready. The new breaker, it is said, will do the work that is now handled at three other breakers in the Olyphant field. The new plant will be even larger than the Hudson's Marvine operation in Scranton, one of the biggest in the anthracite field.

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Did Electric Arc in Firedamp Cause Jamison Blast?

An arc from an undercutting machine, from a defective cable or from the breaking of the circuit between the cable and the power line flashing in an accumulation of gas, probably was the direct cause of the explosion that occurred on Jan. 14 at the No. 8 shaft mine of the Jamison Coal & Coke Co., Farmington, W. Va. The presence of the gas in turn was probably due to interrupted ventilation, an open door being a likely cause.

Whatever the initiating agents, the opinion is held that coal dust propagated the explosion, which finally was stopped by the water contained in the swags on the main headings. When the explosion occurred the company was engaged in a big program for reconditioning this mine to make it more safe and already had spent a large sum of money toward this end. These are deductions from the testimony of witnesses at the inquest of the disaster, which was held in Fairmont on Feb. 26. The verdict rendered was that the nineteen victims "came to their death by an explosion of gas ignited by causes unknown to the jury."

The explosion took place in the Seventh Right section, a new development which is turned off the main heading at a piont about 3,000 ft. from the hoisting shaft. This section consists of a right and a left side, each of which was being ventilated by an individual split of air. At the time of the explosion two shortwall machines were at work in each of the two splits, or four in all in the section.

Prosecuting Attorney N. W. Ogden, counselled by R. M. Lambie, chief of the West Virginia Department of Mines, first of all tried to establish the fact that sufficient coal dust could not have been stirred up by the cutting machines to cause the initial ignition. This as an approach to the finding of the real medium, which was gas.

Deprecate Influence of Dust

Several other witnesses discounted any possibility of dust being the initiating cause, seeing that only two machines were on each of the splits and that these two were 500 to 1,000 ft. apart, intervals which would give ample opportunity for the dust caused by the first machine to settle in some degree before it could be carried by the air to the place where the second machine was at work.

William Leeper, fireboss, and Walter Brown, the mine foreman, remarked that under normal conditions the section would not have accumulated sufficient gas to cause the explosion, but the former declared that gas could have collected in sufficient volume had a door been left open, particularly in the No. 1 Right Butt entry of the section through which No. 4 machine had to pass. Assistant Mine Foreman William Beuglass visited the section on the day of the explosion. He found ventilation good and detected no gas.

One of the doors in the section was not destroyed by the force of the explosion, and an exploration crew found it standing open. This door might have been opened by the pioneer waves of the explosion, for which reason too much significance should not be attached to the position in which the door was found.

The fact that, as disclosed by Mine Foreman Brown, little gas was detected in the section after the explosion, with ventilation more or less impaired, led to the belief that an abnormal condition was set up prior to the explosion. State Mine Inspectors Kramer and Griffith were of the opinion that the piercing of a gas pocket by a cutting machine was the remote cause of the explosion. Many years ago the latter had served for eight years as foreman at this mine—in fact he held that office when the mine was first opened—and he recalled that the gas, emitted from pockets when punctured by drill holes, often made a loud whistle which at times frightened the men. This indicated gas under a high pressure. This gas would bleed off in two hours to three days.

A screw driver and hammer were found near No. 3 machine and the lid on the starting box was found lifted from its position. The body of an electrician was found in a chute of No. 1 butt heading, perhaps on his way to make repairs. However, there were no indications that this machine had anything to do with the explosion, which is believed to have started on the opposite side of the section.

Machines Ten Years Old

The four machines that were working in the section were installed about ten years ago. These were undercutters bearing approval plates of the West Virginia Department of Mines. (The department has long since ceased to issue such approvals.) The machines had no U. S. Bureau of Mines approval plates; in fact they were too old for that. All four machines were under coal in some stage of cutting, but all the controllers were in the off-position when found. However, one of the controllers might have been on at the time of the explosion. If the runner had his hand on the starter at the time, the force of the explosion would have caused him to pull the starter to the off-position as he was flung backward. The machines were not equipped with an automatic closing device on the starter.

Thomas Jarret, state mine inspector, said the force of the explosion was most markedly manifested in the Seventh Right section and thought that the most likely place for the starting of the explosion was the tight end of a crosscut which was being driven between Rooms 8 and 9 on the left side, from which point the force seemed to radiate. Machines Nos. 1 and 2 were at work on that side. A small piece of metal was broken out of the starting box casing on the first machine. The second machine was partially covered by a fall of slate. He testified that the rescuers encountered a number of small fires which were quickly extinguished.

State Inspector W. B. Riggleman, in whose district the mine is located, testified that quick liberation of gas from feeders is a comparatively common occurrence in this mine. He concurred with Mr. Jarret in the latter's belief as to the location of the seat of the explosion.

P. D. Costello, superintendent, on the stand outlined the measures his company had been putting into effect for greater safety. In the early part of 1925 the company decided to discontinue the use of electricity for cutting. Accordingly, prior to the explosion it had installed air compressors and air lines at a cost of approximately $60,000. The compressor station had already been built in the Twentieth Right section (about 2 miles inby of Seventh Right section) and was supplying motive power to ten punchers in its section at the time of the explosion. Two electric machines were still in service in the section due to the difficulty of training men for the job of running the punchers. A similar compressor room in Seventh Right section was near completion. The additional cost of cutting by air punchers as against electric machines in this mine is 9c. per ton.

The mine was sprinkled every day. The use of water cars had been discontinued. Water lines were laid along entries at a cost of $12,000. The intention was, and is, to extend sprinkling to the face of the rooms. No. 9 mine of the company in the same district was being rock-dusted and a rock-dusting machine was on order for this mine.

To Urge Higher Duty on Coal Imports to Canada

Two motions for increases in the duty on coal imports are to be made in the Dominion House of Commons. R. K. Smith (Conservative, Cumberland) intends to move for "an early enactment of a substantial increase in the customs tariff on the importation of coal and steel products of all grades and kinds into Canada from foreign countries." Mr. Smith takes the ground that such action "is essential to the well-being of the province of Nova Scotia and this Dominion."

T. L. Church (Conservative, Toronto Northwest) intends to move that the time has arrived for Canada to have a national policy in relation to its coal supply, and that no part of Canada should be left dependent on the United States for such supply. In his motion Mr. Church takes the ground that the government should immediately consider the initiation of an all-British and Canadian coal supply; that a duty should be placed on coal from the United States, to insure an all-British supply for Canada, and that coal should be carried on a preferential toll basis by the railways, on the same basis as grain and flour.

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318 Killed in January Mine Accidents; High Rate Due to Explosions

Accidents at coal mines in the United States in January, 1926, caused the death of 318 men, according to information received from state mine inspectors by the U. S. Bureau of Mines. All but three of the fatalities occurred at bituminous coal mines. The unusually large total for the month was due to four major explosions that caused the death of 142 men. In January a year ago only one major explosion occurred, with a loss of 6 lives. Because of the four disasters, the death rate for bituminous mines was 5.87 per million tons, based on a production of 53,662,000 tons, as compared with 3.47 for January last year based on an output of 51,930,000 tons. The non-disaster rate for January, 1926, for bituminous mines was 3.22 and that for January last year was 3.35.

The most disastrous explosion during the month was that which occurred at Wilburton, Okla., on Jan. 13, which resulted in the death of 91 men. On Jan. 14 an explosion in a mine at Farmington, W. Va., killed 19 men. Five lives were lost in a mine explosion at West Frankfort, Ill., on Jan. 29. The death of only 5 men out of more than one thousand men in the mine at West Frankfort at the time of the explosion is attributed to the use of rock dust, which localized the effects of the blast. The fourth explosion was at Helena, Ala., on Jan. 29, and resulted in the death of 27 men.

The figures for all mines for January, 1926, when compared with those for the same month last year, indicated reductions in the per-million-ton death rates from falls of roof, haulage, explosives and electricity. Only explosions showed an increased death rate, and this rate was more than ten times the rate for January, 1925, and nearly five times the average rate for the year 1925. The following figures show the death rates per million tons for the principal causes of coal-mine fatalities:

	Year 1925	Jan., 1925	Jan., 1926
All causes	3.811	3.959	5.906
Falls of roof or coal	1.842	1.971	1.876
Haulage	.615	.859	.724
Gas or dust explosions	.590	.270	2.823
Explosives	.174	.337	.074
Electricity	.144	.152	.130

Urges Body to Maintain Industrial Peace

Creation of an industrial Relations Commission of nine members "to discover the laws of industrial peace and effect a uniform compliance with them by capital and labor in all industries engaged in interstate commerce" was proposed in a resolution introduced in Congress, at Washington, Feb. 20 by Representative Browning, Democrat, of Tennessee.

Note Issue to Finance New Hazle Brook Breaker

An issue of $2,000,000 6 per cent gold notes of the Hazle Brook Coal Co., dated March 1, 1926, and maturing serially from March 1, 1927, until March 1, 1936, is announced by Brown Brothers & Co. and Edward B. Smith & Co. The Hazle Brook company operates seven anthracite collieries under leases covering about 8,913 acres of coal lands in Schuylkill County near Pottsville, Luzerne County near Hazleton, and in Columbia and Northumberland counties, Pennsylvania. Over one-third of its coal is produced by modern stripping methods. The company also owns five breakers of modern design with all necessary equipment and has begun the erection of a new breaker which will increase its productive capacity to 1,525,000 tons per year. The proceeds from the sale of these notes will be used for the erection of the new breaker with improvements, for the retirement of all mortgage indebtedness and for other corporate purposes.

State Mine Chiefs to Confer

The semi-annual conference of the heads of the state mining departments of Pennsylvania, Maryland and West Virginia will be held in Pittsburgh on March 5. J. J. Walsh, secretary of the State Department of Pennsylvania; Dr. J. J. Rutledge, chief engineer of the Maryland Bureau of Mines, and Robert M. Lambie, chief of the state Department of Mines of West Virginia, will attend.

Coal-Mine Fatalities During January, 1926, by Causes and States

(Compiled by Bureau of Mines and Published by *Coal Age*)

State	Underground												Shaft					Surface							Total by States	
	Falls of roof (coal, rock, etc.).	Falls of face or pillar coal.	Mine cars and locomotives.	Explosions of gas or coal dust.	Explosives.	Suffocation from mine gases.	Electricity.	Animals.	Mining machines.	Mine fires (burned, suffocated, etc.).	Other causes.	Total.	Falling down shafts or slopes.	Objects falling down shafts or slopes.	Cage, skip or bucket.	Other causes.	Total.	Mine cars and mine locomotives.	Electricity.	Machinery.	Boiler explosions or bursting steam pipes	Railway cars and locomotives.	Other causes.	Total.	1926	1925
Alabama	3	....	6	28	...	....	...	....	....	....	...	37	....	....	....	....	....	....	....	....	....	....	....	....	....	37	8
Alaska	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	9
Arkansas	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	3
Colorado	2	1	....	7	....	....	....	....	....	....	....	10	....	....	....	....	....	....	....	....	....	....	....	....	....	10	6
Illinois	6	....	3	7	....	....	2	....	....	....	....	18	1	....	....	....	1	....	....	....	....	....	....	....	....	19	18
Indiana	....	....	2	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	2	8
Iowa	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	3
Kansas	2	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	2	1
Kentucky	11	....	2	....	....	....	1	....	....	....	1	15	....	....	....	....	....	....	....	....	....	....	....	....	....	15	21
Maryland	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	2
Michigan	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Missouri	....	....	....	....	1	....	....	....	....	....	1	2	....	....	....	....	....	....	....	....	....	....	....	....	....	2	0
Montana	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	0
New Mexico	2	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	2	1
North Dakota	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Ohio	3	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	1	....	....	....	....	....	1	4	12
Oklahoma	1	....	2	91	....	....	1	....	....	....	....	95	....	....	....	....	....	....	....	....	....	....	....	....	....	95	0
Pennsylvania (bituminous)	22	2	5	....	1	....	....	....	....	....	1	31	....	....	....	....	....	....	....	....	....	1	....	1	32	34
South Dakota	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Tennessee	3	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	3	2
Texas	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Utah	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	4
Virginia	3	....	....	....	....	....	1	....	....	....	....	4	....	....	....	....	....	....	....	....	....	....	....	....	4	6
Washington	....	1	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	3
West Virginia	35	....	17	19	2	1	2	1	1	....	....	78	....	....	....	....	....	2	....	....	....	1	1	4	82	47
Wyoming	1	....	2	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	3	1
Total (bituminous)	96	4	39	152	4	1	7	1	1	....	3	308	1	....	....	....	1	3	....	....	....	2	1	6	315	180
Pennsylvania (anthracite)	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	1	....	....	....	1	....	2	3	55
Total, January, 1926	97	4	39	152	4	1	7	1	1	....	3	309	1	....	....	....	1	4	....	....	....	3	1	8	318	....
Total, January, 1925	109	8	51	16	20	....	9	1	2	....	3	219	2	1	1	....	4	5	....	....	....	1	6	12	....	235

[1]Only one fatality owing to strike in anthracite mines.

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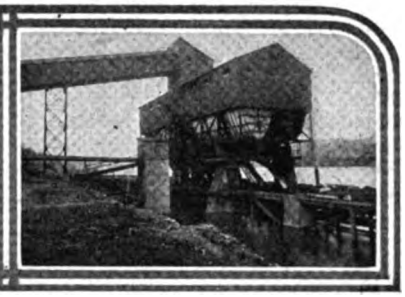
News Items From Field and Trade



COLORADO

The State Coal Mine Inspector's report for January, just released, shows a decrease of 245,000 tons in Colorado's coal output compared with the same month a year ago.

ILLINOIS

The Knox Consolidated Coal Co., of Indianapolis, Ind., operating mines in the Indiana Fourth and Fifth Vein fields, has taken over the business and personnel of the Great-West Coal & Lumber Co., Fisher Building, Chicago. R. E. Barr, formerly president of the Great-West company, has been appointed Northwestern manager, and with him will be associated practically the entire force of the old Great-West company.

The Majestic mine of the Crerar-Clinch Coal Co. broke its output record in the month of January, 1926, with 83,500 tons of coal. The mine has worked full time every day since Oct. 1, 1925. It has been in operation for twenty years.

INDIANA

The Fort Branch mine, Fort Branch, is cleaning up its property preparatory to closing down indefinitely. About 160 men are employed when the mine is operating at capacity.

Agents representing C. W. Willis, of Sullivan, Ind., are obtaining options and leasing 2,000 acres of stripping coal lands east of Hartwell, near Petersburg, with the intention of opening another big stripping mine in southern Pike County. The tract under option is connected with the Southern Ry. by a switch.

The machine shops and supply rooms of mine No. 28 of the Vigo Mining Co., at Sullivan were burned Feb. 13, causing an estimated loss of more than $50,000. The flames were discovered late at night and had gained such headway that they could not be controlled. The storerooms contained much valuable mine machinery and equipment. The origin is not known.

KANSAS

Work was resumed Feb. 23 in the Newlands-Haynie mine, in the southeastern Kansas field, where a strike was called Feb. 2 in protest against penalties imposed by the company on three miners for dirty coal. Officials of district 14, United Mine Workers, insisted responsibility for dirt in the three protested cars could not be determined, as others than those whose names appeared on the cars assisted in loading them. The penalties were set aside in the agreement reached.

The district board of District 14, United Mine Workers, called a strike, effective Feb. 19, at Katy mine, No. 2, southeastern Kansas field, operated by Jim Price, Joe Lafayette and George Mercz. The union officials said the operators refused to recognize a committee appointed by the miners. Twenty-seven men walked out.

KENTUCKY

Green River mine, located between Hebbardsville and Curdsville, will open soon, according to Ollie Keach, of Evansville, Ind., president of the Green River Kentucky Coal Mining Co. The mine recently was auctioned at a commissioner's sale, the owners buying in the stock and Keach succeeding himself as president.

The H. T. W. Coal Co., organized a short time ago to take over the mines of the Alma-Thacker Coal Co., which was forced into the hands of receivers in 1925, is operating the mines with a daily output of about 600 to 800 tons. The product is being sold through the Central West Coal & Lumber Co., of Columbus, Ohio. J. W. St. Clair is at the head of the company.

The West Kentucky Coal Co. and St. Bernard Coal Co. for the year ended Dec. 31, 1925, shows surplus of $372,378 after taxes and charges, but before depreciation, against $676,028 in 1924.

Coal men and other business interests of the Whitesburg section are endeavoring to bring pressure to bear on the Louisville & Nashville R.R. to force the road to carry out an alleged promise to build a connecting link from Whitesburg to Elkhorn City, there connecting with the Carolina, Clinchfield & Ohio Ry. It became known recently that, because of the heavy cost of construction in rough country, the road had decided not to build a connection through from its eastern Kentucky division, and would merely connect up from the Cumberland Valley division, in the Harlan section.

MISSOURI

Joseph Landreth, 57, proprietor of the Landreth coal mine, at Marceline, was instantly killed by a fall of rock in his mine, Feb. 12. Frank Ellis, a miner, was dangerously hurt and is in a hospital.

The Central Coal & Coke Co. and subsidiaries for the year ended Dec. 31, 1925, show net profit of $74,144, equivalent to $3.95 a share. This compares with $364,035, or $5.27 a share, in 1924.

OHIO

Preliminary figures given out by various railroads in Ohio covering coal production during 1925 show that a total of 479,553 cars, or about 23,977,000 tons, of coal was mined as compared with 581,300 cars, or about 29,000,000 tons, in the preceding year. It is estimated that only about one-fifth of the tonnage used in Ohio is produced in the Buckeye State, the remainder coming from West Virginia and Kentucky to a large extent. Of the total output in the state in 1925 the southern Ohio field produced 115,289 cars, or about 5,764,000 tons. Of that production 57,023 cars, or about 2,851,000 tons, was commercial coal; 53,907 cars was railroad fuel, and 4,359 cars, or 217,000 tons, shipped to the lakes.

Owing to the depression in the coal industry, with less than one-half of the 17,000 miners in the eastern Ohio field at work, members of the Fifth sub-district of the United Mine Workers have voted to postpone the twenty-eighth annual convention until March, 1927.

Advanced training in mine rescue work was given at Nelsonville last week by the U. S. Bureau of Mines and half of the force of inspectors of the Ohio Department of Mining were in attendance. The other half will receive the training next week.

M. A. Hanna Co. reports for the year ended Dec. 31, 1925, net income of $123,294 after interest, depreciation, depletion and federal taxes, equivalent to $1.10 a share, on the first preferred stock. This compares with net loss of $1,651,572 in 1924.

The New Pittsburgh Coal Co., of Columbus, a subsidiary of the Pittsburgh Coal Co., has purchased a large tract of coal land in the Pomeroy Bend district. The acreage had been under lease by the company for some time. The purchase price was in the neighborhood of $100,000.

PENNSYLVANIA

The increased value of coal-mine dumps in the anthracite field was brought out recently when the ownership of a bank at New Philadelphia was disputed before an alderman in Schuylkill County. The plaintiff in the case was H. R. Seligman, president of a coal mining concern in Lackawanna County, who charged J. O. Ulrich and

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J. E. Kirby with taking a bank worth $100,000. Seligman also charged that Ulrich had made threats against him unless he kept away from the coal dump. In their reply Ulrich and Kirby contended they had been worked out of the lease on the mine dump through improper methods, but a counter suit brought against the Lackawanna man was dismissed. The alderman held Kirby and Ulrich for trial on Seligman's allegations. The bank in question is said to contain thousands of tons of burnable culm, yet ten years ago it was deemed of no great value.

Court in Schuylkill County has been asked by trustees of the Stephen Girard estate to put a stop to juicy fees being collected by the treasurer of the school district in West Mahanoy Township, in which nearly all of the assessable property is owned by the Girard estate. Court is asked to limit the treasurer's fees to $500 a year. It is alleged that if the tax collector in the township is allowed to collect the usual commissions he will receive $7,000 a year for little or no work and that such a procedure would mean a waste of the taxpayers' money. Much interest is being manifested in the case due to the fact that in many other districts coal companies pay from 70 to 90 per cent of the taxes.

The preliminary report of the Pennsylvania Coal & Coke Corp. for the year ended December 31, 1925, shows a deficit of $461,294 after depreciation, depletion, etc., as compared with a deficit of $428,376 in 1924. Deficit for the fourth quarter last year was $3,760, against $129,720 in the fourth quarter of 1924. December net income was $320 before federal taxes, against a deficit of $42,770 in December, 1924.

Operations will be resumed soon at the Buck Ridge mine, at Johnson City, according to an announcement last week. This mine formerly was owned by the Puritan Coal Co. This concern went into the hands of a receiver and it is now understood that the Buck Ridge operation is to be taken over by one of the largest independent producers in the Pottsville area. Former Governor Sproul of Pennsylvania is mentioned as being interested in the deal. Mr. Sproul is heavily interested in the South Penn Collieries Co., which has several operations in the Scranton field.

A commission composed of Dr. J. J. Rutledge, of Baltimore, chief engineer of the Maryland Bureau of Mines; S. A. Taylor, of Pittsburgh, president of the American Institute of Mining and Metallurgical Engineers, and Robert M. Lambie, chief of the West Virginia Department of Mines, will investigate the cause of the mine blast at Horning mine of the Pittsburgh Terminal Coal Co., in the Pittsburgh district, beginning March 4.

No giant power legislation will be enacted by the special session of the Legislature at Harrisburg, the Senate corporations committee last week having reported out with a negative recommendation all the Pinchot giant power bills. These eight measures took the place of twenty-two that met a similar fate during the regular legislative session last year.

From proceedings originating in Allegheny County, the Fayette courts on Feb. 25 ordered the sale of the Albany and Ferry mines by the receivers of the Forsythe Coal & Coke Co. to the Albany Coal Co., both Pittsburgh corporations. The Albany mine is located near Brownsville, and the Ferry plant, near East Millsboro. The consideration was withheld. The receivers of the Forsythe company are Connie C. McGregor and R. L. James.

A new seam of anthracite 16 ft. thick was discovered recently by diamond drill men of the Dodson Coal Co. near Hazleton. Development will begin at once, the coal being prepared at the Beaver Brook mines. The seam is thought to be a merger of the thick mountain strata which "pinch out" in other properties of the company.

TENNESSEE

J. H. Mitchell, H. C. Kivett and the Frost interests, of Corbin, Ky., recently purchased the Queen & Crescent coal properties at Moreley, at a price of $27,000. Mr. Mitchell has been named president of the company; Mr. Kivett, vice-president; Charles Frost, Sr., general manager and Charles Frost, Jr., secretary-treasurer.

UTAH

The Standard Coal Co. has laid off 105 men at its mine, one-third of the entire force.

Application for the appointment of a receiver for the Great Western Coal Mines Co., of Salt Lake City, has been made. The application is made by a Mr. A. Strebel, who claims to have a secured judgment against the company for $6,487.36, and it is stated that so far but $100 has been paid. It also is alleged that the company has certain assets which it could dispose of or utilize for the benefit of its creditors, but refuses to take any steps in this direction.

The Denver & Rio Grande Western R.R. has applied to the Utah Public Utilities Commission for permission to construct a railway from Spring Canyon Junction to Kenilworth, which would reduce the grade from 6.10 to 3 per cent. The company also asks permission to abandon the old line between the same points. The improvement would cost, it is estimated, $500,000.

The Utah Public Utilities Commission has dismissed the application to build a branch line up the Huntington Canyon for coal purposes. The application had been pending since 1922 when it was originally filed by Arthur and James H. Mays under the name of the Central Railway Co.

It is announced that plans will be made to rush development work on its properties in Salina Canyon by the Sevier Valley Coal Co., of Richfield. The shaft is now being sunk through solid rock, it is stated. It is expected that the branch line to the mines will be completed by the coming summer.

Register Eli F. Taylor of the federal land office will offer 40 acres of coal land for lease on March 31. It is located near Emery, in Emery County. The property was operated once by the Black Diamond Coal Co., but was taken back by the federal government on the ground that the terms of the lease were not fulfilled.

VIRGINIA

Chesapeake & Ohio Ry. suits aggregating $400,000 are affected by a recent decision of the Virginia State Supreme Court of Appeals granting a writ of error to the Smokeless Fuel Co. in an appeal from the Circuit Court of Newport News, involving a suit for $7,093.56. The suit was one of a number of cases in which the railroad is seeking to recover alleged demurrage due on shipments of coal. Request for a writ was presented Feb. 9.

Increasing its total output of soft coal by nearly 2,000,000 tons over the preceding year, the state of Virginia easily maintained its position last year as eighth among all of the coal-producing states of the country. Virginia's total production for 1925 was 12,455,000 tons, as compared with 10,693,000 tons in 1924.



Substantial Dwellings Erected by the Kingston Pocahontas Coal Co.

These dwelling are of modern brick construction and each building houses two families. Large windows and sufficient space between each dwelling provide plenty of light and fresh air for the occupants.

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WEST VIRGINIA

Ignition of a small pocket of gas in the Arnettsville mine of the Fort Grand Coal Co. recently caused a fire which caused minor damage, as the blaze was quickly extinguished by W. B. Riggleman, and other safety experts. Six miners, in the mine at the time of the explosion, were unharmed.

Miners in three Elm Grove mines, near Wheeling, have been provided with safety lamps to replace the open carbide lights formerly used. The new electric safety lamps were recommended by Robert M. Lambie, chief of the State Department of Mines.

The Crozer Coal & Coke Co. of Crozer, near Elkhorn, McDowell County, recently installed a 3,000-ton screening and coal preparation plant.

The Davis Colliery Co., at Jontee, Gilmer County, recently installed a $60,000 tipple.

The Davis Creek Land & Coal Co., Charleston, has installed screens to prepare nut sized bituminous coal.

The C. H. Mead Coal Co. has awarded a contract for the erection of a new tipple at its No. 2 operation. The structure will have four tracks and be equipped with the latest screening machinery for the preparation of coal. The Mead company has started putting in a slope to the No. 3 Pocahontas seam and the coal from the new mine will be run over the new tipple in addition to that from the No. 2 mine operating in the Beckley seam. The tipple will handle 2,500 tons in eight hours and will be one of the best equipped in the Winding Gulf field.

Robert M. Lambie, chief of the state department of mines, presented each of the 20 survivors of the explosion at mine No. 8 of the Jamison Coal & Coke Co. with "self rescuer" chemical masks, which is a protection against the fumes of carbon monoxide.

Gordon B. Late, Clarksburg coal operator, recently acquired a lease on the Austin Coal Co.'s coke ovens in Preston County and has put the plant in condition for immediate operation. This is one of the oldest plants in the state, but it has been idle for several years.

More rigid enforcement of the state mining laws is being sought by Robert M. Lambie, of Charleston, chief of the Department of Mines, who declares that too many accidents have been occurring in the mining fields. As a means of reducing the number of accidents, the head of the department has directed all state mining inspectors to prosecute all offenders who do not comply with the law. In line with this order, three prosecutions recently were instituted in the Panhandle section by A. E. Lafferty, of Moundsville, the penalties varying from $50 to $150 and costs.

Reconstruction of the Baltimore & Ohio R.R. bridge across the Guyan River at Huntington, is contemplated, the company having made a request of the War Department to approve the plans, according to Major H. M. Trippe, U. S. District Engineer at Huntington.

Plans are being made by the Superior-Pocahontas Coal Co. to open a new mine at Davy, along the Norfolk & Western Ry. The company will develop a tract of 2,300 acres of virgin smokeless coal land, and it is planned to expend $65,000 in making improvements as soon as the weather conditions are auspicious.

The Portsmouth By-Products Co. has awarded a contract for the erection of a $250,000 tipple at its Freeburn mine, near Williamson, to cost approximately $250,000. When completed, the loading capacity of the mine will be increased to 4,000 tons of coal every eight hours. At present the loading capacity is 2,500 in 12 to 13 hours. It is expected that construction work will begin within 30 days and will be completed in September.

The Winding Gulf Colliery Co., at Winding Gulf, is preparing to spend $50,000 for a new tipple and screening outfit. Work will be started as soon as the weather permits.

The Scotts Run operations of the Connellsville By-Product Coal Co., of the J. A. Paisley interests, of Cleveland, will be rock-dusted soon. According to reports the machinery has arrived.

WYOMING

P. J. Quealy, president of the Kemmerer Coal Co., has just announced that work will be started immediately on the opening of a new mine by that company on the Sublet No. 5 vein, four miles northeast of Kemmerer. The program calls for an expenditure of $400,000. The first work will be the construction of a 1,500-ft. slope to the coal seam, practically all of which will be rock work. A 660-ft. ventilating shaft is to be sunk to this slope. It is expected that actual production will be possible within another year. The mouth of the slope will be near the old Susie, or No. 4, mine of this company.

CANADA

Canada's production of coke in 1925 totaled 1,471,116 net tons, an increase of slightly more than 100,000 tons over the year preceding. Trade Commissioner Lynn W. Meekins, Ottawa, reports to the Department of Commerce. In addition to the amount produced locally, 852,427 tons was imported. In the production of the domestic product 660,760 tons of Canadian and 1,581,466 tons of imported coal was used.

Imports of coal into Canada from the United States during 1925 were as follows: Anthracite, 3,225,398 tons valued at $26,996,042; bituminous, 12,501,096 tons, valued at $26,758,170, as compared with imports of anthracite 3,878,721 tons, valued at $34,804,748, and bituminous 12,500,616 tons of the value of $29,431,661 during 1924. Imports of coal from Great Britain during 1925 consisted of 558,259 tons of anthracite of the value of $5,100,467 and 46,858 tons of bituminous valued at $213,722 as compared with 273,277 tons of anthracite valued at $2,472,737 and 43,835 tons of bituminous of the value of $188,483 during 1924.

Traffic

Ask Extension of Emergency High-Voltatile Rates

Operators of the Williamson field and other southern West Virginia high-volatile regions have filed a plea with the Interstate Commerce Commission asking continuance of the emergency rate granted by the Commission on prepared coal to New England and the Atlantic Coast states. Shippers believe that it will be possible to retain the Eastern market if rates are reasonable. When the present through rate was granted as an emergency measure during the anthracite strike, April 30 was set as the date for restoring the former rates.

N. & O. to Penalize Shipment On Consignment

Information has been received by coal operators along the Norfolk & Western Ry. that beginning March 15 this road will penalize operators shipping unconsigned coal loads to either the Bluefield or Portsmouth scales. A penalty of $2 a car will be imposed on the shipper, which will carry for a 48-hour period, after which the regular daily demurrage rates will apply. The order is similar to the one issued by the Chesapeake & Ohio Ry., according to coal operators.

C. & O. Adjusts All-Rail Rates To Northwest

The Chesapeake & Ohio Ry. has issued freight tariff No. 1160-C, I.C.C. No. 10,218, reducing rates on coal to northern Illinois to the extent of 15c. per ton and establishing joint through rates to southern Wisconsin on an adjustment similar to the one made to trans-Mississippi River territory. This final adjustment in "Northwestern All-rail Rates" establishes the same rates from northeastern Kentucky mines to destination territory as those in effect from mines on the Louisville & Nashville R.R., which are substantial reductions from the combination of local rates, which were the only rates the northeastern Kentucky or Big Sandy district had in effect. The new rates become effective as of March 15, 1926.

Association Activities

At the annual meeting of the **Pittsburgh Vein Operators' Association**, held Feb. 24, at the Hotel Cleveland, Cleveland, Ohio, the name of the organization was changed to the **Eastern Ohio Coal Operators' Association.** This change was made in order to promptly describe the mining location of its membership and more clearly indicate that the mine properties were located in the State of Ohio. The following officers were elected: President, Ezra Van Horn, general manager, Clarkson Coal Mining Co.; Vice-President, W. L. Robison, vice-president, Youghiogheny & Ohio Coal Co.; Treasurer, H. R. Sullivan, treasurer, Central Coal Mining Co.; Secretary, D. F. Hurd.

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Personal

There is an opening on the editorial staff of *Coal Age*. Please address J. E. Spurr, *Coal Age*, 10th Ave. and 36th St., New York, giving such information as would be of interest.

J. C. Myers has resigned as superintendent of the Wisconsin Coal Co., at Anco, Ky., effective in a few weeks. He has not announced his plans for the future.

Simon Levy, president of the Boylston Coal Co., Chicago mail order coal house, was held on a $10,000 bond recently, charged with using the mails to defraud.

J. P. Routh, president of J. P. Routh & Co. and the Riberena Fuel & Chartering Co., announces the opening of offices in the Bankers Trust Building, Norfolk, Va., with J. H. Tonkin in charge.

G. R. Krebs, of Charleston, W. Va., is among those interested in the Camp Fork Coal Co., a recently organized corporation with headquarters at Greendale, Nicholas County, W. Va.

George Wolfe, formerly secretary of the New River Coal Operators' Association, with headquarters at Beckley, W. Va., has moved to Norfolk, Va., and is engaged in the general investment business.

Harry A. White has been appointed district manager at Norfolk for the Pocahontas Fuel Co., Inc., succeeding Edwin O. Parkinson, who died several weeks ago. Mr. White formerly was assistant manager of the Norfolk office of the company.

Daniel F. Gallagher, who for several years was New York manager for Campbell, Peacock & Kinzer, is now connected with the Shanferoke Coal & Supply Corp., 120 Broadway, New York City. The Shanferoke corporation recently became representative for Campbell, Peacock & Kinzer in New York State and northern New Jersey.

E. C. Pratt, president of the Republic Coal Co., of Minneapolis, Minn., recently started on a three weeks' trip which is to include a stop at Herrin, Ill., where the Pratt Brothers Co., of which he is the head, has a mine.

John A. Howe, of Minneapolis, Minn., vice-president and general manager of the Carnegie Dock & Fuel Co., says that indications point to 1926 being a good year in the coal trade in the Northwest. Consumers would do well, he said, to contract for coal in sufficient quantities this season to provide against a possible suspension of mining in union bituminous fields when the Jacksonville agreement expires, April 1, 1927.

William Bartrim, combustion expert for the Midland Coal Co., Kansas City, Mo., recently received a letter from H. E. Shrack, Topeka, assistant manager of the Board of Administration of Education, Charitable and Correctional Institutions of Kansas, announcing that the state will save about $60,000 this year through improvements and alterations in heating equipment.



E. W. Davidson

E. W. Davidson has resigned as managing editor of *Coal Age*, effective March 1, to take charge of publicity for the Society for Electrical Development, 522 Fifth Ave., New York City. Mr. Davidson had been on the editorial staff of *Coal Age* for five years, four years as Western editor, stationed at Chicago, and one year as managing editor. The good wishes of the editorial staff and doubtless of the readers of *Coal Age* accompany him.

Obituary

John Finger, 93 years of age, founder of the Finger Brothers Pittsburgh & Kanawha Coal & Coke Co., at New Albany, Ind., large handlers of river and rail coal, died at his home in New Albany, on Feb. 23, following a short illness. A native of Germany, he came to America as a boy, and founded the coal company about thirty-five years ago. He is survived by three sons, four daughters and his widow.

Frank A. Schneider, for many years in the coal trade of St. Paul, Minn., died last week, after an illness of a few weeks. He was 48 years of age and left a widow, a son and a daughter. When but 15 years old he started with the North Western Fuel Co., of St. Paul, and continued in various positions until about 1912, when he went with the C. Reiss Coal Co. with which he remained until his death. Funeral services were conducted under Masonic auspices.

Trade Literature

Blasters' Handbook. E. I. duPont de Nemours & Co., Wilmington, Del. Pp. 198; 4x7 in.; illustrated. Describes practical methods of using explosives for various purposes.

Jeffrey Coal Cutters, Loaders and Mine Conveyors. The Jeffrey Mfg. Co., Columbus, Ohio. Catalog No. 425. Pp. 34; 7½x10½ in.; illustrated. Illustrates and describes features of construction, methods of application, etc., of Jeffrey machinery; data on performance records are included.

C-E Fin Furnace. Combustion Engineering Corp., New York City. Catalog FF-1. Pp. 20; 8½x11 in.; illustrated. Describes the advantages of this water-cooled type of furnace wall. The book should prove of interest to those connected with power generation.

The following bulletins were recently issued by the Sullivan Machinery Co., Chicago, Ill.: **Plug Drills, Class DH-3**; Bulletin No. 81-K. **Clay Spader, Class DE-361**; Bulletin No. 81-J. **All-Hammer, Light Drill Steel Sharpener**, Bulletin No. 72-I. **Drill Steel Furnace for Oil or Gas Fuel**, Bulletin No. 74-B. **Belt-driven Air Compressors**; WG-6; single-stage and WH-6 two-stage; Bulletin No. 83-B. **Buster for Breaking Concrete**; DW-221, heavy duty, and DP-221, light duty; Bulletin No. 81-I. **Automatic Line Oiler for Rock and Hammer Drills**; Bulletin No. 81-H. These are 6x9 in., illustrated.

Combustion Steam Generator. Combustion Engineering Corp., New York City. Pp. 6; 8½x11 in.; illustrated. The advantages and construction of this generator are described.

Common Sense in Steel Dollars. Heintz Mfg. Co., Philadelphia, Pa. Pp. 16; 6x9 in.; illustrated. Describes the steel welding operations of this company.

Crowding the Blasting Crew is the title of Bulletin 317, issued by the Marion Steam Shovel Co., Marion, Ohio, describing its shovel operations. The book has 16 pp., is 8½x11 in., illustrated.

The United States Distributing Corporation, New York City, has issued a 39-pp., 8x10½ in. book illustrating and describing the activities of its subsidiaries.

Industrial Notes

George E. Cullinan has been elected vice-president in charge of sales and a director of the **Graybar Electric Co.**, which has just been organized to succeed the supply department of the Western Electric Co. **Leo M. Dunn** has been appointed vice-president in charge of merchandising and accounting.

Allis-Chalmers business in Continental Europe will be handled through an organization recently incorporated as Allis-Chalmers (France), with headquarters at 3 rue Taitbout, Paris. H. I. Keen, who has been manager of European sales through the company's district office in Paris, will be the managing director of the new organization. The company has maintained for many years an office in London at 728 Salisbury House, London Wall, E. C. 2.

W. C. Adams, member of the firm of **Allen & Garcia Co.**, Chicago, will hereafter be located at Birmingham, Ala., in the Birmingham Age-Herald Building, as resident engineer of the company.

The Cutler-Hammer Mfg. Co., of Milwaukee, Wis., has opened a new sales office in the Healey Building, Atlanta, Ga., to take care of the trade in the states of North Carolina, South Carolina, the eastern section of Tennessee, Georgia, Florida, southern Alabama and Mississippi. A. C. Gibson, formerly of the Philadelphia office, is in charge. The General Machinery Co. of Birmingham, Ala., will continue to serve the northern half of Alabama.

The Superheater Co., of New York and Chicago, recently elected M. Schiller vice-president in charge of accounts and purchases, and W. F. Jetter, treasurer and assistant secretary. Bard Browne was appointed assistant to the vice-president in charge of sales and service, and T. F. Morris, assistant secretary and assistant treasurer.

S. C. Ebbert, who was connected with the Birmingham offices of the General Electric Co. for a number of years, has formed a connection with S. L. Morrow, 720 Brown-Marx Building, Birmingham, Ala., sales representative of Link-Belt Co. and H. W. Caldwell & Sons Co. Mr. Ebbert is a mechanical and electrical engineer of recognized ability and is thoroughly acquainted with the industrial needs of the district.

Publications Received

A Century of Progress. A history of The Delaware and Hudson Co., 1823-1923. Pp. 755; 5 x 8 in.; illustrated.

The Bureau of Mines Orsat Apparatus for Gas Analysis, by A. C. Fieldner, G. W. Jones and W. F. Holbrook. Bureau of Mines, Washington, D. C. Price, 5c. Technical Paper 320. Pp. 18; 6 x 9 in.; illustrated. Describes the apparatus used in the gas laboratory of the Bureau of Mines at Pittsburgh, Pa., for the complete and partial analysis of gases.

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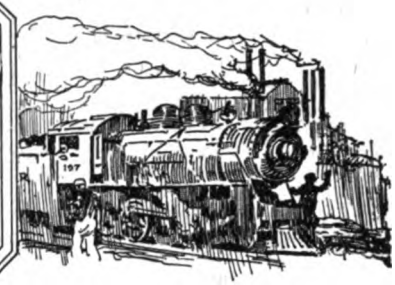
Production And the Market



Liquidation Process Rules Soft-Coal Market; Anthracite Situation Parodoxical

The process of liquidation in the bituminous coal markets of the country still continues. The process is marked more by sharp recession in demand than by sharp breaks in spot prices. The latter are still working to lower levels, but the descent is not abrupt. The decline is moderate because prices as a whole have been so low that pronounced declines would throw more companies into operations at a substantial loss.

Coal Age Index of spot prices on bituminous coal for March 1 was 169 and the corresponding price was $2.04, as compared with an index number of 170 and a price of $2.06 on Feb. 22. This week's index number is the same as that in effect a year ago, when the outlook for the industry was anything but promising. During the past week West Virginia low-volatile coals in Eastern markets and southeastern Kentucky block in the Middle West were the chief victims of the price decline.

Production Still on the Downgrade

Bituminous production is being curtailed to meet the new conditions. The output for the week ended Feb. 20 was estimated by the Bureau of Mines at 11,513,000 net tons, as compared with 12,011,000 tons the week preceding. Preliminary figures for last week indicate a further decline. Notwithstanding these drastic cuts, there is still considerable coal on wheels which can be sold only at bargain-counter figures. And "no bills"are the common lot of most producing fields.

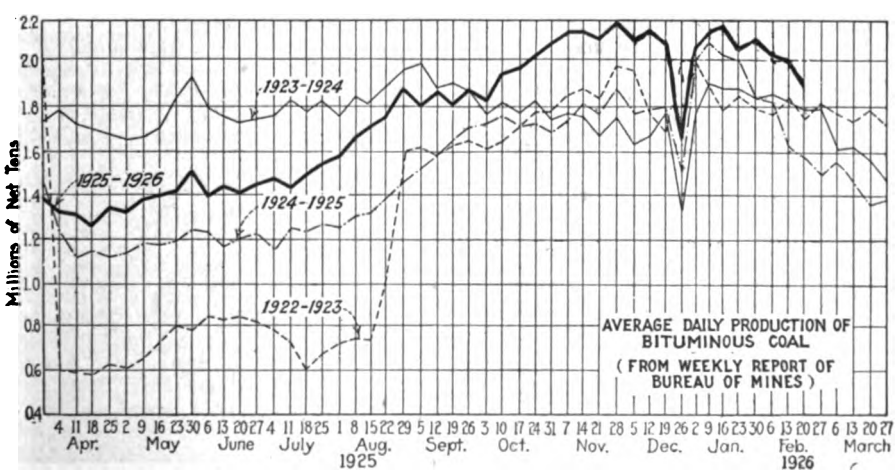
The greatest danger in connection with this unsold and rejected tonnage is not the losses that will be suffered to effect disposition, but the false basis of values such distress sales will establish in the minds of many buyers. Coming at the time when the question of contract renewals is pushed to the front, such a false basis may have a disastrous effect upon next year's business. As a matter of fact, in some cases buyers are holding off from renewing contracts apparently with just such an idea in mind.

Look to Lake Trade for Relief

To the Appalachian Region the most favorable factor in the present situation is the approach of the opening of navigation. One or two troublesome accumulations of tonnage have been moved to boats tied up at the lower ports. This has been a great help to the high-volatile coals. The low-volatile producers, however, have not been able to arouse the interest of lake buyers. In both high- and low-volatile fields, jockeying for prices between buyer and seller already has started.

The anthracite situation is paradoxical. The householder is eager to take in hard coal, but the eastern retailers, particularly in the metropolitan areas, are more concerned with getting rid of the stocks of "substitute" fuels still in their yards. The result is that, while shipments are readily absorbed—possibly because the tonnage is spread so thinly over a wide territory—there is no pressure upon the producers for quick deliveries. In fact, some representatives of the producers complain that the market lacks life. Extravagant premiums on independent tonnage are fading out of the picture, although the range over company circulars is still high.

Domestic interest in beehive coke is largely history. Production in the Connellsville region is declining in spite of increased buying by industrial interests. Some of the byproduct ovens which stepped into the market during the hard-coal strike, however, are laying plans to hold part at least of the business then enjoyed.



Estimates of Production

(Net Tons)

BITUMINOUS

	1925	1926
Feb. 6	10,910,000	12,167,000
Feb. 13 (a)	9,758,000	12,011,000
Feb. 20	9,464,000	11,513,000
Daily average	1,577,000	1,919,000
Coal yr. to date (c)	424,651,000	483,706,000
Daily av. to date	1,552,000	1,763,000

ANTHRACITE

Feb. 6	1,909,000	27,000
Feb. 13 (a)	1,824,000	35,000
Feb. 20	1,838,000	406,000
Coal yr. to date (c)	77,558,000	41,122,000

BEEHIVE COKE

Feb. 13 (a)	265,000	362,000
Feb. 20 (b)	259,000	353,000
Cal. yr. to date	(c) 2,461,000	1,928,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalise number of days in the two years.

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Middle Western Mines Closing

With winter demand apparently on its last legs, the number of mines in Illinois and Indiana closing down or reducing running time is on the increase. An unofficial check of the situation shows more mines down in the two states than at any time, barring general strike periods, in the past five years. "No bills" are no respecters of sizes in either state.

According to present plans, most of the southern Illinois operators will try to hold to the $3 base on lump this month. Pressure from outside coals, however, is severe. West Virginia and eastern Kentucky high-volatiles are easy at $2.50. Smokeless lump is reasonably firm at $3.50@$3.75; egg and nut, $4@$4.25, and mine-run, $2@$2.35.

The Middle Western steam market is exceedingly quiet. Neither the reduced output of coal as a result of the resumption of anthracite production nor the shutting off of tonnage by strikes in southern Indiana has strengthened steam coal prices. Railroad buying in southern Illinois is light. Stripping operations are gathering in some spot orders for locomotive fuel as these mines are willing to compete on a price basis with non-union western Kentucky.

There is no change in the situation in the Duquoin and Jackson County fields. Railroad buying is the mainstay of current business in the Mt. Olive district. With that exception, conditions are on all fours with those in southern Illinois. Mines in the Standard area still pursue a ruinous price policy, but this has little effect upon the accumulation of "no bills" and some operations plan to shut down for an extended period.

The St. Louis local market is "flat, stale and unprofitable." High-grade coals lag in demand. Many retail distributors have been forced to enter into the building materials business to keep out of red ink. Country domestic trade is no better than that in the city and steam movement is light.

Undigested Surplus Pains Kentucky

The collapse of the Eastern market for domestic coal leaves the central states with an undigested surplus of Kentucky and West Virginia high-volatile tonnage. Although consignment shipments are held down to a minimum, the potential capacity of the mines depresses spot prices—particularly upon prepared sizes. The chances are that there will be little advance until the opening of the lake season.

Screenings, on the other hand, are moving to higher levels under the influence of curtailed production. Industrial consumers are showing more interest in the market. Eastern Kentucky slack commands 90c.@$1.10 and screenings from the western part of the state sell for 10c. less. High-grade eastern Kentucky block is easy at $2.25@$2.75; lump, $2@$2.50; egg and nut, $1.75@$2; mine-run, $1.35@$1.50. Western Kentucky block is $1.75@$2; lump and egg, $1.50@$1.75; nut and mine-run, $1.25@$1.50.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	Mar. 2 1925	Feb. 15 1926	Feb. 22 1926	Mar. 1 1926†
Smokeless lump	Columbus	$3.60	$4.60	$4.35	$4.25@$4.50
Smokeless mine run	Columbus	1.90	2.55	2.50	*2.25@2.50*
Smokeless screenings	Columbus	1.15	1.85	1.60	*1.00@1.50*
Smokeless lump	Chicago	3.10	4.50	4.10	4.00@4.25
Smokeless mine run	Chicago	1.75	2.10	2.10	2.00@2.25
Smokeless lump	Cincinnati	3.25	4.25	4.35	*3.75@4.25*
Smokeless mine run	Cincinnati	2.00	2.35	2.35	*2.00@2.25*
Smokeless screenings	Cincinnati	1.35	1.25	1.35	*1.10@1.50*
*Smokeless mine run	Boston	4.30	5.00	4.85	*4.60@4.85*
Clearfield mine run	Boston	2.05	2.15	2.00	**1.90@2.25**
Cambria mine run	Boston	2.25	2.45	2.30	**2.10@2.75**
Somerset mine run	Boston	2.05	2.30	2.10	**2.00@2.35**
Pool 1 (Navy Standard)	New York	2.65	3.05	3.05	*2.75@3.10*
Pool 1 (Navy Standard)	Philadelphia	2.80	3.20	2.90	2.70@3.15
Pool 1 (Navy Standard)	Baltimore	2.25	2.30	2.30	*2.25@2.30*
Pool 9 (Super. Low Vol.)	New York	2.05	2.60	2.55	*2.25@2.50*
Pool 9 (Super. Low Vol.)	Philadelphia	2.20	2.70	2.45	2.30@2.60
Pool 9 (Super. Low Vol.)	Baltimore	1.85	2.15	2.15	*2.00@2.20*
Pool 10 (H.Gr.Low Vol.)	New York	1.75	2.30	2.30	*2.00@2.25*
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.85	2.40	2.15	2.00@2.30
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.70	1.95	1.95	*1.85@1.90*
Pool 11 (Low Vol.)	New York	1.55	2.10	2.10	*1.80@2.00*
Pool 11 (Low Vol.)	Philadelphia	1.65	2.25	1.95	1.90@2.00
Pool 11 (Low Vol.)	Baltimore	1.50	1.70	1.75	1.70@1.80
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.50	1.60	1.60	1.50@1.70
Pool 54-64 (Gas and St.)	Philadelphia	1.50	1.65	1.60	1.50@1.70
Pool 54-64 (Gas and St.)	Baltimore	1.65	1.65	1.75	*1.50@1.60*
Pittsburgh st'd gas	Pittsburgh	2.50	2.65	2.65	*2.40@2.50*
Pittsburgh gas mine run	Pittsburgh	2.20	2.10	2.10	2.00@2.25
Pittsburgh mine run (St.)	Pittsburgh	1.95	2.05	2.05	2.00@2.10
Pittsburgh slack (Gas)	Pittsburgh	1.30	1.20	1.05	**1.15@1.25**
Kanawha lump	Columbus	2.35	2.25	2.25	2.00@2.50
Kanawha mine run	Columbus	1.50	1.55	1.55	1.40@1.70
Kanawha screenings	Columbus	.75	.65	.60	.50@.75
W. Va. lump	Cincinnati	2.10	2.50	2.25	2.00@2.50
W. Va. gas mine run	Cincinnati	1.35	1.45	1.50	1.40@1.60
W. Va. steam mine run	Cincinnati	1.25	1.25	1.30	*1.25@1.40*
W. Va. screenings	Cincinnati	1.00	.75	.85	*.60@1.00*
Hocking lump	Columbus	2.40	2.50	2.50	2.25@2.75
Hocking mine run	Columbus	1.50	1.65	1.50	1.35@1.70
Hocking screenings	Columbus	1.10	1.05	.90	**.85@1.10**
Pitts. No. 8 lump	Cleveland	2.30	2.30	2.30	1.90@2.75
Pitts. No. 8 mine run	Cleveland	1.80	1.85	1.85	*1.85@1.90*
Pitts. No. 8 screenings	Cleveland	1.35	1.00	1.10	*1.05@1.15*

Midwest	Market Quoted	Mar. 2 1925	Feb. 15 1926	Feb. 22 1926	Mar. 1 1926†
Franklin, Ill. lump	Chicago	$3.10	$3.00	$3.00	$3.00
Franklin, Ill. mine run	Chicago	2.35	2.50	2.40	2.35@2.50
Franklin, Ill. screenings	Chicago	1.90	1.55	1.55	*1.40@1.75*
Central, Ill. lump	Chicago	2.85	2.60	2.60	2.50@2.75
Central, Ill. mine run	Chicago	2.20	2.10	2.10	2.00@2.25
Central, Ill. screenings	Chicago	1.85	1.10	1.10	*1.00@1.25*
Ind. 4th Vein lump	Chicago	2.85	2.85	2.85	2.75@3.00
Ind. 4th Vein mine run	Chicago	2.35	2.30	2.30	2.25@2.35
Ind. 4th Vein screenings	Chicago	1.80	1.70	1.70	1.65@1.75
Ind. 5th Vein lump	Chicago	2.50	2.35	2.15	2.00@2.35
Ind. 5th Vein mine run	Chicago	2.10	1.95	1.95	1.85@2.10
Ind. 5th Vein screenings	Chicago	1.60	1.10	1.15	*1.10@1.25*
Mt. Olive lump	St. Louis	2.85	2.75	2.75	2.75
Mt. Olive mine run	St. Louis	2.35	2.15	2.15	2.15
Mt. Olive screenings	St. Louis	1.75	1.40	1.40	1.40
Standard lump	St. Louis	2.50	2.50	2.50	2.50
Standard mine run	St. Louis	1.80	1.80	1.80	*1.75@1.85*
Standard screenings	St. Louis	1.40	.80	1.15	*1.10@1.25*
West Ky. block	Louisville	2.25	2.00	2.00	*1.75@2.00*
West Ky. mine run	Louisville	1.35	1.25	1.35	*1.25@1.50*
West Ky. screenings	Louisville	1.25	.75	.85	**.80@1.00**
West Ky. block	Chicago	2.35	2.35	2.05	*1.85@2.25*
West Ky. mine run	Chicago	1.35	1.50	1.50	*1.25@1.75*
South and Southwest					
Big Seam lump	Birmingham	2.25	2.75	2.35	2.25@2.50
Big Seam mine run	Birmingham	1.75	1.85	1.75	1.50@2.00
Big Seam (washed)	Birmingham	1.75	2.10	2.10	2.00@2.25
S. E. Ky. block	Chicago	2.60	2.60	2.60	2.25@3.00
S. E. Ky. mine run	Chicago	1.50	1.85	1.85	1.75@2.00
S. E. Ky. block	Louisville	2.35	2.75	2.75	*2.25@3.00*
S. E. Ky. mine run	Louisville	1.35	1.55	1.55	*1.35@1.50*
S. E. Ky. screenings	Louisville	.90	.75	.80	**.90@1.10**
S. E. Ky. block	Cincinnati	2.35	2.50	2.35	*2.00@2.50*
S. E. Ky. mine run	Cincinnati	1.40	1.35	1.40	**1.25@1.75**
S. E. Ky. screenings	Cincinnati	1.05	.75	.85	*.50@1.00*
Kansas lump	Kansas City	4.75	4.75	4.50	4.50
Kansas mine run	Kansas City	3.10	3.10	2.85	2.75@3.00
Kansas screenings	Kansas City	2.50	2.30	2.40	2.35@2.50

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**; declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	March 2, 1925 Independent	March 2, 1925 Company	Feb. 22, 1926 Independent	Feb. 22, 1926 Company	March 1, 1926† Independent	March 1, 1926† Company
Broken	New York	$2.34	.....	$8.00@$9.25	$9.00@10.50	$8.25@$9.25	**$9.00@14.50**	$8.25@$9.25
Broken	Philadelphia	2.39	.....	9.15	9.00@10.50	8.25@ 9.25	**9.00@12.50**	*9.00@9.25*
Egg	New York	2.34	$8.50@$9.00	8.75@ 9.25	9.25@15.00	8.75@ 9.25	*9.25@14.00*	8.75@ 9.25
Egg	Philadelphia	2.39	9.25@ 9.75	8.80@ 9.25	9.25@10.40	8.75@ 9.25	**9.25@12.50**	**9.15@ 9.25**
Egg	Chicago*	5.06	8.17@ 8.40	8.08	.....	.....	.....	8.13
Stove	New York	2.34	8.75@10.00	9.00@ 9.50	9.60@15.00	9.25@ 9.50	*9.60@14.00*	9.25@ 9.50
Stove	Philadelphia	2.39	9.40@10.40	9.15@ 9.50	9.60@10.65	9.25@ 9.50	**9.60@12.50**	**9.35@ 9.50**
Stove	Chicago*	5.06	8.80@ 9.00	8.53@ 8.65	.....	.....	.....	8.33@ 8.58
Chestnut	New York	2.34	8.75@10.00	8.75@ 9.40	9.25@15.00	8.75@ 9.15	*9.25@14.00*	8.75@ 9.15
Chestnut	Philadelphia	2.39	9.40@10.30	9.25@ 9.40	9.25@10.40	8.75@ 9.15	**9.25@12.50**	**9.00@ 9.15**
Chestnut	Chicago*	5.06	8.61@ 9.00	8.40@ 8.41	.....	.....	.....	8.33@ 8.53
Pea	New York	2.22	4.50@ 5.50	5.50@ 6.00	6.50@ 8.50	6.00@ 6.35	**6.50@ 9.00**	6.00@ 6.35
Pea	Philadelphia	2.14	5.25@ 6.00	6.00	6.50@ 7.00	6.00@ 6.35	**6.50@ 7.50**	**6.00@ 6.50**
Pea	Chicago*	4.79	5.36@ 5.75	5.36@ 5.95	.....	.....	.....	5.65@ 5.80
Buckwheat No. 1	New York	2.22	2.00@ 2.75	3.00@ 3.15	4.00@ 5.50	3.00@ 3.50	*3.00@ 5.00*	3.00@ 3.50
Buckwheat No. 1	Philadelphia	2.14	2.25@ 3.00	3.00	3.50@ 4.25	3.00@ 3.50	*3.00@ 3.50*	*3.00*
Rice	New York	2.22	1.80@ 2.25	2.00@ 2.25	.....	2.00@ 2.25	2.25@ 3.00	2.00@ 2.25
Rice	Philadelphia	2.14	1.70@ 2.25	2.25	2.25@ 2.75	2.00@ 2.25	*2.25*	**2.25**
Barley	New York	2.22	1.35@ 1.50	1.50	.....	1.60@ 1.75	1.75@ 2.50	1.60@ 1.75
Barley	Philadelphia	2.14	1.50	1.50	1.75@ 2.50	1.60@ 1.75	*1.75*	**1.75**
Birdseye	New York	2.22	1.35@ 1.60	1.60	.....	2.00	.....	2.00

*Net tons, f.o.b. mines. †Advances over previous week shown in heavy type; declines in *italics*.

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Mild weather the last half of February cut into shipments from the docks at the Head of the Lakes to such an extent that some of the plants were on a part-time basis. Industrial demand did not wholly escape the slump, but the slackening in this department of the trade was attributed to heavy buying in earlier weeks. An expansion in steam-coal business is expected this month.

"Substitutes" Still Moving from Docks

The end of the anthracite strike has had little effect upon the movement of Pocahontas and other "substitute" fuels from the docks. Present stocks are large, but dock operators still believe that there will be little left unsold when navigation opens. Docks, however, are planning to bring up the normal quantities of hard coal the coming year.

Dock quotations on all coals are firmly held. There is a real shortage in screenings. Some operators have been compelled to buy from competing docks to take care of contracts. Stocks of all sizes on hand on March 1 were estimated at 3,232,000 tons.

The market at the Twin Cities is colorless. Supplies are free and there is no rush to accumulate tonnage. Consumers, both domestic and industrial, are going on the theory that, with the hard-coal strike over, there will be plenty of coal for everybody. All-rail southern Illinois lump is quoted at $3 mines; central Illinois, $2.50; western Kentucky, $1.90.

Milwaukee in a Slump

Bituminous demand is easing up at Milwaukee. Prices on low-volatile coal are softening, but this weakness has not, as yet, extended to retail quotations. Some anthracite has been received and is being sold at pre-strike prices.

The domestic market in the Southwest has faded away and Kansas operations now are down to two and three days a week. There has been some reduction in the number of unbilled loads of screenings and about one-third of the "no-bills" of prepared have been moved. Arkansas industrial demand is light; domestic business is a closed incident. Less than a dozen mines in the Henryetta field are working.

Decreased domestic buying has cut Colorado operations to a 70 per cent basis. Conditions otherwise are unchanged. Utah, too, suffers from mild weather, but the predicted acute shortage in slack coal has not made its appearance although the situation is tight. Prices, generally speaking, are well maintained. The number of idle miners is growing.

Look to Lakes for Relief

High-volatile producers with headquarters at Cincinnati are looking to the lakes for relief from existing unsatisfactory market and production conditions. Some orders for 2-in. lump and slack already have been placed—principally with southeastern Kentucky mines. Quotations still show a wide spread, lump ranging from $2 to $2.50 and slack from 60c. to $1.

On the other hand, lake buyers are turning a cold shoulder to offerings of low-volatile coals at prevailing quotations. These figures, released last Saturday, show Pocahontas lump at $4; egg, stove and nut, $4@$4.25, and mine-run, $2.25. Some spot New River lump is available at $3.75@$4.

Movement through the Cincinnati gateway has increased only slightly. The latest car interchange report of the American Railway Association shows 12,357 cars interchanged, or 227 loads more than in the preceding week. The number of empties sent to the mines declined 2,122.

Cincinnati retail business is off with a good start for March. Prices show no material change from February levels. Smokeless lump is $8.50; mine-run, $6.50; high-volatile lump, $6.25@$6.50; slack, $4@$4.50. River business is coming back into its own with warmer weather. Most of the boats are back on their regular schedules.

Central Ohio Trade Marks Time

Basic conditions in the central Ohio trade are unchanged. Domestic demand is affected adversely by weather conditions. Retail prices, however, are firm and Columbus dealers have enjoyed one of the best years in their history. The spot steam market is extremely sluggish. Unsold tonnage at mines and junction points has reached uncomfortable proportions. No real relief is expected before the opening of the lake season.

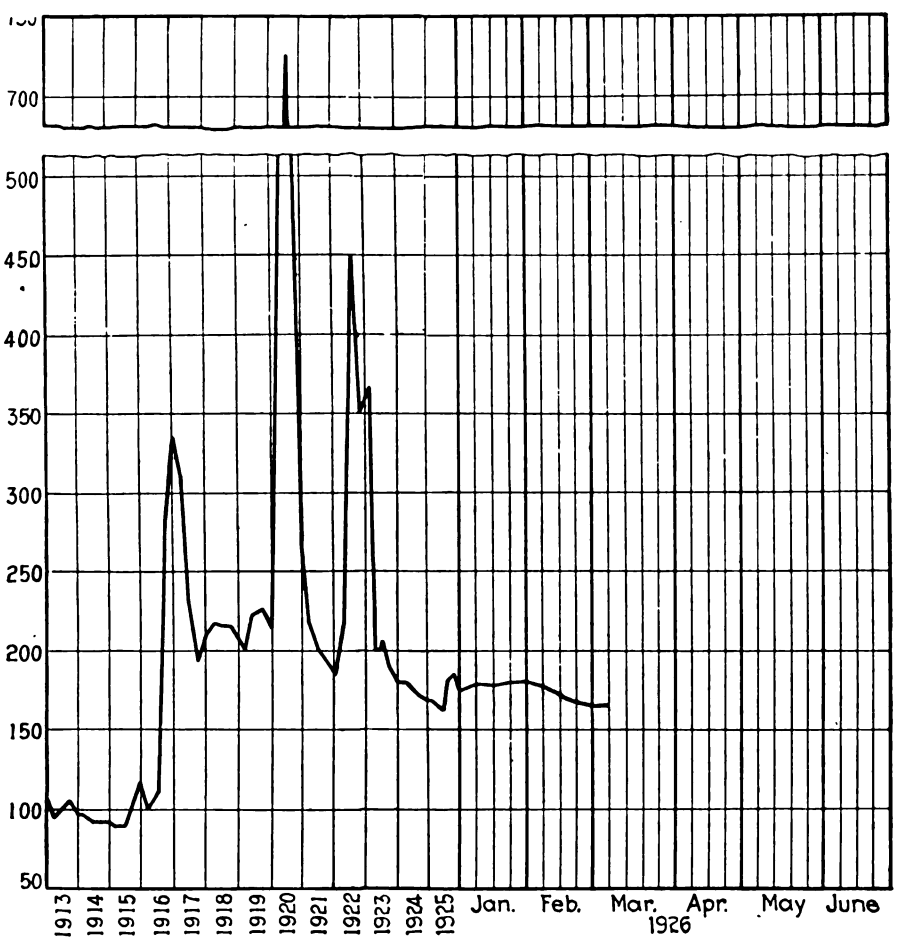
Contracting is still in the inquiry stage, except for a few short-term agreements. It is not considered likely that contract figures will show much change from last year, when mine-run was signed up at $1.35@$1.75.

Southern Ohio production is not averaging over 18 per cent of capacity. As for several months past, the Pomeroy Bend district has been the most favored.

Depression rules in the Cleveland market, but prices are unchanged, except for distress lots of prepared sizes. Screenings, however, are in fair demand because of declining production. Output from the No. 8 field during the week ended Feb. 20 approximated 248,000 tons, or 35 per cent of capacity. This was 12,000 tons under the output for the preceding week and 5,000 tons less than in 1925. More mines are closing down.

Pittsburgh Market Weakens

"No bills" have been added to the woes of the Pittsburgh producers. Egg and nut are offered as substitutes for mine-run and domestic lump is seeking lower levels. Industrial buyers are



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926				1925	1924
	Mar. 1	Feb. 22	Feb. 15	Feb. 8	Mar. 2	Mar. 3
Index	169	170	173	177	169	183
Weighted average price	$2.04	$2.06	$2.10	$2.14	$2.04	$2.21

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.

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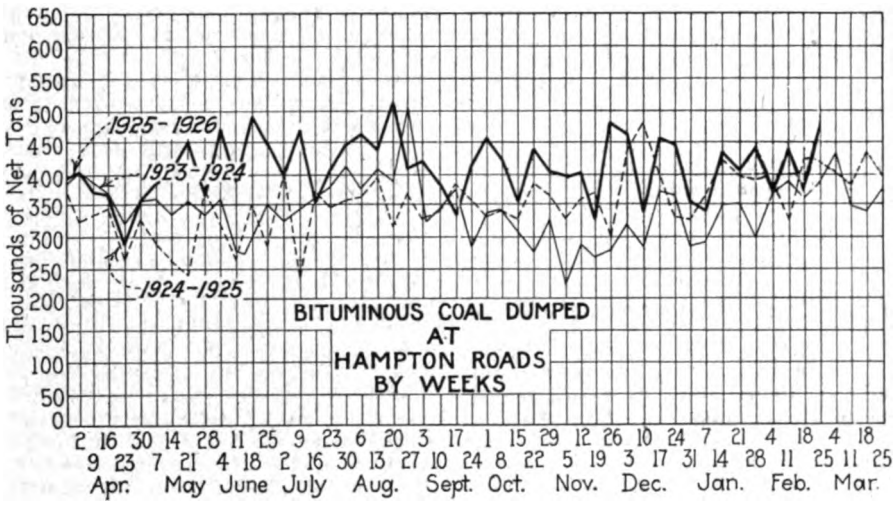


holding back orders, presumably in the hope that non-union offerings will break the market.

Three-quarter Youghiogheny gas is off 20@25c. Competition from the Connellsville field is the explanation advanced for this weakening. Slack prices, however, are growing stronger as production declines. Steam slack is up 10c. and gas slack, 15c.

Central Pennsylvania Loadings Off

Daily loadings in the central Pennsylvania field have dropped from 3,800 to 3,600 cars since the resumption of hard-coal mining. This loss is much less than was expected. "E" and "D" seams in Huntingdon, Bedford, Cambria, Blair and Somerset counties are quoted at $1.95 on contract and $2.25 for spot sales. "C" prime is $2 on contract and $2.30 spot. "B" Miller Seam is $2.30 on contract and $2.65 on spot.

In Clearfield, Centre and Clinton counties, "E" and "D" seams bring $1.90 on contract and $2.15 on spot sales. "B" seam is $2.25. Indiana County "E" and "D" seam coals are $1.85 on contract and 15c. higher on spot sales. "B" seam brings $2 and $2.30.

The Buffalo market is still in a watchful waiting mood. Business is unusually quiet. Nominal quotations are unchanged.

New England Turns to Anthracite

A full week of anthracite mining has sapped the New England bituminous market of the last traces of strength. Mine-run, as well as prepared coals, has settled into a rut and no early improvement is in prospect. There still is considerable prepared bituminous en route, which probably will go at a sacrifice. Recent quotations: Egg is offered well under $4 and $3.25 seems to be the top obtainable on lump.

Navy Standard coals command $4.70 @$4.85 gross f.o.b. Norfolk and Newport News. Less favorably known coals sell down to $4.60. With the outlet for screened sizes more restricted, reductions in the accumulations of tonnage at the piers will be in order. Industrial and railroad consumption show little change. Coal on cars at Providence and Boston is weaker, recent quotations being off 25c. or more.

Coke, ovoids and Welsh anthracite are still arriving, but the cargoes are received with no great enthusiasm. Several of the Boston retailers are trying to get rid of stocks of foreign fuel already on hand. Price cuts have not been potent in persuading the householder to buy freely of these fuels.

Distress Coal Rules New York

How to dispose of distress coal is the chief problem of the New York bituminous market at the present time. Long Island R.R. tracks are crowded with low-volatile coal and coke, many cars of which have been refused. The market for screened bituminous has practically disappeared, but retailers say that the cargoes of British and German coal and coke still arriving are being readily absorbed.

Mine-run also is inactive. Receipts at tidewater piers have been heavy enough to maintain a daily average of nearly 4,500 cars of coal on tracks, but deliveries have been so slow that serious congestion has ensued.

Coke is gradually dropping both in demand and in price. Sized coke, which was held at $14 f.o.b. ovens before the anthracite strike was settled is now offered at $5@$6. Retail prices have dropped from $25 to $15 per ton. Some ovens are planning educational campaigns to hold part of their strike trade.

Philadelphia Market Lethargic

The Philadelphia bituminous market is soft and slow. Spot buyers seem determined to force a bigger break in prices—notwithstanding railroad congestion and delayed deliveries. Producers are turning their attention to contract renewals. Some of the larger operators are asking $2.65@$2.75, but others are willing to take $2.35. Buyers, however, are indifferent. The railroads have been able to pick up so much distress tonnage at bargain figures that contract solicitation finds them cold.

Baltimore Market "Flat"

"Flat" is the way the Baltimore bituminous market is described. Prices on the better grades of steam coal show no real change; gas coals have weakened under light demand. Tonnage at tide and in transit is too great to arouse the industrial consumer to buying activity. Prices on prepared sizes are off $2@$3 per ton since the anthracite strike ended. Bunker demand is weak and there is no export business to ease the strain.

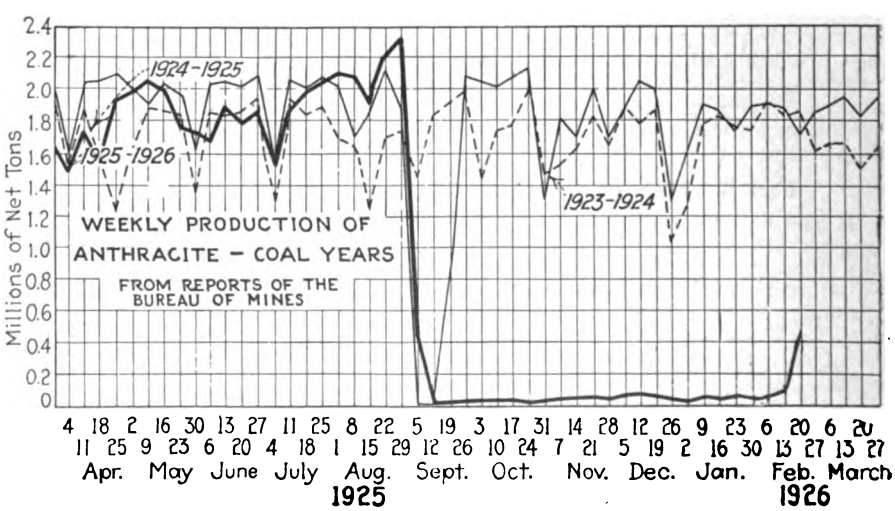
Prices at Hampton Roads slumped 50@75c. last week in belated tribute to the anthracite strike settlement. This slump affected the regular pool classifications. Lump, egg and nut for domestic purposes have dropped $3.25@$3.50 since the strike ended. Dumpings at the piers for the week ended Feb. 25 were 431,980 gross tons, as compared with 322,899 tons the week preceding. The usual month-end rush to avoid demurrage was reflected in this increase.

Fairmont Fears Overproduction

Overproduction is the bugaboo of the Fairmont district. Some sharp reductions in output have been effected, but the market continues to sag. Slack and mine-run are the weakest. The former is quoted at $1@$1.20 on the Monongahela Ry. and mine-run is $1.25@$1.55. Three-quarter lump holds at $1.60@$1.75. Prices at mines on the Western Maryland and Baltimore & Ohio railroads are lower, with slack at 50@90c.

Conditions in the Birmingham coal market last week were a repetition of those controlling the preceding week. Poorer grades of coal moved slowly; higher grades were readily absorbed. Contract consumers took liberal tonnages. On the whole, industrial movement was better than domestic as the latter was hit by the warm weather. General mine quotations were unchanged.

The rising mercury and the end of the anthracite strike have left their impress upon the coke market. Demand still takes care of output, but the prices have weakened. Egg and nut are to be



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Car Loadings and Supply

	Cars Loaded	
	All Cars	Coal Cars
Week ended Feb. 13, 1926....	917,144	171,903
Preceding week.....	914,904	175,964
Week ended Feb. 14, 1925....	902,877	170,596

	Surplus Cars		Car Shortages	
	All Cars	Coal Cars	All Cars	Coal Cars
Feb. 15, 1926	232,031	90,604	.....	.....
Feb. 7, 1926	240,424	93,207	.....	.....
Feb. 14, 1925	220,798	84,602	.....	.....

had at $5.50 ovens, as compared with $6.50@$7 three weeks ago. Foundry coke is $6.50@$7 for spot tonnage, with consumption and production about balanced.

No Pressure on Anthracite

The anthracite market at New York is a paradox. Retailers are so anxious to rid themselves of the substitute fuels still on hand that they are making no frantic demands on hard-coal shippers. Nevertheless, independent operators experience no difficulty in selling domestic sizes at $12@$14 in straight lots and at $12 for egg, stove and chestnut in combination with broken coal. Pea coal is still somewhat scarce and is held at $7.50@$9. Retail prices range from $14.95 on egg and nut to $15.50 for stove.

Spot demand for steam sizes is held down by the surplus of bituminous mine-run available at low prices. Most of the steam tonnage coming in is being applied on existing contracts. Free independent No. 1 buckwheat is quoted at $3.65@$5; rice, $2.50@$3; barley, $2@$2.50, mines. Culm was quoted at $4.30 f.o.b. piers the close of last week.

Receipts of domestic anthracite at Philadelphia last week exceeded expectations. Independent prices, too, are working lower. Starting out in some cases $6 above company circular, prices have come down to $1.50@$3 above company figures, with little moving at the higher premiums. Retail prices are still an uncertain quantity, but the average basis is around $15.75 for egg and nut, $16 for stove, $12 for pea and $8 for buckwheat, curb delivery.

Cut Retail Prices on Substitutes

In an effort to move stocks of screened bituminous coal and coke on hand, Philadelphia retailers are offering these fuels to the consumer at $2@$3 under cost prices. Demand, however, has dropped off sharply. The wholesale market in the buckwheats presents no unusual feature.

Baltimore dealers are fighting shy of independent domestic anthracite at $9.50 @$14.50, mines. Although the householder appears to have little coal of any kind on hand, the retail distributors are hopeful that company tonnage will be coming in in normal quantities before any pinch develops.

Anthracite demand at Buffalo has been less heavy than local representatives of the shippers had banked upon. But the steady flow of hard coal has ended the dreams of the bituminous producers and bargain prices induce no buying. Coke prices have dropped $6 in the fight of the ovens to hold on to some of the business they had.

Connellsville Seeks Its Level

Optimists in the Connellsville region are trying to convince themselves that the price liquidation program has been completed. There are so many operators who have not blown out their ovens, however, that an awkward accumulation of crushed coke seems unavoidable. There has been a light demand from eastern retail interests and some of the industrial buyers have come back into the market.

Straight furnace coke dropped 25c. last week, bringing the price level to $3.75@$4. Yard crushed coke is $4.50 @$5. Foundry coke is $5@$5.50, with a fair volume of buying.

The Connellsville *Courier* reports coke output in the Connellsville and Lower Connellsville regions the week ended Feb. 20 at 110,700 tons from the furnace ovens and 121,460 tons from the merchant ovens. Compared with the preceding week furnace oven output decreased 9,500 tons; merchant oven production, 3,400 tons.

Imports Into United States Almost Double

Coal and coke imports into the United States last year were nearly double those of 1924, but little more than half the total reached in 1923. The greatest proportionate increases were in imports of anthracite coal and coke from the United Kingdom. Sharp increases in movement the last quarter of the year swelled the totals. In December alone, the United States imported 146,700 gross tons of anthracite from Great Britain, as compared with a monthly average for the year of 28,500 tons.

Exports of anthracite from the United Kingdom to Canada also have increased, as shown by figures obtained from Consul A. B. Cooke, Swansea, Wales. Exports from Swansea consular district to Canada in 1925 totaled 364,073 tons, as compared with 215,995 in the foregoing year. Exports to the United States, as stated by Consul Cooke, amounted to 230,388 tons in 1925 and 79,641 in 1924.

IMPORTS OF COAL AND COKE

	1923	1924	1925
	Gross Tons		
Bituminous:			
Canada	981,940	238,200	471,238
United Kingdom	574,602	25,166	35,918
Japan	20,086	25,824	15,348
Australia	80,247	35,646	9,749
Others	23,755	47,687	5,037
Total	1,680,630	372,523	537,290
Anthracite:			
United Kingdom	239,384	88,529	284,457
Germany	.....	.....	32,711
Canada	17,070	14,507	6,102
Netherlands	.....	400	5,790
Belgium	.....	.....	5,075
Others	11,725	1,877	7,735
Total	268,179	105,313	341,870
Coke:			
United Kingdom	43,424	41,746	100,218
Canada	32,470	22,932	46,591
Netherlands	.....	4,246	15,354
Germany	.....	5,034	13,792
Others	1	.....	4,026
Total	75,895	73,958	179,981
Total coal and coke..	2,024,704	551,794	1,059,141

Coal Produced in Ohio in 1924

(Exclusive of Product of Wagon Mines.)

County	Net Tons: Loaded at Mines for Shipment	Net Tons: Sold to Local Trade and Used By Employees	Net Tons: Used at Mines for Steam and Heat	Net Tons: Made Into Coke at Mines	Total Quantity	Value: Total	Value: Average per Ton	Number of Employees a: Underground: Miners b	Number of Employees a: Underground: All Others	Number of Employees a: Surface	Number of Employees a: Total	Average Number of Days Worked a	Average Tons per Man per Day
Athens	2,905,252	66,770	52,893	.....	3,024,915	$5,843,000	$1.93	5,273	1,425	692	7,390	101	4.03
Belmont	10,425,106	415,433	93,571	.....	10,934,110	21,928,000	2.01	8,784	2,369	1,112	12,265	182	4.90
Carroll	183,802	107,379	4,575	.....	295,756	664,000	2.25	307	106	63	476	151	4.11
Columbiana	323,111	40,016	5,811	.....	368,938	879,000	2.38	529	221	116	866	103	4.14
Coshocton	151,894	36,035	1,599	.....	189,528	446,000	2.35	290	94	50	434	122	3.59
Guernsey	2,436,503	139,510	61,192	.....	2,637,205	5,591,000	2.12	2,460	1,036	271	3,767	141	4.95
Harrison	2,464,261	9,512	60,907	.....	2,534,680	4,346,000	1.71	705	229	945	1,879	144	9.33
Hocking	682,140	71,766	2,306	.....	756,212	1,355,000	1.79	1,055	275	201	1,531	107	4.61
Holmes	.....	18,428	40	.....	18,468	49,000	2.65	27	5	3	35	188	2.80
Jackson	81,824	67,156	4,410	.....	153,390	404,000	2.63	321	111	60	492	96	3.24
Jefferson	3,801,751	576,086	25,145	.....	4,402,982	9,412,000	2.14	3,655	1,244	845	5,744	153	5.01
Lawrence	2,417	108,579	179	.....	111,175	218,000	1.96	124	37	14	175	221	2.87
Mahoning	286	43,906	60	.....	44,252	149,000	3.37	67	10	8	85	177	2.95
Medina, Portage, and Summit	63,183	18,307	10,897	.....	92,387	336,000	3.64	85	40	34	159	209	2.78
Meigs	184,595	47,399	2,420	.....	234,414	457,000	1.95	952	286	137	1,375	42	4.07
Morgan, Noble, Scioto, and Washington	652,215	9,338	15,210	.....	676,763	1,394,000	2.06	640	343	83	1,066	157	4.05
Muskingum	325,766	68,901	5,167	.....	399,834	828,000	2.07	420	90	176	686	123	4.72
Perry	1,831,848	73,182	23,809	.....	1,928,839	3,819,000	1.98	2,034	567	639	3,240	128	4.64
Stark	118,225	304,451	5,406	.....	428,082	1,190,000	2.78	426	106	83	615	194	3.59
Tuscarawas	699,264	434,265	4,568	.....	1,138,097	2,476,000	2.18	1,115	313	212	1,640	162	4.28
Vinton	65,308	24,110	1,892	.....	91,310	181,000	1.98	170	55	36	261	98	3.58
Wayne	6,200	5,036	434	.....	11,670	46,000	3.94	42	4	2	48	108	2.26
Total	27,404,951	2,685,565	382,491	.....	30,473,007	62,011,000	$2.03	29,481	8,966	5,782	44,229	143	4.82

a Note that figures of men employed and days worked do not include mines that operated in 1923 but were idle the entire year 1924; they do include many mines operated for a short time only in 1924. The number of active mines of commercial size in Ohio was 906 in 1923 and 750 in 1924.

b Includes also loaders and shotfirers.

Statistics compiled by U. S. Bureau of Mines.

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Foreign Market And Export News

Welsh Industrial Coals In Keen Demand; Tyne Spot Market Sluggish

The outlook in the Welsh steam coal industry continues to improve and prices are firmer, but operators are not ready to sell forward on current rates. Orders are plentiful until late March or early April. Steamers have been somewhat delayed by the recent stormy weather, though tonnage is now arriving regularly.

Shipments have been helped by the improvement of dock facilities, chiefly the reconstruction of the coal hoists to take the new 20-ton cars of the Great Western Ry. In addition to this the trippers and trimmers are working better than for some time past.

A favorable impression has been created by the return of the Paris & Orleans Ry. to the use of Welsh coal and this railway has ordered 150,000 tons of Monmouthshire Black Veins large and Cardiff smalls for shipment up to the end of August. France and Italy are both buying better, and the hope exists that the Italian State Rys. will return to the use of Welsh coals. Inquiries from the United States are few and from South America moderate.

The improvement in Wales is having the opposite effect on the Newcastle market. The collieries are well booked, but merchants are finding some difficulty in getting rid of their stocks and in many cases are selling below colliery quotations. There are few contracts at Newcastle worth reporting, though several orders have come through from European gas works for gas coals up to around 2,000 tons.

Output by British collieries during the week ended Feb. 13, according to a sepcial cable to *Coal Age*, totaled 5,400,000 gross tons, compared with 5,415,000 tons in the preceding week.

Belgian Market Still Gaining

The slow but steady progress in the Belgian coal market continues unchecked, according to reports from Brussels under date of Feb. 11. Domestic coals are holding their position and the industrial coal market is improving more rapidly than had been anticipated.

The greatest improvement is in the Borinage. Increased prices on French coals, decreased receipts from Holland, lessened competition in coke from Germany and the resumption of metallurgical operations in the Charleroi district all have contributed to quickening activities in the Borinage.

No decision has been reached on prices for small coal consumed by the Belgian State Railways since Nov. 1, 1925. Patent fuel prices, however, were set at 97 fr. for November and December and 100 fr. since Jan. 1, 1926.

February indemnity fuel prices are 5 to 10 fr. above January figures, except on unscreened 25 per cent semi-bituminous coals, which are off 10 fr.

U. S. Coal Exports in January

(In Gross Tons)

	1925	1926
Anthracite	295,799	6,311
Bituminous	979,876	993,386
Exported to:		
France	11,105	.....
Italy	44,616	94,110
Other Europe	3,000	1,138
Canada	711,162	724,991
Panama	19,366	19,452
Newfoundland and Labrador	.....	155
Mexico	9,470	8,282
Br. W. Indies	13,832	6,865
Cuba	52,016	68,456
Fr. W. Indies	5,038	12,954
Other W. Indies	4,613	12,783
Argentina	12,656	10,653
Brazil	80,785	9,871
Chile	2,998	3,039
Uruguay	6,001	.....
Egypt	.....	12,484
French Africa	.....	.....
Other countries	3,218	8,153
Coke	62,845	81,863

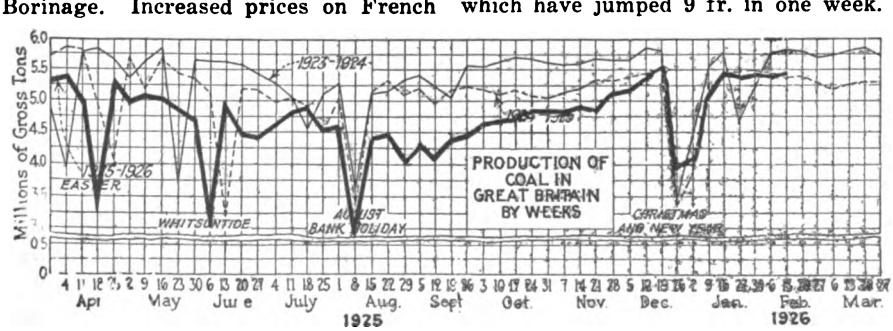
U. S. Coal Imports in January

(In Gross Tons)

Coal	1925	1926
Anthracite	10,125	135,201
Bituminous coal, shale and lignite, free	3,630	17,331
Bituminous coal and shale, dut	38,077	37,987
Imported from:		
United Kingdom	1,516	9,254
Canada	40,185	41,552
Australia	.....	4,411
Other countries	5	101
Coke	6,266	24,509

French Domestic Coal Demand Outstrips Production

Paris, France, Feb. 11.—There has been no break in the French market. Industrial orders are filled without difficulty, but production cannot take care of current domestic demand. Screened flaming gas coals seem to be the shortest in supply. Stocks are being supplemented by purchases of British coal, D. C. B. sorts (corresponding to screened No. 4 of the Pas de Calais), which have jumped 9 fr. in one week.



Wage increases have been granted in the majority of the French producing districts and prices at the pit mouth have been advanced to cover the increase.

French receipts of indemnity fuel from the Ruhr in December were: Coal, 482,700 tons; coke, 288,800; lignite briquets, 32,300 tons. During the first twenty-three days of January, 242,200 tons of coal, 203,700 tons of coke and 25,100 tons of briquets were received. Average daily receipts were approximately 20 per cent less than in the preceding month.

Last year this country produced 48,033,564 metric tons of coal and lignite, as compared with 44,954,567 tons in 1924 and 40,844,218 tons in 1913. The 1925 total includes 5,213,000 tons from Lorraine, which in pre-war years was credited to Germany's output.

Export Clearances, Week Ended Feb. 25, 1926

FROM HAMPTON ROADS

For Italy:	Tons
Ital. Str. Georgia C., for Naples	361
Span. Str. Astoi Mendi, for Genoa	7,189
Ital. Str. Monbaldo, for Genoa	2,699
Ital. Str. M. T. Cicerone, for Porto Ferrajo	9,166
For West Africa:	
Ital. Str. Delia, for Dakar	8,066
For British West Indies:	
Nor. Str. Artensis, for Port of Spain	2,493
For Nova Scotia:	
Nor. Str. Dago, for Halifax	2,265
For Danish West Indies:	
Dan. Str. Fredensborg, for Curacao	2,769
For Uruguay:	
Nor. Str. Hesperos, for Montevideo	6,599
For Cuba:	
Br. Str. Fred Cleeves, for Santiago de Cuba	1,785
For Brazil:	
Br. Str. Rynde, for Para	4,895

Hampton Roads Coal Dumpings*

(In Gross Tons)

N.&W. Piers, Lamberts Pt.:	Feb. 18	Feb. 25
Tons dumped for week	153,768	151,884
Virginia Piers, Sewalls Pt.:		
Tons dumped for week	73,718	117,164
C. & O. Piers, Newport News:		
Tons dumped for week	95,413	162,932

*Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS

	Feb. 20	Feb. 27†
Pool 1, New York	$6.00@$6.25	$6.00@$6.25
Pool 9, New York	5.50@ 5.75	*5.40@ 5.70*
Pool 10, New York	5.25@ 5.50	5.25@ 5.50
Pool 11, New York	4.85@ 5.25	4.85@ 5.25
Pool 9, Philadelphia	5.30@ 5.55	5.30@ 5.55
Pool 10, Philadelphia	5.10@ 5.25	5.10@ 5.25
Pool 11, Philadelphia	4.75@ 5.00	4.75@ 5.00
Pool 1, Hamp. Roads	5.40@ 5.50	*4.50@ 4.65*
Pool 2, Hamp. Roads	4.90@ 5.00	*4.20@ 4.30*
Pools 5-6-7, Hamp. Rds.	4.40@ 4.50	*4.10*

BUNKERS

Pool 1, New York	$6.25@$6.50	$6.25@$6.50
Pool 9, New York	5.75@ 6.00	*5.65@ 5.95*
Pool 10, New York	5.50@ 5.75	5.50@ 5.75
Pool 11, New York	5.10@ 5.50	5.10@ 5.50
Pool 9, Philadelphia	5.55@ 5.80	5.55@ 5.80
Pool 10, Philadelphia	5.35@ 5.60	5.35@ 5.60
Pool 11, Philadelphia	5.00@ 5.25	5.00@ 5.25
Pool 1, Hamp. Roads	5.50	*4.65*
Pool 2, Hamp. Roads	5.00	*4.30*
Pools 5-6-7, Hamp. Rds.	4.50	*4.15*

Current Quotations, British Coal, f.o.b. Port, Gross Tons

Quotations by Cable to *Coal Age*

Cardiff:	Feb. 20	Feb. 27†
Admiralty, large	23s.6d.	23s.@ 24s.
Steam smalls	14s.6d.	*12s.@ 13s.*
Newcastle:		
Best steams	17s.	*16s.@ 16s.6d.*
Best gas	17s.6d.	19s.
Best bunkers	17s.	17s.

Advances over previous week shown in **heavy** type; declines in *italics*.

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Coming Meetings

Fayette-Greene Coal Producers Association. Annual meeting March 6, at Uniontown, Pa. The third annual banquet will be held in the evening at the White Swan Hotel. Secretary, J. Fred Shean, Box 450, Uniontown, Pa.

American Mining Congress. Southern industrial development conference, Hotel Peabody, Memphis, Tenn., March 15-17. Acting secretary, Henry M. Payne, Southern Division, American Mining Congress, Memphis, Tenn.

New England Coal Dealers' Association. Annual meeting at the State Armory, Worcester, Mass, April 7 and 8. Secretary, E. I. Clark, 141 Milk St., Boston, Mass.

American Welding Society. Annual convention at 29 West 39th St., New York City, April 21-23. Secretary, M. M. Kelly, 29 West 39th St., New York City.

National Retail Coal Merchants' Association. Ninth annual convention at the New Willard Hotel, Washington, D. C., May 17-19. Resident vice president, Joseph E O'Toole, Transportation Bldg., Washington, D. C.

Electric Power Club. Convention at The Homestead, Hot Springs, Va., May 24-27. Secretary, S. N. Clarkson, B. F. Keith Bldg., Cleveland, Ohio.

The American Mining Congress. Annual Exposition of Coal Mining Equipment, May 24-28, at Cincinnati, Ohio, in conjunction with the annual meeting of practical operating officials. Assistant secretary, E. R. Coombes, Washington, D. C.

International Geological Congress. The fourteenth congress will be held in Madrid, Spain, commencing May 24, 1926. From May 5 to 22 excursions of interest to the visiting delegates will be arranged. Information concerning the congress can be obtained from the secretary of the organizing committee, Enrique Dupuy de Lome, Plaza de los Mostenses, 2, Madrid, Spain.

Midwest Retail Coal Merchants Association. Annual meeting, May 25 and 26, at Kansas City, Mo. Secretary, James P. Andriano, St. Joseph, Mo.

Western Canada Fuel Association. Annual meeting at Winnipeg, Manitoba, Can., May 27 and 28. Secretary, W. H. Morrison, Winnipeg.

Association of Iron & Steel Electrical Engineers. Exposition and convention at Hotel Sherman, Chicago, Ill., June 7-10. Secretary, J. F. Kelly, 1007 Empire Bldg., Pittsburgh, Pa.

American Wholesale Coal Association. Annual meeting at Toledo, Ohio, June 7-9. Treasurer, R. B. Starek, Union Fuel Bldg., Chicago, Ill.

American Institute of Electrical Engineers. Annual convention, White Sulphur Springs, W. Va., June 21-25. Secretary, F. L Hutchinson, 29 West 39th St., New York City.

American Society of Mechanical Engineers. Spring convention at San Francisco, Calif., June 28-30. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

American Society for Testing Materials. Convention at Haddon Hall, Atlantic City, N. J., June 21-25. Secretary, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

New Companies

The Reichert Coal Co., Freeburg, Ill., has been incorporated with capital of $20,000 to acquire coal and coal rights and to operate coal mines. The incorporators are W. C. Reichert, Elmer W. Reichert and William J. Reichert.

The Bidge Coal Co., of Mulberry, Kan., with a capital of $16,000, has been incorporated.

Papers of incorporation for the **Boulder Coal Co.**, Boulder, Colo., have been filed of record by W. J. Quinlan, Melvin G. Gelwicks, C. M. Goddard, and others. The capital is $50,000. The new coal company will operate mines, including the Black Hawk mine, which will be developed.

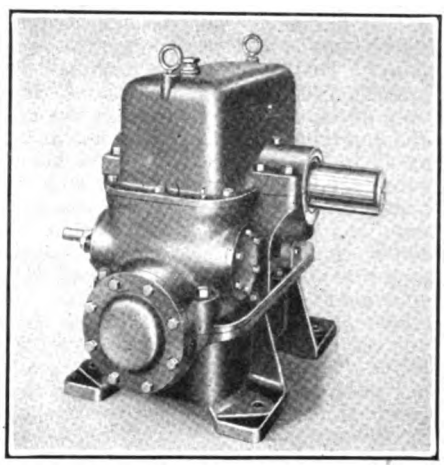
The Monroe Coal Co., Greenville, Ky., capital $25,000, has been chartered by Henry B. Lee, George T. Collamore, and O. S. Roberts.

New Equipment

Two-step Worm Reduction Gear for Driving Conveyors

Recently the De Laval Steam Turbine Co., Trenton, N. J., has developed a two-step worm reduction gear to provide ratios of from 100 to 1 to 8,000 to 1. The unit which is shown in the accompanying cut is designed for driving conveyors, stokers, heat-treating furnaces, escalators or similar devices. Its gearing consists of an initial worm turning a wheel mounted on the end of an abutting shaft. This shaft carries a second worm which drives the low-speed wheel and shaft.

A single casing carries all bearings



This new two-step worm reduction gear is intended for driving stokers, conveyors, heat-treating furnaces and other similar devices

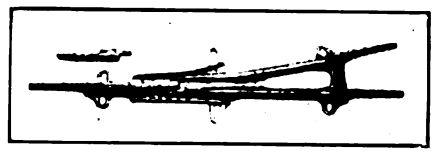
for the high-speed worm shaft and the low-speed worm shaft, which also carries the high-speed wheel and shaft so as to insure accurate alignment and meshing. The construction is rugged to enable the use of the unit for heavy-duty work. End thrust and bending strains from the driving and the driven machine are taken on flexible couplings of the pin and rubber bushing type.

The casing serves as an oil reservoir, in which oil is maintained at a sufficient level to touch the high-speed wheel and the low-speed worm at all times. In addition to this, the unit is equipped with a positive oil pump by means of which oil is drawn from the reservoir and forced through passages to the low-speed shaft bearings.

Improved Trolley Frog Assures Good Tracking

The type CF overlapping runner trolley frog made by the Westinghouse Electric & Mfg. Co., of East Pittsburgh, Pa., offers several improvements over previous designs. In this improved frog the trolley wheel rides on the runner continuously and never touches the pan. Current is thus always collected in the groove of wheels and not on the flange. The life of both frog and the trolley wheel are thus greatly increased.

This frog possesses exceptionally good tracking qualities as the wheel will follow through without the necessity for slewing the trolley pole by the



Plenty of Clearance Is Assured

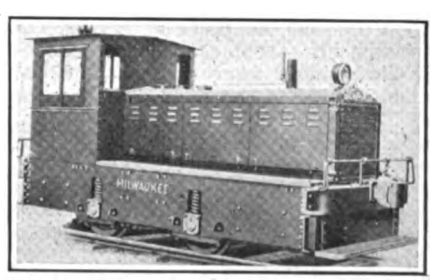
Ample wheel clearance is provided in this design of frog and the wheel makes continuous contact in the groove and not on the flanges. The life of both wheel and frog is thus prolonged.

locomotive driver. It is equipped with renewable bayonet type approaches so that there is an easy transition of the trolley wheel from the wire to the frog body. This is made in either 15- or 20-deg. angles for right-or left-hand turnouts, thus adapting it to practically all points of application in and about the mines.

Two Gasoline Locomotives of 18 and 20-Ton Sizes

The latest addition to the line of gasoline locomotives manufactured by the Milwaukee Locomotive Manufacturing Co. consists of two locomotives of 18 and 20 tons' capacity respectively. These machines are of the four-speed gear and chain drive type, and are geared for four speeds of 2, 4, 6, and 12 m.p.h. both forward and reverse. The machines are built for all gages of track from 30 to 56½ in., and the design of the frame is such that the center of gravity is very low, to steady the locomotives on poorly surfaced track.

It is claimed that the design of the transmission eliminates all possibility of stripping the gears, and as the gears are always in mesh there can be no clashing. All the gears have exceedingly wide faces and are made of chrome-nickel steel forgings, except the



New 18-ton gasoline locomotive

final driving gear and pinion, which are made of steel castings. Removal of the various covers and housings for inspection of the gears and the entire dismantling of the transmission without removing the case proper from the locomotive are features of the design. Driving sprockets on the final drive shaft in the transmission are centrally

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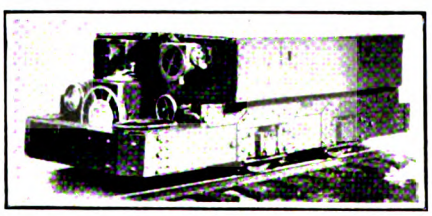
located between two bearings, thus providing a rigid and sturdy construction and eliminating the use of a separate jack shaft. Chrome-vanadium roller chains are employed for power transmission.

The locomotive is equipped with hand-operated four-wheel brakes as standard, but also can be equipped with straight or automatic air brakes when specified. A 12-volt electric lighting and starting system consisting of a generator starter and Westinghouse storage battery is used. The engine is a Beaver six-cylinder heavy-duty type, having overhead valves, forced feed oiling, and a maximum speed-regulating governor.

Two Battery Locomotives Put On Permissible List

Two more new type of storage battery locomotives have won the right to bear the official stamp of permissibility. Government approval No. 1,510 was recently granted by the Bureau of Mines to the Jeffrey Manufacturing Co., of Columbus, Ohio. This approval covers a large permissible storage battery locomotive intended for main line haulage. This machine is equipped with two 60-hp., 250-volt motors. The battery consists of 110 lead-plate cells, and has a capacity of 120 kw.-hr.



Permissible Gathering Locomotive

This machine is similar in general construction and appearance to the main line haulage locomotive, except that it is smaller. It is fitted with a battery of 64 cells, having a capacity of 60 kw.-hr. It is intended for gathering purposes only.

This new haulage locomotive is built for a 44-in. track gage. The overall width is 78 in. and the overall length 19 ft., 2½ in. The total height is 50½ in. above the rail, and the wheelbase is 70 in. The drivers are 26 in. in diameter and are carried upon 4½-in. axles. The total weight of the locomotive is 18 tons. Machines of this type have a haulage capacity sufficient to permit them to take the place of several compressed air machines.

Government approval No. 1,507 was also granted to the same company, covering a permissible storage battery gathering locomotive. This machine is equipped with two 15 hp. motors, and the battery consists of 64 lead plate cells having a capacity of 60 kw.-hr.

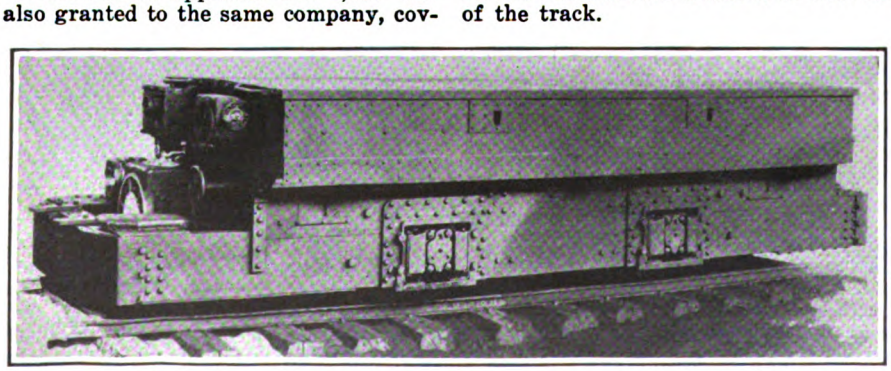
The dimensions of this machine are as follows: Track gage, 48 in.; total width 72 in.; length 12 ft., 3 in.; over-all height 45½ in.; wheelbase 44 in.; diameter of driver 20 in., and diameter of axle 4 in.

Machines of this type are intended for gathering purposes taking the coal to and from the working faces and making them up into trips to be hauled to the tipple or shaft bottom by means of the main haulage machine.

Improved Shoveling Machine With Low Headroom

The new shoveling machine (No. 2-25) recently developed by the Myers-Whaley Co., Knoxville, Tenn., embodies several points of design that make the shovel different from those designs of shovel introduced earlier by the company. This machine is designed for operation in very low headroom. It is only 39 in. high over-all from the rail, and can be operated in headroom as low as 42 in. from the rail. It is a heavy, substantial machine, however, and embodies all improvements which the company has developed up to this time. A roller chain drive is used from the motor to the first shaft instead of a spur-gear drive. This drive is enclosed in oil casing and is noiseless, and the designers think that it will prove very durable. The first machine has been in service for loading rock a short time, and in that service has developed the same capacity as the company's Special No. 3 or Standard No. 3, and is said to have required no repair parts. Indications are that the upkeep on the machine will be low.

Another machine recently developed by the company is an auxiliary turntable conveyor which is used back of the shovel, for delivering material to the side. This conveyor swings 360 deg., and is adjustable in and out and up and down at the discharge end. Its extreme reach is 13 ft. to each side from the track center. This auxiliary conveyor is built with the same care as its other machines, the company says, and is applicable for loading of rock or ores where it is desired to load on parallel track or to discharge the material at considerable distance to one side of the track.

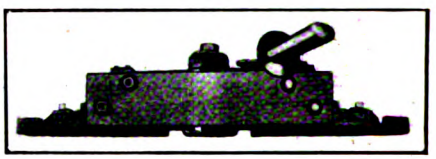


Large Permissible Storage Battery Haulage Locomotive

This machine weighs 18 tons and is intended for main line haulage. It is provided with 110 lead plate cells and has a capacity of 120 kw.-hr., this being ample for all ordinary haulage purposes.

Double Insulating Gap Proves Efficient

In the accompanying illustration appears a 600-volt double gap section insulator as recently developed by the Westinghouse Electric & Mfg. Co. of East Pittsburgh, Pa. This insulator has a double beam with two air gaps as insulating media. These gaps take the shape of arcing horns and consequently there is no tendency to carry the arc over if the motorman happens to overrun the insulator when the switch is open. A short rugged blade is attached under the box in such a manner that the insulator will remain continuously in alignment.



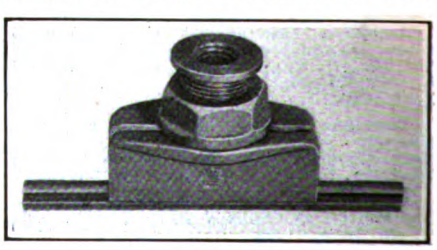
Wires Inserted Without Bending

This type of section insulator possesses many advantages over its predecessors. It has a double insulating gap and the trolley wire may be inserted in either end without deformation. It is thus easy to install and efficient in use.

This insulator has bronze end castings and renewable arcing tips. It is equipped with the SL type of approach which permits insertion of the wires without bending. A rotating board makes installation and removal easy. The plate can be locked open thereby complying with the requirements of the bituminous coal mine compensation rating schedule.

Great Holding Power Assured

Line material for use in mines is constantly being improved. The heavy duty trolley clamp shown in the accompanying illustration and designed by the Westinghouse Electric & Mfg. Co., of East Pittsburgh, Pa., is so constructed as to afford a maximum holding power on any size of wire from 1/0 to 4/0 grooved or figure-8 section. This clamp is easy to install and affords a maximum wheel clearance in the jaws.



Low Height and Sure Grip

This trolley clamp will hold any size of wire either grooved or figure-8. It possesses several improvements over previous designs and is particularly adapted to mines affording low headroom.

Suspension of this clamp is secured by means of a ball on a stem casting which is hung in a recess in the jaws. This eliminates excessive loads on the fulcrum pin. On account of its compact design and minimum overall dimensions this clamp is particularly adapted for use in mines where the headroom is small.

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What Grades May Be Improved Over Week Ends, Pages 355-357

COAL AGE

The World's Accepted Authority on Coal Mining

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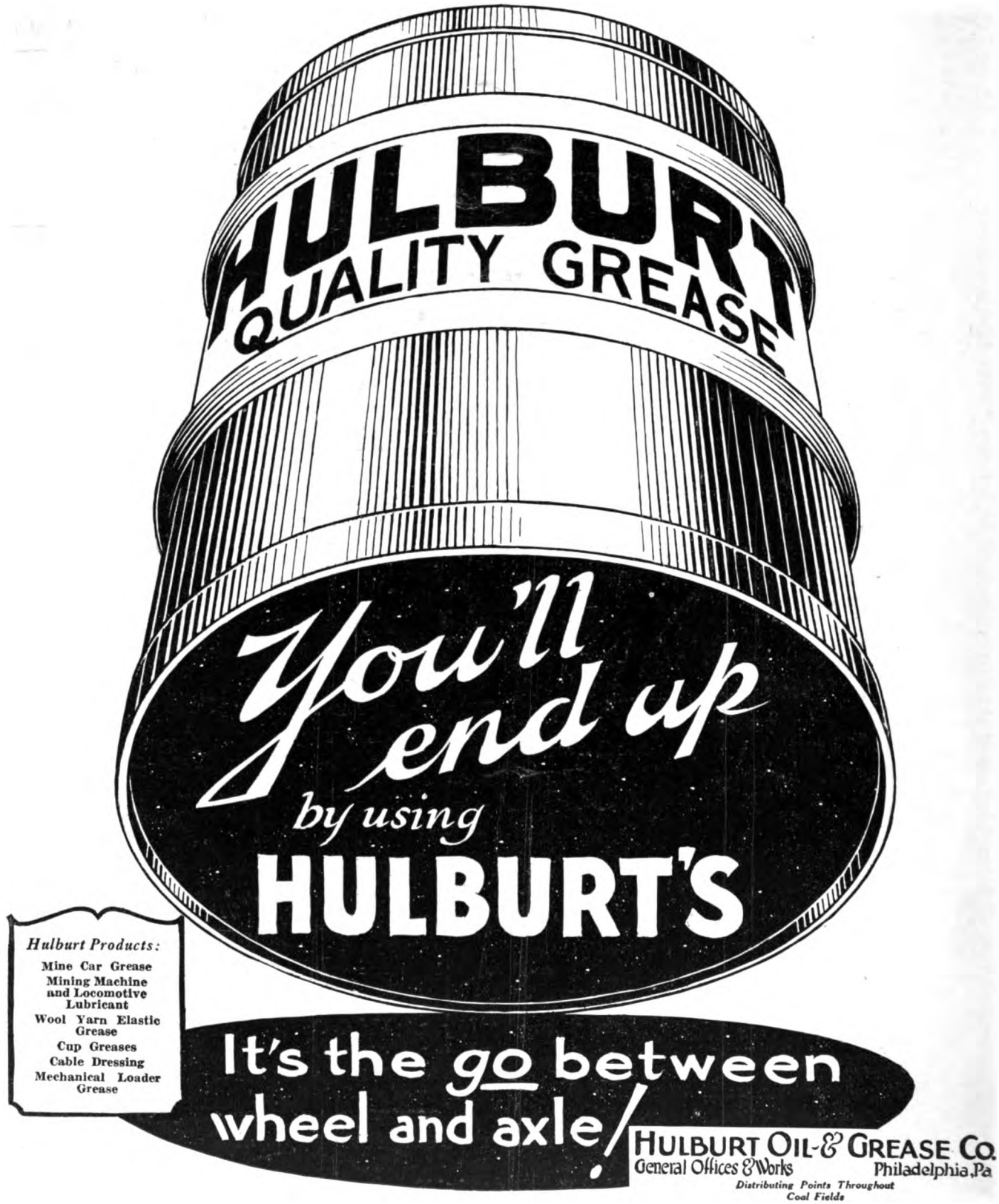

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

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Shoveling Machines Reduce Costs and Speed Rock Removal 355
BY FRANK H. KNEELAND.

Liquid Oxygen Desirable for Strip-Pit Work 358

Rock-Dusting Gains Slowly in Alabama Coal Mines 362

Seek Plan to Settle Labor Problems in Soft Coal Industry 370
BY PAUL WOOTON.

Urges State Fuel Commission in New York 370
Lake Cargo Cases Reopened 370
Stocks of Substitutes Delay Movement of Anthracite 371
Chamber Backs Downing Bill 371
Fayette-Greene Operators Canvass Coal Industry's Needs in Pennsylvania 372
Believe 28 Dead in Explosion in Eccles (W. Va.) Mine 372
Pittsburgh Coal Co. Has Deficit in 1925 373
Ford Tipple at Stone, Ky., Destroyed by Fire 373
Heroism Upwards Voted to West Virginia and Alabama Coal Miners 374
Mechanization Pressing Need of British Coal Industry 374
Tennessee Products Corporation Issues Bonds 374

Editorials 353
Underground Operation 366
Practical Pointers 368
News Items from Field and Trade 381
Traffic 384
Weekly Review and the Market 375
Foreign Market and Exports News 379
New Equipment 385

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Lake Rate War Revived

THE LAKE CARGO coal cases, in which a decision was handed down last summer, have been reopened by the Interstate Commerce Commission. Interested parties are given until March 22 to say whether they desire to submit additional evidence. That advantage will be taken of the Commission's offer is a foregone conclusion.

These rates have been before the Commission in one form or another since 1912. Involved in the question is the bitter struggle between Ohio and Pennsylvania, on the one hand, and southern West Virginia and eastern Kentucky, on the other, to dominate the coal tonnage of the Northwest. In the background hovers the spectre of union vs. non-union labor.

A simple transportation question has become a big economic issue, clouded by political manouveuring. The issues in these cases, their transportation, economic and political background, will be reviewed in next week's issue by Sydney A. Hale.

Light on Fan Construction

VENTILATING engineers say that our coal-mine fans are behind the times. Experience in the ventilation of factories and schools and in the supply of air to furnaces has resulted in wonderful progress in the theory and practice of ventilation.

L. W. Huber will discuss next week the fan that has blades so turned that it seems as if the designer desired them to avoid moving the air. But such fans when driven at high speed are efficient and give unusually stable conditions. They use almost the same horsepower and give almost the same quantity of air despite changes in pressure such as would entirely unbalance a fan with forward-curved blades. That uniformity of horsepower is good for the fan, and the uniform air flow is an essential factor in promoting safety. But as to the desirability of these high-speed fans for mine use there is much difference of opinion.

Advertising Index—Alphabetical, 56; Classified, 53; Consulting Engineers, 48; Searchlight Section, 50 and 51

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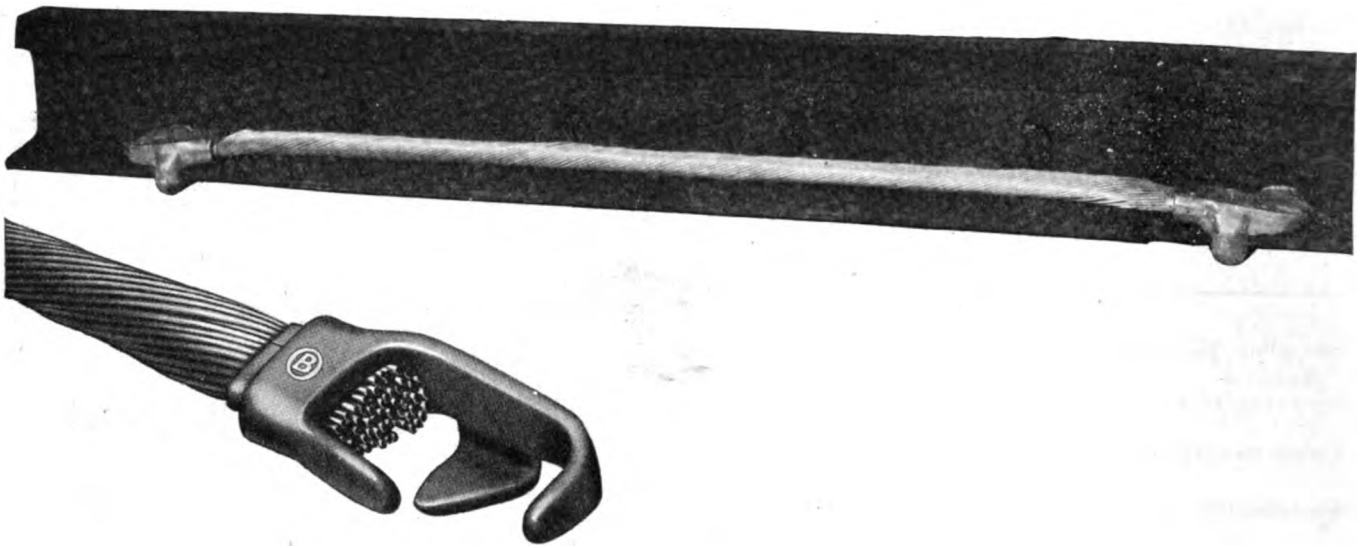

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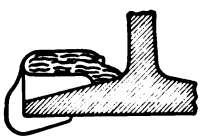

Four distinguishing features make this new bond a distinct improvement. Each feature affords a substantial advantage to the user.

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THIRD—Every wire strand extends through the terminal and becomes an integral part of the actual weld. Insures perfect conductivity.

FOURTH—A soft copper sleeve protects the strands where they enter the terminal. Bending and vibration will not break them off.

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Read over these points again! They mean better bonding, fewer breaks and less up-keep cost as soon as you get this new type bond in service.

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COAL AGE

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 29 | NEW YORK, MARCH 11, 1926 | Number 10

The Coal Myth

WHAT everybody believes is likely to be in the main untrue, for, when all are agreed, then exaggerations are inevitable, statements are not questioned or examined and no one fears to give rein to his imagination. So it has been with the coal industry. It has been declared the worst of all the world's institutions. It has been the prey of masters of superlatives. Is it sick? There is none more sick. Is it overdeveloped? None is more so. Is it irregular in operation? None works more irregularly. Is it deficient in mechanicalization? None is more deficient.

Some time when coal has partly re-established itself by a superhuman effort we shall begin to see it in its right light. Day laborers at mines, for instance, who get $7.50 for an eight-hour day will be seen to be better paid than snow shovelers who work for ten hours and obtain a wage one-third lower, paying also more for shelter, transportation, food and comfort than the laborers at coal mines. Some day the irregular trades will be examined, and coal will be seen to be nowhere in the running. Some day the primitive industries will hold a congress and refuse to recognize such a well-developed and highly mechanicalized industry as coal mining. Some time the miner will be seen not as a feudal serf but as one of the more independent of artisans. There will come a day also when we shall see the industry as one in which the operators are grossly undercompensated. The world is happy in having a myth, a scapegoat for simple minds to discuss. We have so many difficult problems to solve. Here is something we all agree on —a story which we can believe without doubt or question. Why then trouble about the facts!

Talleyrand de Périgord said history was "a fable agreed on." That expression will serve to describe the coal industry until someone comes to shatter our faith and to convince us once more that the more superlatives there are in an assertion the more unsafe it has become. If all that has been said of the coal industry is true there is no certainty in human nature.

Snap Judgment

AT A MEETING of the Chamber of Commerce of the State of New York on Feb. 4, its committee on public service was asked to investigate coal prices in New York City. On March 4, the committee reported that it was "quite apparent that profiteering is and has been going on" and that this price-gouging "is not confined to the cellar dealer or peddler." Mark-ups of 54 to 106 per cent by those distributors of fuel in bag lots did not impress the committee as exorbitant. Large retailers, stated an appendix to the report, "must bear some share of responsibility for oppressive prices."

The mandate to the committee was "to ascertain the facts concerning the relation between the cost of coal delivered in New York and the price demanded by retail dealers *of all classes*." Yet, nowhere in the report is there any evidence that the committee had any accurate knowledge either of mine prices, prices at tidewater or the cost of handling coal through the retail pockets. The text of this document reveals a clouded conception of the different agencies of coal distribution and their respective functions. The only statement purporting to represent wholesale prices made on the committee's authority is a hopeless jumble of mine prices on domestic anthracite, tidewater quotations on bituminous mine-run and retail delivered prices on coke.

The committee excuses its failure to develop all the facts called for in its instructions by pleading that the task was difficult and that it lacked authority to compel the submission of pertinent data. The evidence gathered, it says, was conflicting—but the imperfect record did not deter it from pronouncing judgment and from making recommendations for legislative action. Just how difficult it would have been to gather the necessary information is lost in mystery. There is, however, nothing in the report to indicate that the committee or its paid investigators unduly exerted themselves to carry their studies beyond the peddler to apportion responsibility and, if need be, condemnation.

For seventy-five years it has been the proud boast of the Chamber that it has taken no action upon questions "we confessedly do not feel ourselves qualified to judge." In the present case, however, the Chamber has seen fit to accept and indorse a report the imperfections of which are patent and in the face of a request from the chairman of the state relations committee of the New York State Coal Merchants' Association that the retail trade be heard before the Chamber committed itself. This departure from well-seasoned tradition hardly adds to the glory of the Chamber of Commerce of the State of New York.

Liquid-Oxygen Explosives

DURING the past few years much interest has been shown in this country concerning the use of combustible matter soaked in liquid oxygen as an explosive for use in industrial blasting. Perhaps it would be more proper to say "curiosity" than "interest," because up until quite recently everybody was mildly anxious to know more about this explosive, its possibilities and limitations; yet nobody seemed to be doing anything in particular about it.

As is well known, explosives, from the chemical standpoint, are of two general types—compounds and mixtures. High explosives are usually compounds while the mixtures are, as a rule, slower in their action because they evolve their gases from actual combustion which progresses from particle to particle. Common black gunpowder is an excellent example of a mixture explosive.

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Liquid-oxygen explosives partake of the nature of mixtures although in many respects they behave much like dynamite which is a good example of a chemical compound. We print elsewhere in this issue an abstract of the extremely valuable paper on this subject recently presented before the American Institute of Mining and Metallurgical Engineers. This will be of keen interest to many mining men.

Several characteristics of the new explosive recommend it for strip pit mining and tunnel work in rock although its heat of explosion and quickness of action unfit it for shooting coal. The rigidity of the cartridges and the fact that the smaller sizes, in order to even approximate their possibilities must be fired within 10 to 15 min. after their placement in the shot hole are detrimental qualities.

It is in the strip pit and rock quarry, therefore, that the new explosive can be used to best advantage. Here the 4-, 6-, or 8-in. drill holes used permit the employment of cloth-bound cartridges of large diameter which may remain in place as much as 2½ hr. before firing and yet evolve a large proportion of their maximum possible energy. Another interesting feature of the liquid oxygen cartridge is the fact that it is entirely successful in wet holes or may be used with water stemming. Such stemming soon freezes after insertion of the cartridge.

Other excellent characteristics of the new explosive are its freedom from detonation by impact and the fact that it must be used practically as soon as it is manufactured. The cartridges may be made up at any time and can be safely stored in any quantity as they do not become explosive until soaked in the liquid oxygen. Atmospheric conditions have small effect upon them when either soaked or unsoaked. Furthermore their total cost as used is somewhat less than that of dynamite.

An operation using this explosive needs neither magazine nor thaw house. In its stead a suitable place must be provided for the storage of detonators, fuse and cordeau. Similarly a small oxygen plant must be installed as well as a place for soaking cartridges. However, in addition to a decreased expense all or practically all of the danger incident to storing, transporting and handling high explosives is eliminated while the useful effects realized are approximately the same.

It is reported that liquid-oxygen cartridges are being used at a large coal stripping operation in Indiana for blasting the overburden ahead of the stripping shovels. The progress of this work will be watched with more than usual interest by the rest of the coal industry.

"Bootlegging" Coal

SOME have wondered how the miners met the long strike without any large withdrawal of savings funds and without any extensive measure of relief from the public, the trades unions in general or their own union. Many of them wandered to the big centers of industry such as New York and Pittsburgh and obtained work there. Perhaps in all 20 per cent of the workers left the anthracite region.

Some were reported in the bituminous mines, and, in one case at least, they were willing to perform more dead work without compensation than were the miners of the locality they invaded. A room had caved in, and the anthracite men consented to clean it up without charge in order to get the opportunity to mine the coal after the face was reached. Being away from their own homes they did not hesitate to create conditions that they were unwilling to introduce or afraid to practice in their home mines. Their action was equivalent in character to the "dumping" policy of manufacturers who relentlessly demoralize distant markets but are careful of their own.

Many miners, however, did not move away but lived on the earnings of wives and daughters employed in the silk mills. Silk manufacturing is a great industry in the anthracite region, because the air is not sullied with soot and because there is an abundance of female labor.

But there was another industry available and that, strange to say, was coal mining—"bootlegging" coal. The miners would not work for the companies, but they were willing to extract coal from the culm banks. Great activity was shown in this industry. The miners, each for himself, paid a high royalty on this coal to the owner of the culm bank. Teamsters hauled it short distances, and even into New Jersey. These "snowbird" operators made $7 or $8 a day, and the coal, improperly prepared and containing large quantities of slate and bone, was sold at premium prices. These men, so long as the winter lasted, did not find their strike unprofitable. The distant cities had to do without anthracite but the home towns and those around the region had hard coal—of a sort.

The operators made no complaint. It is usually found that when these disagreements occur the owners of mines have a sympathetic eye to the sufferings that the men have brought and are bringing on themselves. They find it difficult to distinguish those who are the mere victims of circumstances that they cannot control from those who have invited misfortune by advocacy of a dogged resistance.

Many years ago a bituminous strike occurred during which one company, having a large store and being obliged to refuse credit to the idle miners, was importuned to lend the services of its mules and teamster to the miners. This was conceded and the men were soon scouring the surrounding country for farmers ready to supply them with food. In most instances the aid was afforded, and much provender was brought in as the farmers were at that time more friendly to the miners than today, partly because wages were lower but more because the farming population had furnished many recruits to the coal industry. Even the company stores have not infrequently extended credit to the friendly miners and those whose financial difficulties appealed to the store management; and then when the bars were let down it was difficult to separate deserving from undeserving.

A Gambler's Chance

NOT a few mines covered with untreated, combustible dust are in operation. It must be true that mine officials and the higher executives are now thoroughly aware of the degree of inflammability of coal dust. With little doubt therefore those who allow combustible dust to accumulate in large quantities without attenuating it with rock dust, or even so much as soaking it with water, are deliberately taking a gambler's chance in hoping for freedom from disaster.

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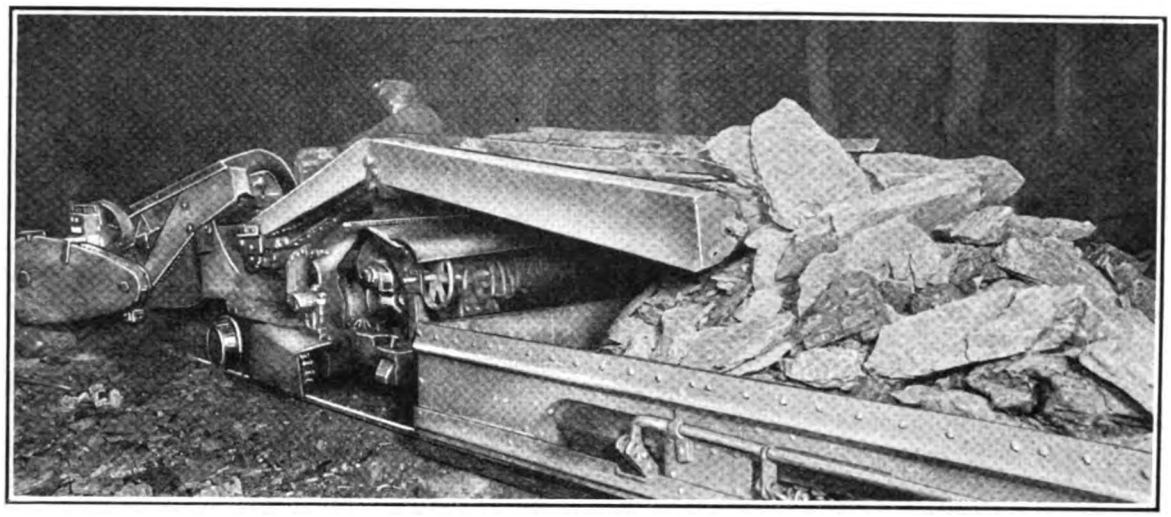

Shoveling Machines Reduce Costs and Speed Rock Removal

Particularly Useful With Uncertain Roof and Rolling Bottom—Can Clean Up Rock Faster Than All the Men That Can Be Gotten Around a Fall

By Frank H. Kneeland
Associate Editor, New York, N. Y.

MANY mines are afflicted with a rock problem more or less severe. Sometimes the thickness of the coal is such that the roof must be brushed in order to secure the necessary headroom on haulageways and entries. As a rule all such rippings must be removed from the mine and disposed of outside. Again, in many cases the bottom must be lifted either to give the necessary headroom or to afford a reasonable grade for the haulage. Particularly where the coal is thin and its contour uneven either or both of these methods must be followed if anything resembling favorable haulage conditions are to be approximated.

Such are the conditions encountered in a certain group of mines in Kentucky. The thickness of the coal in these operations ranges from approximately 3 ft. 6 in. to about 5 ft. Local dips and rolls are numerous, and there is scarcely a haulage road to be found in these mines anywhere that does not require grading. In many places, also, the roof caves, sometimes to a height of 20 ft. or more, necessitating the removal of large quantities of rock.

Shoveling machines have been adopted for this purpose, not only because they cheapen the process involved but also because they do the work more rapidly than all the men that could possibly be used to advantage. In a typical instance as will be described later the bottom was lifted to a maximum depth of 3 ft. throughout a distance of 245 ft. along one of the main haulage headings and all the material from this cut, amounting to 166 cu.yd. in the solid was loaded out over a week end.

Rock work on haulage roads is always expensive, not alone because the material handled is worthless but also because only a limited number of men can be employed. Furthermore a fall on a main haulage blocks traffic on this roadway and may thus cause an indirect loss that may far exceed the direct loss represented by the expense of rock handling. It is in such places that mechanical means of loading, inasmuch as they are far more rapid than hand methods, are especially advantageous, and such means are accordingly employed in the mines to which reference has been made.

It has now been practically eighteen months since the first Myers-Whaley type of shoveling machine was started to work. The savings made by this loader, however, were such that a second machine of the same kind, size and model, was installed in January of 1925.

Typical examples of the work done by these machines are shown in the accompanying illustrations, Figs. 1 to 7. In Fig. 1 practically all the work was lifting bottom. The grade was made uniform from *A* to *E* with two cuts and two fills between these points. The first cut extended from *A* to *B*, a distance of 280 ft., the maximum depth of this cut being 3 ft., the total yardage being 202½ cu.yd. in the solid. The yardage of loose material or spoil handled would be roughly twice this amount or approximately 400 cu.yd. From *B* to *D* a short fill had to be made, material for which was obtained by shooting the roof at *C*. Only enough roof was shot down to make the required fill and the material thus obtained was allowed to remain where it fell, no work being done upon it other than leveling the surface sufficiently to enable the track to be laid satisfactorily.

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From *D* to *E* the cut measured 295 ft., its maximum depth being 3 ft. The volume (in the solid) was 252.2 cu.yd., making nearly 500 cu.yd. of loose rock. It was not necessary to shoot top to secure material for the little fill from *E* to *F*. The maximum depth of this fill was about 1 ft. and material for it was readily obtained from the end of the cut from *D* to *E*.

Fig. 2 shows how an abrupt dip was straightened out and excessive grades avoided. It represents another case of both brushing top and lifting bottom. Here the maximum fill was 15 ft. and the maximum cut was only 2½ ft. The total length of the fill was 630 ft. and of the cut 220 ft. The material blown down from the roof was 2,100 cu.yd., of which the shovel loaded out 942½ cu.yd., both figures representing material in the solid. The volume of rock removed from the cut was 150 cu.yd. measured in the solid.

Fig. 3 represents a case similar to Fig. 2 in that both a cut and fill are involved. The maximum depth of fill here was 10 ft. and its length to 470 ft. The volume of material shot down was 1,332 cu.yd. in the solid, of which it was necessary to move with the shovel 642½ cu.yd. also in the solid or roughly 1,280 cu.yd. of loose rock. The cut was about 130 ft. in length and its maximum depth approximately 2 ft.

Fig. 4 shows a long cut, so long, in fact that its extremities are omitted from this drawing, only 850 ft. of its length being shown. The maximum depth of this cut was 5 ft. 6 in. The spoil amounted to 1,108 cu.yd. in the solid, or approximately 2,200 cu.yd. of loose rock. As may be seen, however, the track grade obtained was excellent, the many humps and hollows originally existing being replaced by a level stretch of track and a uniform slight grade over which heavy trips can be hauled with comparative ease.

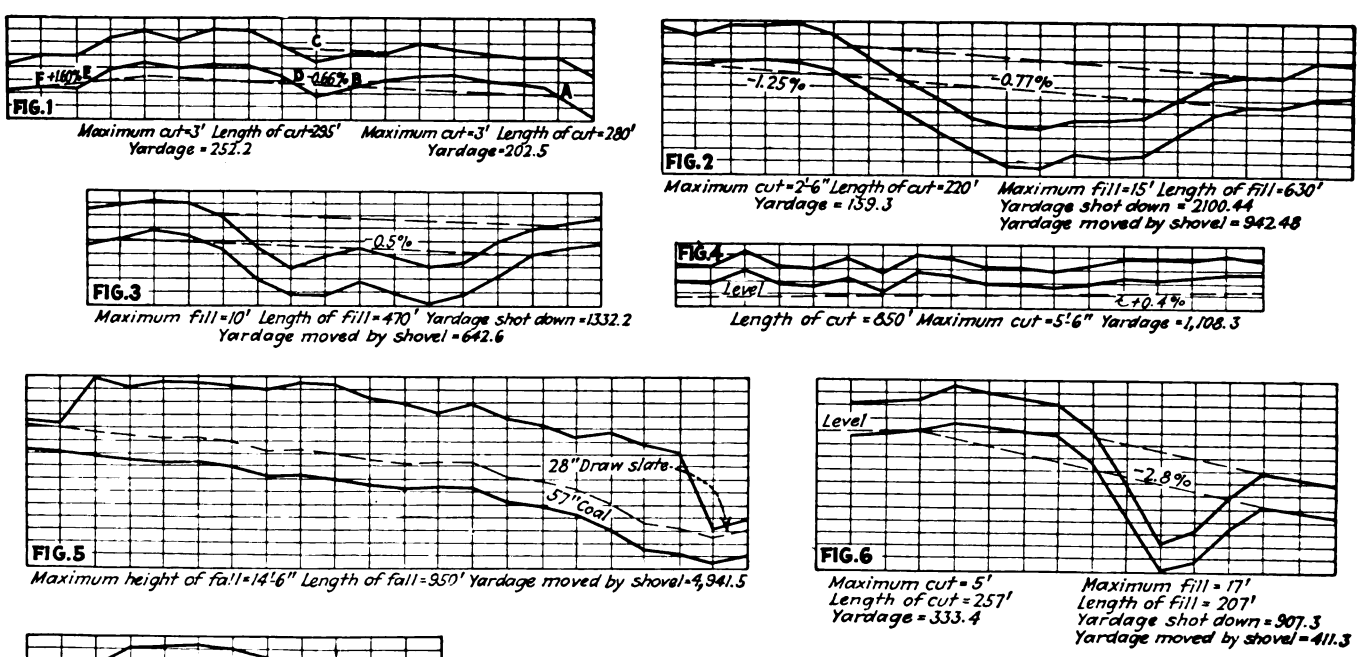
Fig. 5 shows a long heavy roof fall. For a distance of 950 ft. the top of this entry fell to a maximum height of 14 ft. 6 in. The above statement is misleading in that the fall did not take place entirely unaided. When the timbers along this heading began to show signs of distress and failure, the roof was drilled and shot, bringing rock and timbers down together. The rock was then loaded out, many of the timbers being reclaimed in this process for use elsewhere. In this particular fall 4,941 cu.yd. of material in the solid were loaded by the shovel, slight inequalities in the floor being filled in the process. The actual yardage of loose material loaded and hauled away thus amounted to almost 10,000 cu.yd.

Fig. 6 is another case of both a cut and a fill, but in this instance the fill was unusually thick and heavy. It was made in a sharp local dip where the pitch of the coal at one end was so steep that a locomotive could not ascend with more than one or two cars and not even then unless it had a running start. To overcome this difficulty the roof was shot down to a maximum depth of 17 ft. and over a distance of 207 ft. A total of 907 cu.yd. of solid rock was thus brought down, of which 411 cu.yd. were loaded out.

Bordering this dip on the left was a roll. Here the bottom was shot up over a length of 257 ft. and to a maximum depth of 5 ft. All of this material amounting to 333 cu.yd. of solid rock was loaded out by the shovel. The resulting grade now has an inclination of 2.8 per cent against the loads, whereas originally the maximum grade had been one of 22 per cent against them.

Fig. 7 shows how a hump or roll was cut down. This was on one of the main haulage roads and was causing much trouble. The improvement was accomplished in two operations, the first from *A* to *B* and the second from *C* to *D*. The total length of the entire job was 380 ft. and the yardage moved 322 cu.yd.

Probably the chief interest in this cutting down of a bothersome hump centers in the first cut made because of the rapidity with which the work was accomplished. The first cut was approximately 245 ft. long, its maximum depth about 3 ft. and its cubical contents 166.6 cu.yd. in the solid. Work of tearing out track was begun after the day's run on Friday. The track was removed, the place drilled and shot and all loose material loaded



Mine-Grade Adjustments in a Kentucky Coal Mine

Mechanical loading of rock, with an inexpensive means of removing it from the mine cars and disposing of it on the surface, made the work, though expensive, a notable economy in operation. The removal of the fissured rock shown in Fig. 5 eliminated heavy timbering and some danger from falling rock.

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out by Sunday afternoon. The track was then relaid and was ready for traffic by Monday morning. In this case, however, the cut was accessible from both ends. Accordingly, one shovel started at *A* and the other at *B*, the shovels working toward each other. Thus, starting to shovel on Saturday morning, they met on Sunday afternoon, after loading as stated, 166 cu.yd. of solid, or approximately 325 cu.yd. of loose, bottom rock.

Rock shoveling in these mines is done mostly at night. Where no track is laid in the place ten 7-ft. sections of 40-lb. rail laid on steel ties have been provided. These can be laid section after section in front of the machine as it advances. Each of these sections is provided with fish plates which may be slipped over or a-straddle the webs of the rails of the track already in place and quickly bolted fast. At the first opportunity, usually the next day, this temporary track is replaced with one of a more permanent nature. Of course if permanent track is already in place and only the roof is to be brushed, the top is shot down directly onto the rails and the fall cleaned up without recourse to temporary track of any kind.

Speed of loading depends largely upon the conditions of the material to be handled and the distance over which both the loads and empties must be hauled. A car containing about 5 tons of rock can be loaded in about 5 min. This might be taken to indicate that 140 to 145 cars of this material could be loaded in the course of a 12-hr. night shift. As a matter of fact shifting cars and the breaking down of big lumps either with sledges, by hand or by mud capping consumes so much time that especially when cleaning up falls only about seventy cars are normally loaded out per shift. Chunks much larger than 1-ft. cubes cannot be readily handled in the car dump employed at the tipple. As a result pieces of much larger size must be broken down. This is done either by hand sledges or by explosives.

In shooting roof the same explosive is employed as for bringing down the coal. For lifting floor 40 per cent dynamite is sometimes used, although here also a permissible will do the work. Sticks 1x6 in. are employed, all firing being done electrically using a low-voltage battery instead of a blasting machine.

For drilling the holes jackhammers are used. These are operated from a portable compressor that is electrically driven from the trolley wire. Steel 8 ft. in length is about the longest that is used with these machines, so that if a fill is of greater depth than this the rock must be taken down in lifts. However, it is seldom necessary to do this.

Inasmuch as a cut in the bottom can be shot harder and can thus be broken up much more thoroughly than a cut in the roof it represents a much better condition for the machine. The worst condition encountered in machine operation is what might be termed a natural fall or a roof that breaks and comes down of itself. Most such falls can be anticipated and the roof shot before the timbers are crushed. Even this latter procedure, however, results in bringing down the roof in such large pieces that it is sometimes necessary to mud cap and shoot after each two or three cars are loaded. This means much delay.

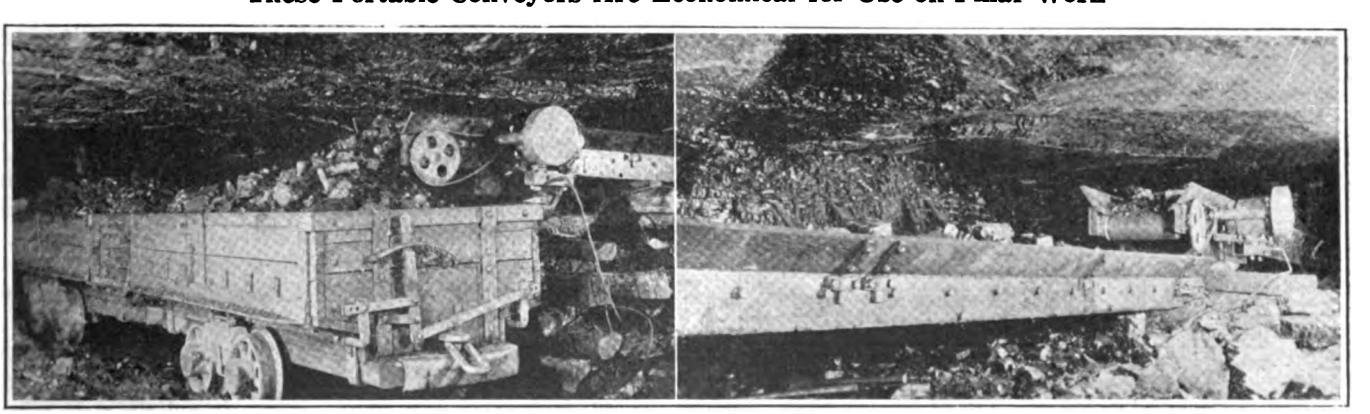
ROCK IS WASTED OUTSIDE

In these mines practically all the rock that is loaded by power shovel underground is hauled to the outside. Here it is discharged in the same dump as the coal being segregated from it by means of fly valves in the chutes. The rock takes a course through the tipple that is separate from that taken by the coal and after being joined by the slate and refuse picked from the mine product is conveyed by belt to the slate bin. Thence it is taken by slate larries, hauled around a small spur on the hillside and dumped.

Direct savings made by the use of power-operated equipment, even though they may be large, are frequently far outshadowed by and become a secondary consideration when compared with the indirect savings obtained. In the specific case of the power shovel as used at the mines mentioned, although it makes a large saving in the cost of handling rock, yet its chief advantage probably lies in the speed with which its work is accomplished.

At best only two hand shovelers can work to advantage in a 12-ft. heading—any more would be in each other's way. On the average two such men would load out about five cars of rock each, or ten in all during a shift. The shoveling machine on the other hand, operated by a crew of from two to five men, depending upon the condition of the material to be handled, as has been stated, can load an average of about seventy cars per shift. Thus a machine removes roughly seven times the quantity of rock that could be handled by the gang that it supplants. It is this speed of operation that particularly commends its use.

These Portable Conveyors Are Economical for Use on Pillar Work



These conveyors are in the mines of the Phelps Dodge Corp. at Dawson, N. M. They are used exclusively in retreating room stumps and chain pillars. This process saves considerable brushing and relaying of tracks according to W. C. Holman, chief engineer at the Stag Canyon Branch operations of the company. The illustration shows two 20-ft. conveyors in tandem retreating on a chain pillar. The left-hand picture shows the delivery end with coal being deposited in a car.

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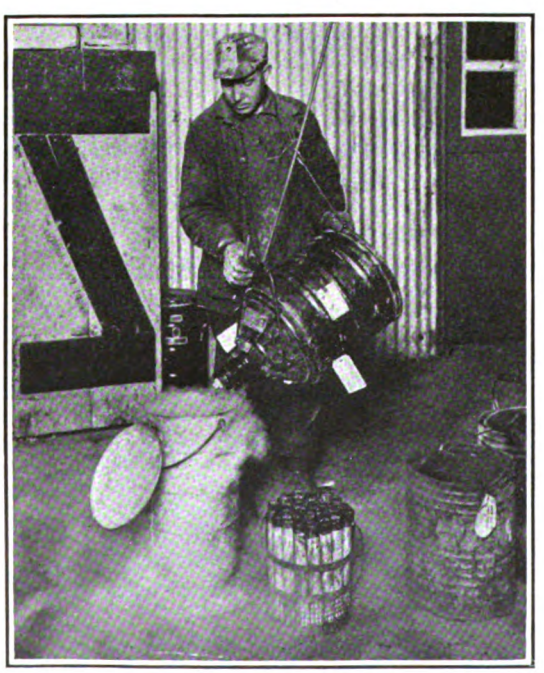
Liquid Oxygen Desirable For Strip-Pit Work

Being Combustible But Not Subject to Detonation Flame or Light Concussions the Cartridges Are Safely Handled

THAT liquid-oxygen cartridges are not suitable explosives for use in coal mines, because of the long flame that results from their detonation and because they are quite readily combustible, is conceded now by everyone. They have, however, been proved advantageous for use in open-pit work including in that designation coal and other strip pits.

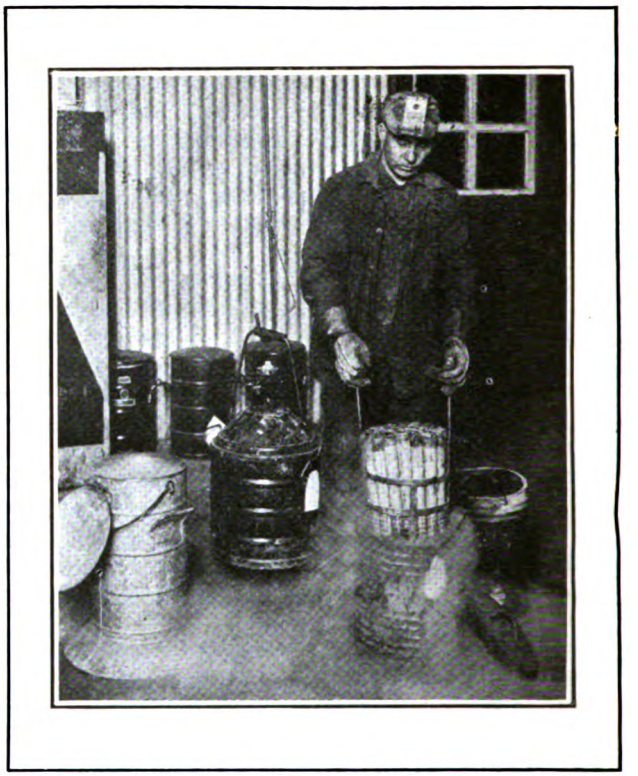
During the past few years much has been heard in this country concerning the possibilities of using as an explosive for mining some form of combustible saturated with liquid oxygen. Such an explosive commonly known as L.O.X., has for some years been used in blasting down ore in the iron mines of Lorraine, France. An investigation of this substance, its possibilities and limitations has been conducted by Frederick W. O'Neil, chief engineer of the Ingersoll-Rand Co. and Herman Van Fleet, vice-president of the Air Reduction Co. The following is an abstract of their paper as presented before the winter meeting of the American Institute of Mining and Metallurgical Engineers, Feb. 17, 1926, by Mr. O'Neil.

Reliable apparatus for the production of liquid oxygen has been fully developed and perfected. Operating on the so-called Claude system, which requires compression of the air to only about 900-lb. pressure, liquefaction of the air and fractional distillation with recondensation of its oxygen content, commercially pure oxygen can be produced at an estimated cost of 2.29c. per pound.



Pouring Liquid Oxygen on Cartridges

This is done at the central charging station. Note the cartridges in a basket, the soaking container on the left and the dry carriers on the right. The cut in the upper corner of the page shows the attendant transferring the soaked cartridges to a dry carrier at the same station.



Theoretically the oxidation of pure carbon to carbon dioxide (CO_2) requires 2.67 units of oxygen by weight for each unit of carbon. Similarly, its oxidation to carbon monoxide (CO) requires 1.33 units of oxygen. As commercial carbons are not chemically pure, and as the cartridge wrapper is cellulose and not carbon, it has been assumed that 2.5 times the weight of the cartridge is required for its oxidation to CO_2 and 1.25 times the weight of the cartridge for its oxidation to CO.

Ideal requisites for a cartridge of this kind are as follows: (*a*) Maximum density in order to provide a maximum of explosive in a given volume. (*b*) Ability to absorb liquid oxygen in excess of all requirements for complete combustion so as to provide for oxygen evaporation prior to detonation. (*c*) The physical properties of both the filling material and the wrapper should be such as to render the soaked cartridge mechanically strong in order that it may be handled without breakage. This applies particularly to the wrapper which must not be too brittle at the low temperature of the liquid. (*d*) The price of the filling material must be low enough for commercial use. (*e*) The soaked cartridge must be firm and dry. With some filling materials, especially when lightly packed, liquid oxygen readily squeezes out of the cartridges making them difficult to handle.

It should be noted that a material giving maximum requirements of density tends to give minimum capacity for absorption. The commercial cartridge, therefore, will be a compromise between these two requirements.

Approximately 400 varieties of carbon blacks, lampblacks, hydrocarbons and various mixtures were investigated. Many of these materials were rejected in the laboratory because of their high cost, low densities or low absorptive qualities. Several varieties of carbon blacks and lampblacks of satisfactory cost (from 6 to 9c. per lb.) and of satisfactory density and absorption qualities were selected. From this list of possibles

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a lampblack and carbon black were finally chosen as the best absorbents, and further laboratory tests and practical experiments were confined to these materials. Both of these absorbents are procurable in large quantities and at reasonable prices.

Cartridge wrappers must possess the following qualities: (*a*) The material should be combustible; (*b*) it should allow liquid oxygen to permeate it readily and (*c*) it must not be brittle or fragile during soaking, in order that the soaked cartridge may be handled without breakage. It is desirable also that it should retain liquid oxygen while at the same time allowing sufficient evaporation to prevent rupture of the cartridges by expansion of the gas. After experimentation and testing, the material finally selected was a pure rag-stock paper varying in thickness from 0.007 to 0.010 in. Papers which are filled or sized are unsuitable because of their brittleness at the low temperature of soaking.

Considerable difficulty was experienced in making a suitable cartridge. Gumming or gluing the wrapping paper renders it impervious and brittle, and a spirally wrapped ungummed cartridge is liable to sift filling material. A satisfactory cartridge was finally developed, rolled from a piece of paper of rhomboid shape. A machine gums this paper along one edge, so that when rolled into shape this edge circles the cartridge spirally. One end of the cartridge is crimped by this machine and the other is crimped by hand after filling. Both ends are then immersed in paraffin to a depth of about ¼ in., thus preventing sifting.

It was soon discovered that hand filling of cartridges was unsuccessful, and a simple machine was developed for this purpose. In this machine a spiral screw acting within the storage hopper causes the filling to exude from a nozzle at its lower extremity. The cartridge is placed on a weighted platform below this nozzle, and the carbon is forced into it against the pressure exerted by the weight. Any desired density of filling may thus be attained. The term density as here used indicates the mean apparent density obtained by dividing the gross weight of the cartridge by its gross volume.

The cost of unsoaked cartridges is about as follows:

7 x 20 in. 8 lb. cartridge, cost per lb. 15 c.	—	cost per cartridge	$1.19
4½ x 18 in. 3 lb. cartridge, cost per lb. 14 c.	—	cost per cartridge	.42
1½ x 12 in. ½ lb. cartridge, cost per lb. 24 c.	—	cost per cartridge	.04

In the accompanying illustrations Fig. 1 shows the relation between the weight of large cartridges that have been soaked and the time that they have been exposed after absorbing oxygen, and Fig. 2 shows the same relation for small cartridges. Fig. 3 shows the time in minutes taken by cartridges of different densities but of the same composition for the evaporation of excess oxygen down to the quantity necessary for complete combustion to carbon dioxide. This graph would at first indicate that the low-density cartridges are preferable as they give a longer life. As a matter of fact, however, the quantity of carbon present is smaller and their strength per unit of volume is thus decreased. The selection of the proper density, therefore, becomes a compromise between long life (low density) and explosive strength (short life and high density). Cartridges of extremely low density are unable to hold the liquid oxygen and some of it runs out when the cartridge is removed from the soaking bath.

From Europe has come many reports of the excellent results secured from the use of a substance known as carbene. This is made from acetylene gas and not much difficulty is found in its manufacture. Little hope is seen for the use of this material as an oxygen absorbent because its cost is prohibitive, and the tests already made show it to be inferior to lampblack.

Liquid oxygen may be stored and transported in Dewar flasks or vacuum bottles. These consist essentially of an inner and an outer shell with a vacuum space between them containing a compartment in which is placed a small quantity of activated charcoal. The outer vessel is provided with a lead tube which is connected to an air pump and by this the vacuum space is exhausted. When the required degree of vacuum has been obtained this pipe is pinched off and the end soldered over. At the low temperature existing in the flask when filled with oxygen the activated charcoal absorbs the residual air in the vacuum space. The whole flask is then surrounded by a sheet-steel case, the space between it and the outer container being filled with excelsior or similar material. Such flasks have shown themselves to be highly efficient in the shipment of liquid oxygen by combined railroad and motor-truck transportation, the entire journey taking three or four days. The average loss in transit from eighty 15-liter containers amounted to 10 per cent per 24-hr. day. At rest these same flasks had a loss from evaporation of 7.6 per cent per 24-hr. day.

It is believed entirely feasible in liquid-oxygen plants to store the oxygen in double receivers large enough to hold a 24- to 28-hr. supply. Although no data are available concerning the evaporation that would take place from vessels of this capacity, it is believed that owing to the large ratio between the volume and radiating surface as compared with small flasks, vacuum insulation would probably be unnecessary and hair felt or mineral wool could be used instead. Such receivers should, however, be made of copper or of a copper alloy; steel is unsuited to this purpose because it is liable to develop fine cracks at the low temperatures encountered.

Experience concerning the maintenance of vacuum equipment has not extended over a period sufficiently long to give satisfactory data. Out of 55 such containers fifteen had to be re-evacuated at the end of one year. Loss of efficiency in containers of this kind arises less from a loss of vacuum than from the fact that the inner and outer shells come into contact from rough handling. The re-evacuation of vessels of this kind is not difficult and can be readily performed at the mine.

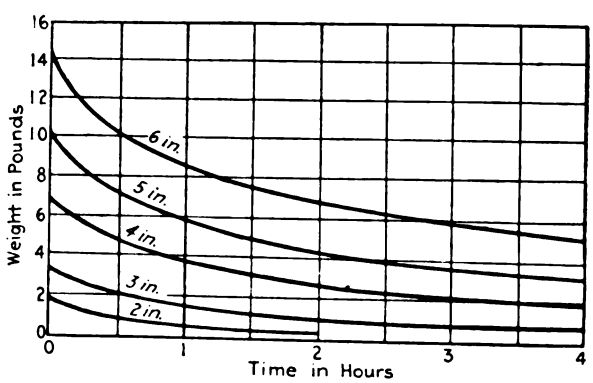

Fig. 1—Typical Time-Evaporation Curves for 12-in. Cartridge of Large Diameter

The cartridges of 6-in. diameter after two hours have less than half and after four hours about one-third of their original charge still left. The carbon is in a cotton bag. The exposure is made to the open air.

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A suitable vacuum gage and a small 2-stage oil-immersed vacuum pump are all the equipment required.

Cartridges are soaked in straight-sided Dewar flasks. These are built on the same constructional principles as the transportation containers. In order to facilitate handling, the cartridges are placed in copper-wire baskets which fit easily within the container. Before starting to use a flask of this kind a small quantity of oxygen should be placed in it so that it may become chilled before the soaking of cartridges begins. In containers of this kind hair-felt insulation gives almost as good results as a vacuum.

In soaking, the cartridges are placed in a copper-wire basket which is lowered into the soaking container after which the oxygen is poured in. Fig. 4 shows the results of tests, setting forth the time required to soak cartridges of various diameters. It will be noted that when a cartridge sinks it is practically saturated and that the time required for complete saturation is from 15 to 18 min. A 5-in. cartridge requires about 30 min. for complete saturation.

Because vacuum soaking containers are rather awkward to handle and liable to damage, and inasmuch as hair-felt insulation has practically the same efficiency, what is termed a dry carrier has been developed. This consists of a double-wall vessel with about 1½ in. of hair-felt insulation between the walls, the inner vessel being made of copper and the outer one of steel. After the soaked cartridges have been removed in their basket from the soaking container, they are placed in a dry carrier into the bottom of which a little liquid oxygen has been poured. The cartridges then tend to remain saturated through capillarity from the oxygen in the bottom of this carrying vessel. Tests to determine the ability of the cartridge to take up liquid oxygen by capillarity are set forth in Fig. 5, which gives the effect of standing a dry unsoaked cartridge on end in one of these dry carriers in which a little liquid oxygen has been placed, this liquid being maintained at a constant level. This test shows that the dry cartridge is able by capillarity alone to absorb enough oxygen to reach a point between its carbon-monoxide and carbon-dioxide requirements.

Fig. 6 shows the evaporation that takes place when soaked cartridges are placed in a dry carrier with a little liquid in the bottom. This sets forth conclusively that it is entirely practicable to keep cartridges in this way 1½ hr. after soaking before use. The results shown were obtained with cartridges of rather low density and with the carrier only two-thirds full. With cartridges

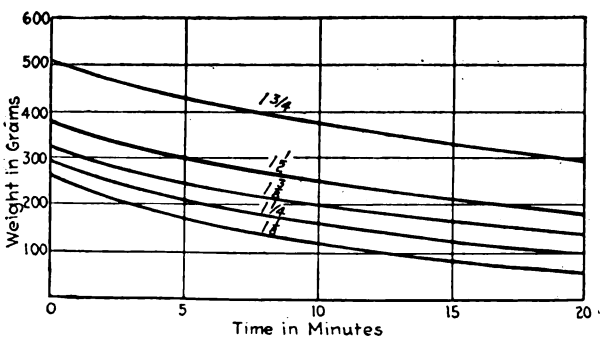

Fig. 2—Typical Time-Evaporation Curves for 10-in. Cartridges

Curves show that the weight of the liquid oxygen decreases rapidly in the cartridges as time passes. The carbon is held in a paper wrapper, and the cartridges are exposed in the open air after soaking. Note this graph has a different time scale from that of Fig. 1.

of higher density, such as are usually employed and with the carrier well filled, the loss of oxygen would be reduced about one-half. The vacuum soaking container thus need not be carried into the working places, but the cartridges may be prepared at a convenient central point. This permits a large saving in labor and trans-

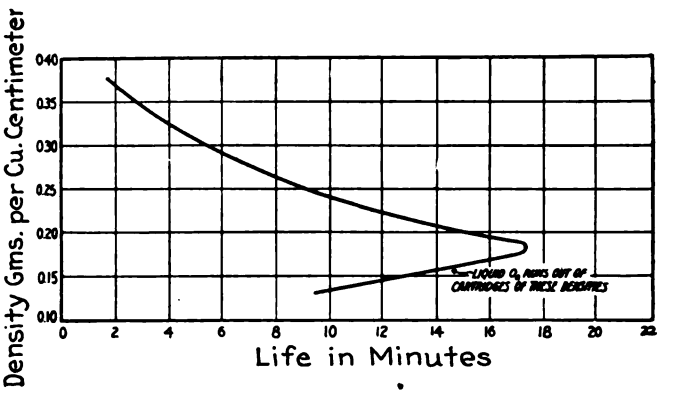

Fig. 3—How Cartridge Life Varies with Density

Dense cartridges hold but little liquid oxygen and have a short life. Loose cartridges take up a lot of oxygen but leak badly when they are no longer immersed and so they are undesirable. A happy mean is to be preferred.

portation as well as a reduction in wear and tear on the vacuum equipment. It also allows the use of larger containers and makes possible the saving of a large quantity of oxygen which would otherwise be lost.

The strength of any explosive is a function of the total energy it develops and the rate at which this energy is liberated. The methods most commonly used for determining the total energy are the ballistic pendulum and the Bichel gage. Many tests carried out in the explosives laboratory of the Bureau of Mines at Pittsburgh indicate that carbon is the best absorbent for liquid oxygen of all the materials tested and when properly soaked is practically equivalent to 40 per cent dynamite.

In the Bichel gage, or closed bomb, various cartridges were tested. As the insertion of the cartridge, closing of the bomb and getting ready for firing requires about 10 min., the soaked cartridges cannot be fired in this device at the theoretically correct time. The conclusion could be drawn from these experiments, however, that carbon L.O.X. cartridges are superior to those made from other substances volume for volume.

Comparisons with rate of detonation of trinitrotoluol cordeau by the Dautriche method showed that the rate of detonation of L.O.X. cartridges when fired at the CO_2 point, ranged from 5,520 meters (18,100 ft.) to 5,950 meters (19,400 ft.) per second. This rate varies somewhat with the length of time that the cartridges have been removed from contact with the liquid oxygen before firing. The longer the cartridges are exposed to the air the slower their rate of detonation. With 1½x8-in. carbon cartridges this rate of detonation changed from approximately 4,850 meters (15,900 ft.) per second at 5-min. exposure to the air to 4,150 meters (13,600 ft.) per second after an exposure of 30 minutes.

Tests were also made on the continuity of detonation. For this purpose a string of 1¼x12-in. cartridges 40 ft. long, was laid with the cartridges end to end and in contact. This was detonated by a cap in the end cartridge. All cartridges in this string detonated uniformly. Cartridges of the same size were then laid on the ground end to end with an air gap between adjacent cartridges. It was found that straight carbon car-

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tridges would detonate in this way across an air gap of from 5 to 7 in. By the addition of suitable hydrocarbons, or metallic powders, the gap across which they could be made to detonate could be increased to 20 in. or more. Tests conducted on 1¼x12-in. cartridges in a drillhole, placing one cartridge in the bottom and detonating another at the collar, demonstrated that the bottom cartridge can be detonated across a gap of 3½ ft. or more. Evidently no difficulty will be experienced in mining because of failure of the cartridges to touch each other in the hole.

It was found impossible to detonate any of the carbon L.O.X. cartridges in the open air by flame alone, that is, by a fuse inserted in the cartridge. Caps in this case were necessary in order to assure detonation. When confined in a drill hole, however, the cartridges can be detonated by a fuse without cap, this being the standard practice in the iron mines of Lorraine. The tests on different strengths of detonators showed that they all had a like effect upon this explosive and that one strength of cap was as effective as another.

Tests were also conducted to determine how small the quantity of oxygen in the cartridge could be and still secure detonation. Cartridges were exploded that contained only 3.3 per cent of the oxygen necessary for their combustion to carbon dioxide. As the oxygen evaporates from one of these cartridges there is a tendency to leave a saturated core in its center, and detonation can be obtained as long as this core is present provided the cap is in contact with it. A 4-in. cartridge was detonated after the lapse of four hours in the open air.

Sensitiveness of the new explosive to impact was also tested. In the large impact testing machine at the Bureau of Mines laboratory the explosive was placed between steel disks and a weight of approximately 440 lb. dropped on it from varying heights. The explosive can be fired in this manner without difficulty. Many attempts have been made to detonate it by throwing cartridges against rock faces in stopes at distances of from 60 to 80 ft. In every case the cartridge failed to detonate. Dropping a miner's acetylene lamp that had previously been lighted into a container full of prepared cartridges was also tried. The cartridges did not detonate but were set on fire, producing a large flame of intense heat. A high-power rifle bullet fired through the container detonated its contents.

Tests made in the friction-testing machine in the Bureau of Mines laboratory showed that L.O.X. would not detonate under either the fiber or steel shoe. These and numerous other experiments have demonstrated

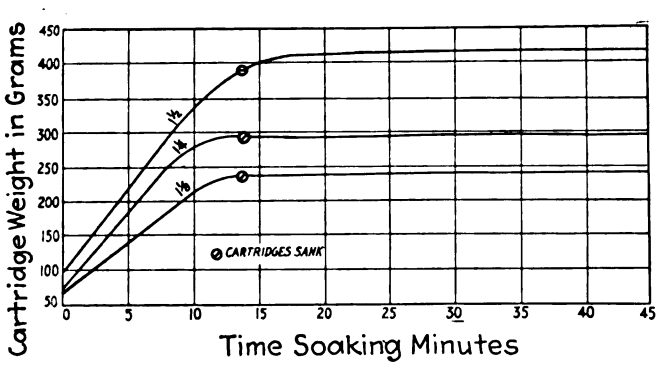

Fig. 4—Time Required to Soak Carbon Cartridges Beginning with Pouring

Note that the large cartridge is soaked almost as rapidly as the smaller cartridges. After sinking the latter gain little, if any, weight, but the large cartridge makes a slight absorption.

that with the smaller cartridges having densities of approximately 0.3, fired within 10 to 12 min. after soaking, L.O.X. is equivalent to 40-per cent dynamite, volume for volume. For the larger cartridges, the same holds true for firing at 30 to 45 min. These firing

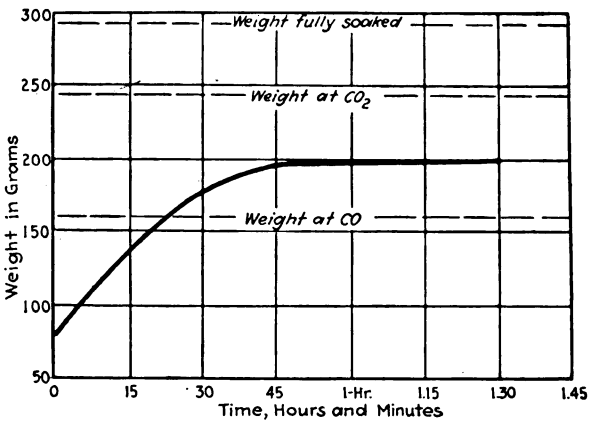

Fig. 5—Capillarity Test, 1¼x12-in. Cartridge

The dry cartridge is set on end in 1-in. of liquid, the liquid being maintained at constant depth. The dry weight of the carbon cartridge is 69 g.

periods are based upon the loss of oxygen taking place in the open air and are extended considerably when the cartridges are confined in a drill hole. This extension in the smaller diameter of cartridges ranges from 15 to 20 per cent.

One of the chief disadvantages in the use of L.O.X. in highly abrasive rock lies in the fact that the gage of the drill is appreciably decreased during the drilling process with the result that the holes are tampering. Inasmuch as the cartridges are practically solid they will not deform and fill the hole perfectly in loading. Their effectiveness in breaking rock is thus somewhat decreased.

In practical operation electric firing was found to be effective but under the conditions where the explosive was tried better results were obtained by shooting with fuse. This was crimped into an ordinary cap which was placed within a brass tube, into the other end of which a piece of ordinary cordeau was inserted. The brass sleeve protected the detonator during loading, and the cordeau acted somewhat as a booster.

All practical tests with these explosives tend to verify the work done in the laboratory and the conclusions drawn therefrom. In the light of the work done at Mineville, the following conclusions may be drawn so far as underground mining is concerned—(1) Where the ground is heavy and abrasive, causing the drillholes to be considerably tapered, L.O.X. costs more than dynamite. (2) Where the method of mining involves drilling of comparatively shallow holes without a large loss of gage, this explosive may be commercially profitable, especially where the price of dynamite is high. (3) The use of L.O.X. does away with the necessity of maintaining a stock of explosives at the mine and renders the powder supply independent of interruptions in transportation. (4) It has been shown that there is no danger from the premature detonation of this new explosive. There is, however, a danger of premature ignition resulting in violent long-flame conflagration, which would be dangerous in confined spaces underground. In loading holes, there is some danger of the liberated gas blowing out the stemming, and, perhaps, of ignition of carbon-laden gas by miners' lamps. The danger of drilling into missed holes is

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eliminated, and upon this score the new explosive is safer than dynamite. (5) The use of the new explosive for shooting down coal is not recommended because of its long hot flame. (6) When firing must be done simultaneously in a large number of adjacent places, it is much more difficult to synchronize this work if L.O.X. is used than if dynamite is employed. (7) More holes are lost with L.O.X. than with dynamite because the fuse is not held as firmly. Also, inasmuch as the cartridges fit the hole loosely, they are sometimes jarred out by the detonation of adjacent holes. If a cartridge jams in loading, because of the hole being crooked, there is no time to remedy it, and there is usually no time to reload a hole that blows out its stemming by evolved gas.

While operations were going on at Mineville, oxygen was shipped to various quarries and such highly satisfactory results obtained that the liquid-oxygen plant was moved to Lebanon, Pa. From this point many quarries and open-pit operations could be reached. Tests were then made in a wide variety of rocks. These trials were mostly conducted in 6-in. holes, there being a few 2-, 4- and one 8-in. hole. The depths to which these holes were drilled varied from 6 to 106 ft., and the number of holes fired simultaneously ranged from 1 to 40. From the plant at Lebanon oxygen was shipped over long distances sometimes being held in the transportation container as long as 96 hr. For this purpose containers of 50-liter capacity, with a loss of about 3 per cent in weight per 24-hr. at rest, were employed. The loss was about twice this quantity when the containers were agitated during travel.

Most of the cartridges used in this work measured 4½x18 in. and a few were 7x24 in. These were made of the straight carbon black but were incased in cylindrical cotton bags, instead of in paper, as the large paper containers were found to be too fragile to withstand handling. Because of the large size of the cartridges and the necessity for soaking a great number at a time, large soaking tanks were developed. These were merely copper-lined boxes insulated with hair felt.

A continuous length of cordeau from the bottom to the top of the hole was used in these large blasts. This was first placed in the hole and all the cordeau from the various holes were spliced to a common trunk line which was detonated electrically by a single cap.

In introducing the cartridges into the hole a flared copper funnel, about 6 ft. long was used. This both guided the cartridges and kept surface material from falling into the hole. The stemming used was generally loose earth merely shoveled into the hole without tamping. As a rule each hole was filled to the collar. In no instance was the stemming blown out. Neither was difficulty experienced in loading wet holes, and some were fired that were filled with water to the collar. In forty-nine blasts of this kind only four encountered difficulty, and investigation of these disclosed the fact that they were not charged or fired properly due either to miscalculation or to inadequate facilities at the time of charging the hole. With these exceptions all the shots were successful in every respect.

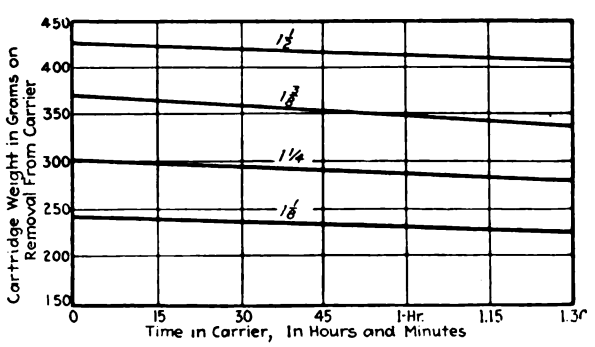


Fig. 6—Oxygen Loss in Dry Carrier

Here the fall in the oxygen content is much slower, of course, than in open air. Compare this with Figs. 1 and 2 where the evaporation is unhindered. Note also the difference in the time scales. The cartridges are stable enough that they can be made in a central loading station.

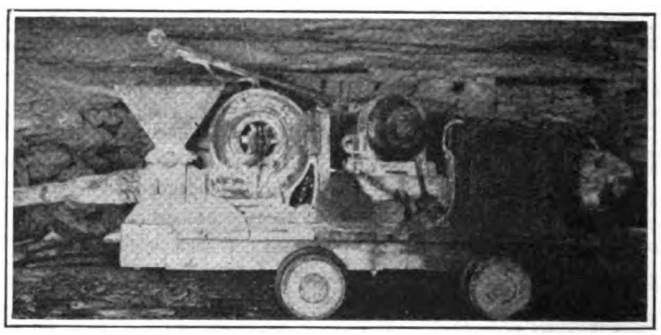
From the total quantity of dynamite replaced, as well as from the quantity of oxygen and dry cartridges used in all of these blasts, it would appear that 1 lb. of dynamite could be replaced by 0.935 lb. of oxygen, measured as produced at the liquid-oxygen plant. This, therefore, includes all losses of every sort. It also appears that 0.201 lb. of dry cartridge are required to replace 1 lb. of dynamite.

As to cost, to replace 1 lb. of dynamite for this class of service, 0.935 lb. of oxygen is required at 2.29c. per lb., making a cost of 2.14c., also 0.201 lb of. cartridge at 14c. per pound, or 2.83c. This makes a total cost of 4.94c. to replace 1 lb. of dynamite.

Rock-Dusting Gains Slowly In Alabama Coal Mines

Eleven Companies Now Dust Fifteen Mines—Powdered Dolomite is Used Exclusively—Most Machines For Applying It Are Home-Made

DURING the past calendar year rock-dusting did little better than hold its own in the coal mines of Alabama. It was inaugurated at a number of mines in 1924 awakening wide interest throughout the state but gathered only two converts in 1925. The Woodward



This One Is Electric

Rock-dusting machine used at Sayre mine of the Gulf States Steel Co. The motor at the right does the propelling. Push-Button control makes the machine simple and safe to operate. When not engaged in emptying bags of dust into the hopper the operator sits on the platform beside the hopper and directs the flexible leather nozzle.

Iron Co., which has been recognized as a leader in safety measures has not yet seen fit to slacken its intensive water sprinkling program in favor of rock dust.

The present status of dusting in the state is as follows: Approximately 1,700 tons of rock dust has been applied by eleven companies in fifteen mines. Practically all of the dust used was powdered dolomite. At least six of the eleven companies are using dusting machines of their own design and manufacture. Some are scattering the dust by hand. Few dust barriers have been installed.

The Gulf States Steel Co. and the Galloway Coal Co.

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were the pioneers in Alabama rock-dusting. The former company has dusted 64,450 ft. of gob entry in the Sayre mine using 208,200 lb. of rock dust or 3.23 lb. per linear foot of entry. Early in 1925 the Galloway company completed the dusting of its No. 11 and No. 15 mines but has not included any of its other mines in the program.

The self-propelling distributing machine used at the Sayre mine is shown in one of the illustrations. On this machine, which was designed and built at the company shop, a separate motor is provided for propelling and both motors are controlled by fully-enclosed automatic starters. It takes but one man to operate the machine.

The rock dust in 50-lb. bags is carried in a mine car attached to, and pushed ahead of, the duster. Without stopping the machine, the operator empties the 50-lb. bags into the hopper, and between times sits beside the hopper and directs the leather nozzle as the character and shape of the entry demands.

In September, 1924, rock-dusting was started in the mine of the New Castle Coal Co., at New Castle, Ala. At that time two miles of entry were dusted. This territory was given a second dusting in March, 1925, and a third application in October of the same year when the work was extended to the face, making a total of somewhat over five miles of dusted entry. Samples taken just prior to the October application showed the combustible to be still above the assumed safety limit of 60 per cent.

In this mine 4 lb. of rock dust per linear foot of gobbed entry was applied at the first dusting. In the second and third applications 2 lb. per linear foot was used.

The gasoline-driven machine used at New Castle is shown in another illustration. A mule is used to pull the machine and dust car. The dust is handled in 100-lb. bags and the machine hopper holds 500 lb. The 16-in. blower is driven by a 2½-hp. engine. Feeding of the dust into the blower discharge pipe is accomplished by a rotating cylinder 4 in. in diameter and 8 in. long. This cylinder contains four measuring pockets and its drive shaft is fitted with cone pulleys providing for three speeds.

The powdered dolomite used in Alabama mines is all fine enough to pass through a 40-mesh screen, and



A Gas Engine Drives It

This duster is used at New Castle. M. G. Launius, superintendent, is standing back of the machine. It is not self-propelling. A mule furnishes the tractive power for the machine and a dust car. The blower and feeder are driven by a 2½-hp. engine.

60 to 70 per cent is of 200-mesh. The price, f.o.b. the mill in bulk, is $3 per net ton. In 100-lb. bags the price is $4.75 per ton, with a rebate of $1.50 for the return of all of the bags in good condition. If put up in 50-lb. bags the price is $6.50 per ton with possible rebate of $3.

The cost of applying the dust varies widely. A fairly representative figure is that of a company which reports that its labor cost is $5.11 per ton of dust applied. The labor and material cost is $1.63 per linear foot of entry. This company uses a self-propelling machine which requires but one operator.

The future development of rock-dusting in Alabama will no doubt depend somewhat upon the action of leading companies such as the Tennessee Coal, Iron & Railroad Co., and the Woodward Iron Co. The Alabama Fuel & Iron Co., one of the large producers, recently decided to rock-dust all of its gassy mines and has bought a dusting machine and two carloads of dust with which to start.

Contrary to the usual order, rock-dusting in Alabama was not started by the larger companies but instead by the medium-tonnage producers. It is now spreading slowly but surely to include companies of all sizes.

COAL AGE INDEX

THE INDEXES *to COAL AGE are furnished free to all who ask for them. The index for the last half of 1925 is now ready for distribution. A copy can be had by addressing a postcard to the subscription department of COAL AGE.*



These Entries Are Dusted According to Alabama Practice

At the left is a view down the 14th straight in Sayre mine. Here roof and ribs are rock-dusted. The bottom is kept wet by daily sprinkling. Spillage of fine coal from end-gate cars is considerable. Frequent rock-dusting would be required if an effort were made to keep the combustible matter in the roadway dust down to the safety limit of 40 per cent. In the center is the rock-dusted main slope of the New Castle mine. Two miles of entry was dusted in September, 1924, when the practice was adopted. At the third dusting, in October, 1925, the work was carried to the face. About five miles of entry in the mine is now dusted. At the right is the second straight cross off the 14th left in Sayre mine. This entry was dusted for the third time about a month before the picture was taken. Rock-dusting with the light colored dust used in Alabama relieves a mine of much of its gloom.

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Viewpoints of Our Readers

Why Tuberculosis Rate Is Low in Missouri Mines

In the editorial on p. 150 of the Jan. 28 issue of *Coal Age*, the tuberculosis rates in the northern part of the state of Illinois are shown to be higher than in the state of Missouri though there is much rock brushing and bottom lifting in both of these low coal areas and the question is asked: "What gives the Missouri miner his low tuberculosis rate?" This question appears as a comparison with the northern Illinois condition. I believe the reasons to be as follows:

The Missouri coal mines are moist and there is a minimum of dust of either rock or coal in suspension.

The northern Illinois coal mines are dry to a much greater degree than the mines of Missouri, with the consequent increase in the quantity of rock and coal dust found suspended in the air of the mines.

You will probably remember that whereas Missouri has in the past been quite a coal-producing state, its record for explosions in the last twenty years has been low.

A. W. DICKINSON.

Rock Springs, Wyo.

Shooting More Important Than Shearing

Mr. Levin's article, in your Dec. 31 issue, on a new shearing machine again brings up the perennial question of center shearing as an aid in producing more lump coal.

At the 1924 summer meeting of the Rocky Mountain Coal Mining Institute I presented a paper on this subject (subsequently reproduced in *Coal Age)* in which was set forth the results of a number of tests made in Clear Creek Mines of the Utah Fuel Co., all of which indicated that shearing was not advantageous.

Up to that time my experience in cutting and shooting had covered only the usual blocky type coals; recently, however, a case where the coal was decidedly laminated came under my observation, and it seemed that shearing would be a great aid in securing more lump and in preventing over-shooting. No opportunity was afforded to try machine shearing, but some tests with the pick confirmed the view that shearing would result in considerable economies.

In the article referred to I pointed out certain inherent difficulties in shearing, among which was the relative instability of the cutter bar when putting in a vertical cut. The kerf in shearing is apt to overrun the expected width enough to upset all calculations as to the amount of slack to be produced. I was never able to reduce the percentage of slack by shearing. I was able to produce somewhat larger and better lump, but never to an extent that would make the process economical.

Mr. Levin also states that it is questionable if snubbing the face will yield results comparable with center shearing in increasing the percentage and grade of the lump. This is a surprising statement, though it probably will hold good in the rather rare cases of highly laminated coals. In the case of blocky coals, however, snubbing with proper depth of undercut and properly controlled shooting is by long odds the most promising method.

LONGER BARS NEEDED

In the matter of cutting practices, too, much dependence has been placed on the machinery builders and not enough on the technical staff of the mines. The determination of the proper length of cutter bar for a given mine is seldom given much attention, and often the changing of the length of the bar makes a surprising difference in the amount and grade of the lump. There is one certain length of bar for each seam or mine that will give maximum results. I am convinced that longer bars than are now customary will prove feasible and economical in most cases.

The crucial point in all programs for improved mining is blasting. In most districts the rule-of-thumb methods of practical miners prevail, in others overworked pit bosses and powder salesmen conspire to "improve the shooting," often with quite good results. The old theory of the independent miner furnishing his own supplies and being responsible for every detail of his "place" still hangs like a millstone around our necks, hampering progress at every turn. I know of one instance where the profit on the sale of powder to the miners through the company store prevented the adoption of a shooting system that promised large economies.

Wholly aside from its safety aspects, shooting looms large in any economic study of detailed mining expenses. That it, along with dozens of other serious matters, is concealed in a "contract mining rate" by no means minimizes its importance. In fact the big job just now is to segregate this contract mining rate into its detailed elements, study each one as we study hoisting or greasing pit cars, and apply the knowledge thus gained in reducing costs.

When we get down to brass tacks and apply scientific studies and methods to our blasting practices there will be less demand for additional "loose ends" to shoot to, and the extra machinery, power and labor necessary to produce them.

THOMAS A. STROUP.

Quincy, Ill.

Coal Truck Aids Oil Tank

We have just had a very unique experience with our unfriendly competitor, oil. Our Park Ridge yard had a hurry call from a man who used to be one of our customers, but this fall put in oil. Our ex-customer asked us to loan him a heavy tow-chain, as a big oil truck from Hackensack which was delivering oil fuel to his house was stuck about a mile from him. With a sincere desire to help him out, we sent the chain and our driver to see what could be done to assist, but the latter returned about half an hour later reporting that the oil truck was stuck so deep in the snow that he did not think it would get out that night.

It looks as though our customer will be in bad, and perhaps run the danger of freezing up the plumbing in his house.

This is just another one of the oil-burner hazards that people do not usually think about at the time of oil burner installations. Although this customer's oil burner is a very high-priced affair, and supposed to be one of the best that's made, it is no better to him than any other on the market at a particular crisis like the above, and he might rather and much more safely have stuck to good old coal, the safe and standard fuel.

H. B. BLAUVELT.

Hackensack, N. J.

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Book Reviews

Distress Follows Ruhr and Lorraine Separation

With civilized peoples, progress, comfort and wealth depend on the mineral resources of the soil as much probably as on the intelligence of the population. The Ruhr and Lorraine districts with their respective wealth of coal and iron will accordingly have much to do with the good fortune of the German and French nations by which they are owned. Coal is relatively useless without iron. No modern population can progress without the latter, and if it be not available, the coal is of but little industrial value. Today, owing to the war, the line between Germany and France is roughly that of the line separately the coal of the Ruhr from the iron of the Lorraine district. Unless, then the two can be brought together the deposits are of little value to either nation. The bitterness engendered by the war, therefore, acts to the detriment of both regions, creating a difficult international situation. This is the theme of the fifth volume of the series of books being prepared by the Institute of Economics on the problems of international industrial reconstruction.

Guy Greer, the author, appears to be an unbiased witness of the embarrassment caused by the divorce of the two regions, and in this book of 328 pages measuring 5x7½ in. he speculates on the effects that may be expected to follow. The title of the book is "The Ruhr-Lorraine Industrial Problem." The publisher is the Macmillan Co., 60 Fifth Ave., New York City, and the price, $2.50.

The World's Rival Fuels and How They Are Handled

A mine of information is the book on "Fuels and Their Combustion," by Robert T. Haslam and Robert P. Russell, professor and assistant professor of chemical engineering, respectively, at the Massachusetts Institute of Technology. Every part of the subject of fuels is covered, from their formation in the geologic ages, their composition and distribution, to their uses, whether burned in the raw state or converted into powder form, gas or into one of the many other forms by the carbonization process.

One is surprised to note, however, that low-temperature distillation is so casually treated. The Piron-Caracristi process is briefly described, as also the Greene-Laucks and Economic Carbonization processes, but the McEwen-Runge, McIntyre and amalgam processes are conspicuously absent. Something is said about Carbo-coal also, though the equipment and methods are not described. American low-temperature distillation methods in fact are given a scant page and a half—and indeed, Europe is treated to about an equal space. It should be said, however, that the general principles of low-temperature carbonization are well described.

ALL THE FUELS FOUND AND MADE

The book, which contains 809 pages, measuring 6x9 in., commences with a review of the fuel situation, then discusses the origin and composition of coal, the types of coal and their classification, spontaneous combustion and storage, coal resources and coal production, petroleum, other primary fuels, the chemistry of combustion reactions, combustion of elementary fuels, combustion calculations and the properties and combustion of gaseous fuels. So much for theory. This is followed by combustion of coal on grates, the operation of hand-fired furnaces, mechanical stokers and furnaces, powdered coal, the combustion of fuel oil, furnace efficiency and heat losses, producer gas, water gas and oil gas, and the carbonization of coal. At the end of the book are three lengthy appendices, one on the flow of liquids and gases, another on the flow of heat and a third on the rate of heating.

LOSSES IN FUEL USE

The book will be found a valuable addition to any engineer's library and especially to a coal man who is interested in the uses to which his coal is being put or may be put in the future. The book is published by the McGraw-Hill Book Co. and sells for $7.50.

In discussing the fuel situation it shows a chart credited to George Otis Smith, exhibiting how with waste—in mining, in transit and in combustion—15,700 lb. of coal may be used up to produce 1,000 hp.-hr., whereas with up-to-date conditions in all three parts of the operation 1,320 lb. would serve the purpose, the combustion and plant losses in the one case requiring 10,000 lb. and in the other only 1,200. Fortunately for the industry, no small portion of these economies already has been effected at most large plants.

The reviewer is influenced overmuch by a personal interest in pyrite, and may be excused for taking exception to the author's declaration that "The pyrites is mainly formed by the intrusion of rock." The rock is not intruded, and Thiessen's view, long advocated editorially by *Coal Age*, that in almost all plants there is sulphur enough to account for the sulphur in the coal would seem warrant for believing that the pyrites in coal is no extraneous material. It should be said, however, that after this strange and inexplicable remark the author quotes Thiessen as testifying to the presence of sulphur in the proteins entering into the coal mass, which "on putrefaction yield hydrogen sulphide which would precipitate the heavy metal sulphides."

R. DAWSON HALL.

Progression in Chemical Analysis

Analytical methods are receiving revision for purposes of attaining greater accuracy in the case of bodies the ultimate analysis of which we are seeking and to obtain more uniform results in the case of materials regarding which we desire only a proximate analysis. Hence a revision and fourth edition of Wilfred W. Scott's book on "Standard Methods of Chemical Analysis" will be welcomed. To the first volume twenty-seven and to the second twenty-six specialists contribute, so the work is not a one-man book but a well-ordered symposium of specialists.

Volume 1 deals with the elements and Volume 2 with materials such as paints, fats, waxes, oils, alloys, cement, gas, asphalts, tars, pitches, carbon steel, explosives, water, rubber, soap, slag and so forth. Coal is given 18 pp. and methods for analysis of fuels, 29. The actual text in the two volumes which are of equal size occupies 1,805 pages each 6x9 in. The books are published by D. Van Nostrand Co., 8 Warren St., New York City, the price being $12 for the two volumes.

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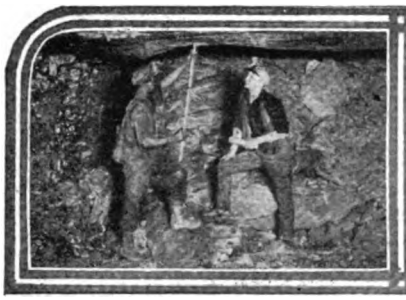
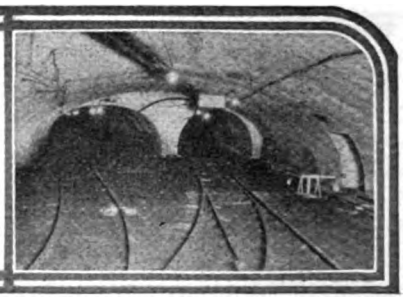


Underground Operation



How Track Grades Govern Locomotive Capacity

Resistance to haulage arising from grades, says James L. Libby in the *Employees' Magazine* of the Union Pacific Coal Co., is always 20 lb. per ton for each per cent of inclination, 1 per cent of 2,000 lb. being 20 lb. The track resistance for cars equipped with plain-bearing wheels is about 30 lb. per ton on level track, whereas those equipped with roller bearings have a resistance of about 20 lb. per ton. Most mine cars weigh approximately three times as much loaded as they do empty, and on this basis the most efficient grade is ¾ per cent in favor of the loads for trips with plain-bearing wheels and ⅓ per cent for those with roller-bearing wheels.

Angle of Car Repose

The angle of repose, or that grade on which cars are on the verge of movement by gravity and on which if moving they will not accelerate in speed, is 1.5 per cent for plain-bearing and 1 per cent for roller-bearing wheels. These grades are ideal for gravity switches when cars are well oiled, in proper repair and the tracks are kept clean, but if the cars are kicked in, a lighter grade is preferable. Starting friction is about 60 lb. per ton for plain-bearing and 35 lb. for roller-bearing wheels.

The rated drawbar pull of a locomotive depends upon the weight on the drivers. With cast-iron wheels this pull is ¼ of the weight, or 400 lb. per ton, whereas with steel-tired wheels it is ¼ the weight, or 500 lb.

On grades a locomotive cannot develop its rated drawbar pull because of the loss of effort or the power required to raise the machine itself up the grade, and thus 20 lb. per ton of locomotive weight must be subtracted, amounting to 5 per cent of the load for cast-iron wheels and 4 per cent for steel wheels.

Put in a simple way, using rolling friction at 30 lb. per ton for the load hauled and taking the drawbar pull at ¼ the weight, a locomotive will haul 13.3 times its own weight in tons on a level track, whereas on grades it will show the following results: Up a 1 per cent grade it will haul 7.6 times its own weight; up a 2 per cent grade 5.1 times its weight; up a 3 per cent grade 3.8 times its weight; up a 4 per cent grade 2.9 times its weight; up a 5 per cent grade it will haul 2.3 times its weight. Down a 1 per cent grade it will haul 42 times its weight; down a ½ per cent grade 20.5 times its weight, and down a ⅓ per cent grade it will haul 14.4 times its weight. A close approximation to the haulage capacity, in tons, of a motor working on a grade, as compared to the weight of the machine, may be found by the following rule, which is as nearly correct as the theoretical values, when condition of the track is taken into consideration.

Fifteen divided by the numerical per cent of adverse grade plus one, equals the number of times its own weight that a locomotive will haul up a given grade. Thus, for a one per cent grade we have: Load hauled = 15 ÷ (1 + 1) = 7½ times locomotive weight.

Up a 2 per cent grade we have 15 ÷ (2 + 1) = 5 times weight of locomotive.
Up a 3 per cent grade 15 ÷ (3 + 1) = 3¾ times weight of locomotive.
Up a 4 per cent grade 15 ÷ (4 + 1) = 3 times the weight of the locomotive.
Up a 5 per cent grade 15 ÷ (5 + 1) = 2½ times the weight of the locomotive.

Inasmuch as a locomotive will haul 13.3 times its weight on a level track, 50 per cent additional on a downgrade of ½ per cent and 200 per cent in excess of a level haul on a 1 per cent grade, the necessity for the proper grading of main haulageways is apparent.

Did Powhatan Blast Start In Mine or Tipple?

In the explosion which took place on Feb. 15 in the mine of the Powhatan Mining Co., Powhatan, Ohio, killing one man and burning twenty-two others, several seriously, coal dust played a major role. The explosion spent its greatest force in the shaft bottom and hoisting shaft, from which it extended to the tipple, ripping off much of the sheathing from this structure without damaging the equipment to any extent. This mine was rock dusted—to what extent has not been ascertained—and open lights were used. The coal is emptied from the mine cars by a rotary dump on the bottom and hoisted by skips.

Chief Inspector Jerome Watson, of the Ohio Department of Mines, in an interview with the *Wheeling Daily News*, as reported in the issue of Feb. 16 of that paper said:

"The findings seem to indicate that a short circuit in the tipple set off the blast which swept down the shaft. Everything in the shaft and entry indicate that the trend of the force was downward. Had the explosion come up unquestionably more damage would have been done to the tipple.

Open-Air Explosion

"The small damage to the tipple was the result of an open explosion. Had the dust been more closely confined there the force would have been as great as in the mine and a complete wreck would have been the result. This is another point in favor of the theory that the blast started there and went down, thus leaving the tipple before serious damage was done.

"When the blast reached the bottom of the shaft it was at its height and wrecked the weighroom and burned the men who were within the area it swept over. After passing down the entry a short distance the blast encountered rock dust and moisture. Both these elements tended to weaken the force and it spent itself after running a few hundred feet."

Some have wondered why, after examining the mine following the explosion, Mr. Watson chose to fix the location of the source of ignition in the tipple rather than in the shaft bottom, in the absence of unquestionable evidence backing his belief.

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Several years ago the U. S. Bureau of Mines conducted a series of tests at its experimental mine at Bruceton, Pa., in an attempt to propagate an explosion of coal dust inby from a point 150 to 200 ft. from the mouth of the drift by means of a blownout shot. While the blownout shot in these tests in some cases ignited the coal dust outby of the point of ignition, in no instance did propagation extend inby. In view of this fact it is held by some that it is unreasonable to suppose that an explosion of dust in the open, where no propelling pressure might be built up, would extend down the shaft and propagate itself for several hundred feet along the shaft bottom.

Safety Kits Save Lives At Overton Disaster

In the explosion which took place in the Overton No. 2 mine of the Alabama Fuel & Iron Co., near Birmingham, Ala., Dec. 10, 1925, costing the lives of sixty-one men, no less than twenty men were saved from the toll of afterdamp by the use of self-rescuers, according to George A. Anderson, district inspector for the Associated Companies. On arriving at the mine, Mr. Anderson gathered up all the self-rescuers he could handle. On his way to the Fifth Level he met several men traveling to the surface who were equipped with self-rescuers. Wearing one of these masks himself, he explored Fifth Right entry in the upset airway and there found three men, to each of whom he gave a self-rescuer.

The Alabama Fuel & Iron Co. has a large supply of self-rescuers in the office for such an emergency. Furthermore, many of the miners were equipped with the mask by an optional plan whereby a man paid for the equipment in installments, one being deducted from each pay.

One of the victims found by the rescuers had the mouthpiece of his self-rescuer in his mouth, but had failed to attach the clip to his nose in time to save himself from carbon-monoxide poisoning. One man was found overcome with his head over his bucket, supposedly having been in the act of taking a drink before putting on his self-rescuer. One of the men saved by the rescue party said he had left his self-rescuer at home in a trunk. Several other men stated they had left their masks at home.

Fireboss Lowery of Overton No. 2, wearing a Gibbs apparatus went into the mine immediately after the explosion, and in the Fifth Right heading found six men who had not ventured out because of the presence of afterdamp outby the point where they were located. Two men had attempted escape and were killed, but the six men had decided to wait for help. Not having self-rescuers with him, Lowery went out and got six of them for the live men whom he had found. Protected with this equipment they made their way to the surface without assistance and in safety.

Fear Finds Creosoted Ties Lower Track Costs

T. G. Fear, general superintendent of the Inland Collieries Co., is enthusiastic over the results obtained from the use of creosoted mine ties in one section of Indianolo mine, Indianola, Pa. About three years ago he had occasion to retrack the main haul of this section and then decided to use creosoted ties. These are protected from the wearing effect of rail movement by pressed-steel tie plates. The ties purchased were 5x7 in. and 5½ ft. long, yellow pine impregnated with 6 lb. of creosote per cu.ft. by the pressure-vacuum process. A sawn cross-section of one of these ties selected at random, disclosed a thorough impregnation of the preservative to the heart of the wood.

Mr. Fear's comments on this matter are worthy of careful consideration: The first cost of the treated ties is roughly 2½ times that of untreated ties of the same grade, but he estimates that they will last three times as long. The saving in this regard is slight; but when labor, uninterrupted operation and freedom from costly derailments with their accident hazards, are considered he is confident that a large saving is made. Much labor is involved whenever the ties have to be replaced. Furthermore, it is a difficult matter to restore the ballast and align the rails to their original state after new ties are inserted, particularly as the job is done under pressure on Sundays during holidays, at night and during off-shifts.

"Slab System" Suggestion Proves Valuable

Lew Roach, manager of the mines of the Elkhorn Piney Coal Mining Co. in eastern Kentucky and southern West Virginia, reports that the article on the "Slab System," by George E. Harkess, which appeared on page 822 of the Dec. 10 issue of *Coal Age*, supplied a suggestion which is proving of considerable value in Mine No. 1 at Weeksbury, Ky.

This mine is worked on the room-and-pillar system with rooms 24 ft. wide. The average height of the coal is approximately 43 in., and, generally speaking, the roof is fairly good, being sandstone in a large portion of the mine. The slabbing system of developing the 24-ft. rooms was first tried at Weeksbury about the middle of December and proved a success from the start. It has resulted in increased production per man, descreased car-gathering cost, increased percentage of lump and decreased explosives cost.

Besides the advantage of presenting loose ends for shooting down much of the coal, the system has the distinct advantage of making it possible to spot and load two cars at a time. This decreases the car-handling cost and cuts down delays. Mr. Roach reports that the loaders and mining-machine operators are enthusiastic over the system, and that it results in a gain of approximately 20 per cent in production per loader.



Self Rescuer in Service

The device, which saved lives in Overton, Ala., is a small canister containing a chemical which absorbs carbon monoxide. Attached to the canister are a mouthpiece and a nose clip. The total weight is less than 1 lb. At the right is shown a miner carrying the self rescuer, sealed in a tin can, on his belt. At the left, he has it in position for use.

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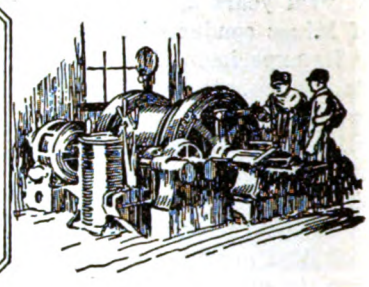
Practical Pointers For Electrical And Mechanical Men



Fan Speed Is Controlled From Inside of the Mine

When variable-speed motors are attached to mine fans the reason, usually, is either to effect a power saving by supplying less air at times when there are few or no men in the mine, or to provide for an excess of air during periods of rapid development. On a new fan at the Nuttallburg (W. Va.) mine of the Fordson Coal Co., a motor of the variable-speed type has been installed primarily to compensate for changes in the temperature of the outside air. This machine is located at the top of a recently-completed rock slope and is at an elevation approximately 350 ft. higher than the main portal of the mine, as is shown in the accompanying sketch. The main opening is a drift in the side of New River gorge, and the fan is located back from the stream on what might be termed the plateau or table-land of the region.

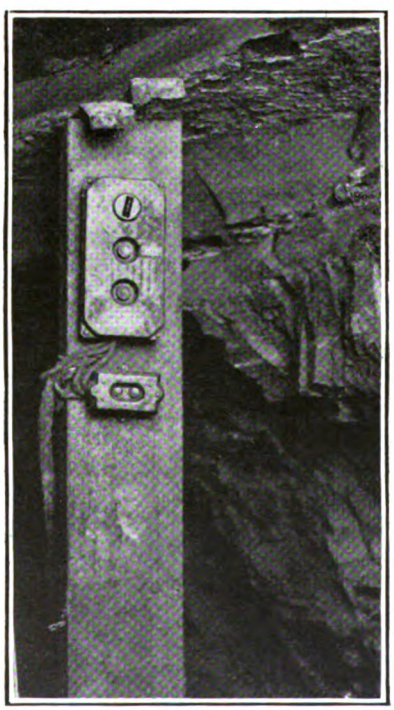
With the large difference in elevation between the two openings above noted temperature changes in the atmosphere must be counteracted with variations in fan speed if the quantity of air circulating through the mine is to be kept even approximately constant. On days when extreme temperatures prevail sufficient natural ventilation is obtained without the fan.

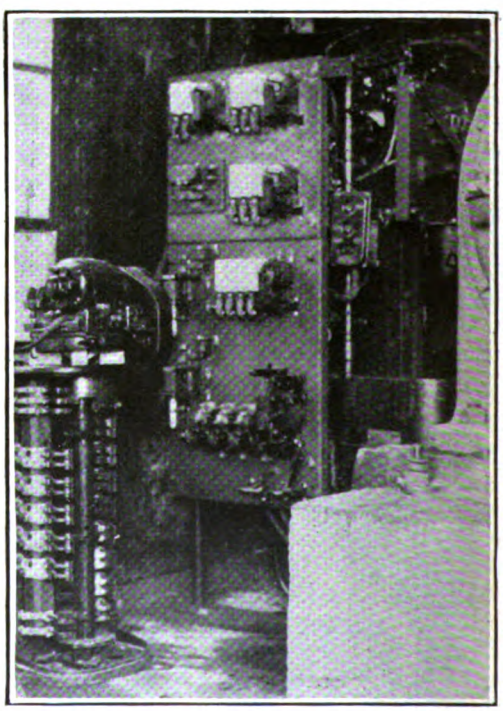
In order to eliminate the need for a man in constant attendance on the fan and to make it convenient for the mine foreman to start and stop the equipment or to alter its speed, a remotely-controlled automatic starter with motor-driven secondary controller was installed. A control cable is carried from the fan, down the slope, and to a push-button station located at a central point in the mine. This station has four push buttons and an indicating iight. The buttons and an indicating light, the latter are labelled "Start," "Stop," whenever the drum controller at the fan is between any two of the running points.

If the foreman finds that there is insufficient air circulating in the mine and therefore decides to run the fan "one notch" faster, he pushes the "fast" button and holds it until the lamp first lights up and then goes out whereupon he releases it immediately. The controller is then on the next-higher running notch.

In case the foreman wants to de-







At Nuttallburg, the Fan Is Controlled from Within Mine to Keep a Constant Current Despite Variable Natural Ventilation Conditions

On the left is the muddy, steep, mountain road, a "good" part of two miles long, that leads from the tipple to the fan. This indicates why full-automatic control was used and provision made for changing the fan speed from inside the mine. In the center is the control station within the mine. From this point, the fan which is some 2,000 ft. distant and 350 ft. high in elevation, can be started, stopped or changed to any controller point. At the top of the upper box is a lens behind which is a lamp indicating the controller positions. On the right the edge of the 75-hp. slip-ring motor can be seen. To the left of the illustration is the automatic starter beside which can be seen the motor-driven drum controller which changes the fan speed.

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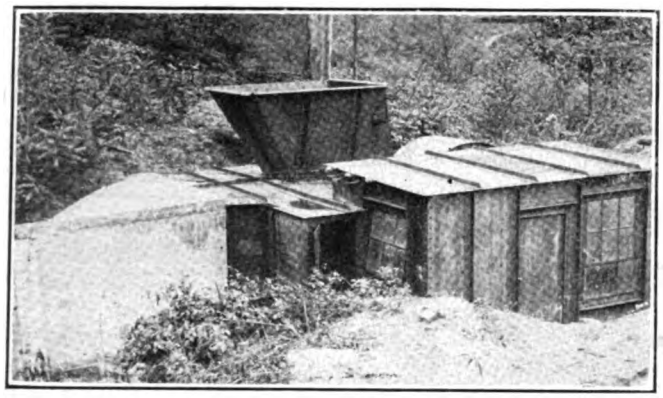
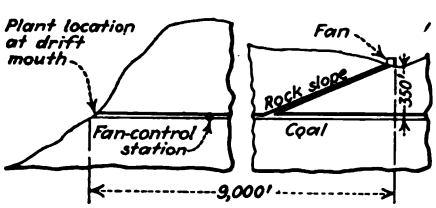


Steel-Cased Fan

The small steel building adjoining the fan housing contains the 75-hp. motor and complete control equipment. A short silent-chain drive makes the arrangement compact. The motor house is locked and visited about once a month.

termine on which point the fan is operating, he holds the "Slow" button depressed until the lamp ceases to flicker on and off. This indicates that the controller has moved to the slowest point. Having counted the number of times that the lamp lighted up during this process he knows on what point the fan was operating. He can then push the "Fast" button and bring the speed back up the desired number of points.

Electrically there is nothing complicated about the arrangement. The 75-hp. 2,300-volt motor is of the wound-rotor type, and the automatic starter is a piece of standard equipment provided with an additional contactor for cutting out the secondary controller at starting. This provides for starting the motor with full secondary resistance in circuit, regardless of the point at which the drum controller is set. The fractional horsepower motor which drives the drum-controller cylinder is wound for 220-volts three-phase, this current being supplied by small transformers. One of these latter also supplies single-phase current for operating the contactors of the automatic starter and for the signal lamp at the push-button station.



Sketch Showing Fan Location

The coal bed outcrops in the somewhat steep bank of the river while the fan is installed almost two miles inland on the plateau. In extreme weather natural ventilation furnishes sufficient air to the mine workings but the fan must supply any dearth when the temperatures of outside air and mine are nearly equal.

The fan is a 5x3-ft. machine of the multi-bladed type fitted with a complete steel casing and motor-house. Silent-chain drive is used. This permits of an extremely compact installation; the motor, automatic starter, motor-driven drum controller, secondary resistance and control transformers all being housed in a 6x12-ft. building.

As the fan is in an out-of-the-way place and is inspected only about once a month, precautions have been taken to protect the bearings in case of heating. All fan and motor bearings are fitted with thermostats. The electrical control equipment, although out of the ordinary, is but a combination of various pieces of standard equipment.

"Desmoking" a Smoky Coal For Smithing Purposes

Any good smithing fuel should contain only small quantities of sulphur and volatile matter. Sulphur tends to harden the metal heated and make it brittle and a high-volatile content makes the fire dirty and gummy, interfering with such processes as welding, simultaneously smoking up the whole shop. Some coal companies have long purchased smithing coal from other regions, but several southern Illinois operators "devolatilize" the product of their own mines before using it in their shop forges and furnaces. In this form the fuel is practically a coke.

Another type of coking furnace is that shown in Fig. 1 of the accompanying illustrations, this particular furnace being used at the No. 8 mine of the Old Ben Coal Corp., at West Frankfort. This consists of four walls of red brick, lined with firebrick above the grate or what would be the grate of an ordinary furnace, but which in this case is really a floor. The top is partially closed by means of firebrick blocks supported by old rails extending between the side walls. The outside dimensions of this furnace are roughly 6x5 ft. and the height is approximately 6 ft. A twyer pipe supplied with suitable draft openings extends from rear to front.

Still another device intended for this purpose is shown in Fig. 2, this photo being taken at the Valier mine of the Valier Coal Co. The sides and rear end of this furnace are built up of old rails to a height of about 3 ft. The front is left open and the bottom slanted from either side to the twyer pipe in the center.

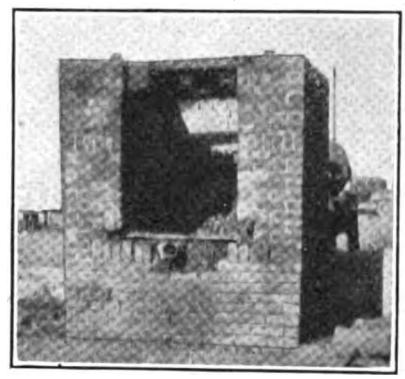


Fig. 1—Old Ben Coking Furnace

This furnace much resembles a blacksmith's forge with side and end walls. From 200 to 400 lb. of coal may be coked in it per charge, the length of time necessary depending almost entirely on the quantity of coal treated.

All these furnaces are operated in a similar manner. A fire of paper, shavings and kindlings is first built over the twyer above which small coal is piled. If the charge is a large one, its top is covered with fine coal or even dirt. Draft, which is supplied by a fan, as a rule located within the shop building, is turned on when the fire is first lighted. This blast is continued until the entire mass burns clear and red and practically without smoke. The draft is shut off and the contents of the furnace thoroughly quenched with water.

The result is a small sized coke which, although it may be somewhat discolored, forms an excellent smithing fuel that may be used in the shop forges and furnaces with good results.

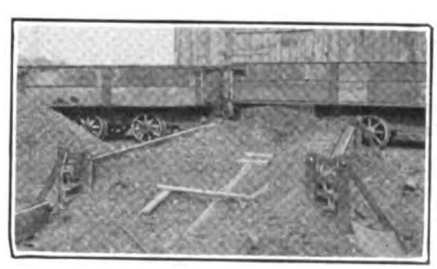


Fig. 2—Coking Furnace at Valier

Both sides and the rear end are made up of old rails. This furnace is of such size as to take several tons per charge, and the time necessary for coking may be several hours.

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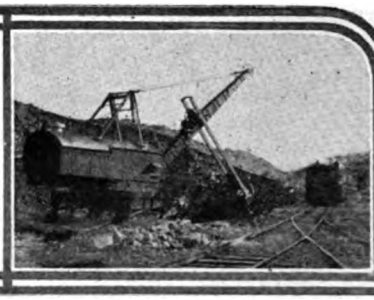
News Of the Industry



Seek Plan to Settle Labor Problems In Soft Coal Industry; Congress Welcomes Shift of Responsibility

By Paul Wooton
Washington Correspondent of *Coal Age*

The bituminous coal industry, not to be outdone by the railroads and the anthracite producers, is considering what machinery it can set up to handle labor questions. Many operators think action of this sort is the best guarantee against having some half-baked plan foisted upon the industry by Congress.

Plans to this end have not taken definite form and the difficulties are such that they probably will move slowly. It is believed that Congress would welcome some assurance from the soft-coal producers that they will undertake to work out some plan of arbitration. When efforts were being made to draw the federal government into the anthracite strike some of the House leaders promised to consider coal legislation after the strike, when the situation would not be surcharged with emotion and when an opportunity would exist to consider the problem deliberately.

The real truth is that these leaders now are looking for a way out of their commitment. This loophole would be furnished were they to be able to point to active efforts in the bituminous-coal industry looking toward arbitration machinery. On the other hand they feel that they will have to go through with the program if the strike remains the only recourse in case of dispute.

Some consideration has been given the President's suggestion that the recommendations of the Harding Coal Commission be followed, but some difficulty has been found "in putting these pious proposals into legislative form," as one of those interested put it.

Congress Wary of Coal

Moreover, Congress wants to adjourn. There is a campaign coming on and the members are anxious to be free to participate. The legislative program already is longer than they wish. There are enough worries and uncertainties without adding such a controverted matter as coal legislation, so that any development which would make it unnecessary would be greeted with three cheers on both sides of the Capitol.

As has happened in every previous instance when coal legislation has been initiated, investigation reveals a fundamental obstacle in the form of a constitutional question. The attitude of the courts in the Federal Trade Commission cases has thrown in doubt the whole question of compulsory returns of facts. If fact-finding were eliminated from the principal pending bills there would not be much left.

There is a disposition on the part of many members of Congress, and apparently on the part of the administration, to take at its face value the arbitration feature of the anthracite settlement. The belief of some observers that both sides will nominate agents, rather than arbitrators, is by no means universally held. In the paragraph of the settlement referring to arbitration it says "the Board shall be obligated within ninety days after appointment to arrive at a decision on all issues in controversy." The two arbitrators are obligated under the contract to arrive at a decision.

Conflict of Interpretations

The provision that these two "may enlarge the board to an odd number" has been the cause of some confusion. It does not say they shall add an odd member. If the two are obligated under the contract to agree, it seems plain, the permission to add a third member simply is a means to help them carry out the obligation of the contract, which is to agree. Apparently this clause is just as mandatory as that referring to "co-operation and efficiency." President Lewis, in speaking of that clause, declares that "it is a mandate just as strong as the English language can state it."

Regardless of the actual binding force of the arbitral feature of the agreement, Congress has been impressed sufficiently with the promise that it will work out to allay demand for the setting up of arbitration machinery by federal edict.

Advance View of Safety Film

An advance showing of the master film of the picture being prepared in co-operation with the Peabody Coal Co., Chicago, showing safety devices employed in coal mines, was made in Washington March 4 before members of the staff of the Bureau of Mines. The picture is in three reels and is one of the most pretentious thus far undertaken by the Bureau.

Lake Cargo Cases Reopened

The Lake Cargo Coal cases, in which a decision was handed down last July, have been reopened by the Interstate Commerce Commission. An order made public last week gives the parties to the case until March 22 to advise the Commission whether they desire to submit additional evidence. The cases were reopened upon the petitions of the original complainants, backed by the Pittsburgh Chamber of Commerce and the State of Pennsylvania.

At issue is the adjustment of rates from Ohio and western Pennsylvania to the lower lake ports as compared with rates from southern West Virginia and eastern Kentucky. The tentative opinion prepared by the examiners who heard the evidence recommended decreases in the rates from the two states first named. The opinion of the Commission, however, declined to disturb the existing adjustment and dismissed the complaints.

Urges State Fuel Commission In New York

Assemblyman Louis A. Cuvillier, Democrat, of New York, basing the necessity therefor upon action by the State Chamber of Commerce calling for a "fact finding" investigation of prices charged for fuel, introduced in the Assembly at Albany March 8 a bill creating a state fuel commission as a permanent agency of the state government and appropriating $25,000 to enable it to carry out its proposed work.

The commission would consist of three members to be appointed by the Governor and to serve without pay except for their necessary expenses. The commission would have power to make a general investigation of the fuel industry and to fix the prices to be charged by the wholesaler and retailer.

Many of the provisions of the bill are adapted from the State Fuel Commission law enacted under Governor Miller, except that the Cuvillier bill contains no provision allowing the state to go into the business of buying and selling coal, and that it would constitute a permanent commission and not be subject to dissolution on the proclamation of the Governor as was the Miller law.

The bill was referred to Committee on Ways and Means.

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Stocks of Substitutes At New York City Delay Movement of Anthracite

New York consumers were urged to use more bituminous coal or coke in an appeal issued March 3 by the New York State Coal Commission following a conference among representatives of the railroads, coal dealers and public organizations held in New York City. The statement pointed out that there is a congestion on the railroads because of an oversupply of soft coal for which there is a very limited demand. The Department of Health was asked to refrain from strict enforcement of the smoke ordinance until after April 1, in order to encourage the use of bituminous coal.

After the congested condition of the terminals had been pointed out at a meeting of the Atlantic States Shippers' Advisory Board earlier in the day, the Coal Commission issued its statement calling on the public to use soft coal or coke until adequate supplies of anthracite can be obtained. In line with the petition of the Advisory Board the commission in its statement expressd the hope that "the authorities will cooperate in regard to the enforcement of the smoke ordinance."

Figures reported by the American Railway Association and read in the meeting of the Atlantic States Shippers' Advisory Board showed that on March 3 there were 8,498 cars of coal, totaling more than 450,000 tons, in the New York tidewater terminals, while an additional 3,945 cars, containing about 200,000 tons, were being held at points outside the tidewater terminals awaiting orders for movement and the relief of congestion already existing. Of this total of 12,443 cars, only 1,887 contained anthracite; the remainder being bituminous coal, together with something over 1,000 cars of coke.

Congestion Is Widespread

A. G. Warren, who represented E. J. Cleave, district manager of the American Railway Association, at the meeting, explained that cars being held outside of the terminals because of congested conditions extended as far west as Harrisburg and as far south as the Maryland division of the Pennsylvania R.R.

In its statement the advisory board declared that "the supply of anthracite will not be sufficient to satisfy the full demands of the New York district before May 15," and warned that "restricted deliveries of bituminous coal on hand and in transit will ultimately affect the supply of cars for the movement of anthracite in the district."

George J. Eltz, member of the New York State Coal Commission and of the Coal Merchants' Association, in summing up the situation, said there is an oversupply of soft coal and coke on hand which must be used in order to free the transit and terminal facilities for the handling of anthracite.

"Whether the public wants to continue the use of soft coal or no," he declared, "it must do so or do without coal. However, it may be assured that there will be no increase in the price of anthracite even though the demand is far greater than the supply."

The statement of the Coal Commission was as follows:

"Sufficient anthracite is not yet reaching the New York market to supply the demand. Owing to congestion at the railroad terminals and to the backing up of cars filled with substitutes, as reported by the American Railway Association, it will be several weeks before sufficient anthracite can be supplied.

"Under these considerations, this commission urges consumers to use low volatile mine-run soft coal or coke when anthracite cannot be obtained."

Dr. Louis I. Harris, Health Commissioner of New York City, said last Thursday that by March 10 he would have reports on the coal situation from the State Coal Commission, the dealers, the railroads and his own investigators, when it would be decided when the complete elimination of smoke would be required.

"This does not mean that I am enthusiastic about the present state of the atmosphere, but it is reasonably good," he said.



Hugh Shirkie

Who will succeed the late Col. D. B. Wentz as president of the American Mining Congress. Mr. Shirkie was elected by the directorate at a special meeting called in Chicago, March 8. He is a well-known operator, being president of the Shirkie Coal Co., Terre Haute, Ind.

Senate Defers Naming Hunt To Trade Commission

After nearly two hours' discussion of the reappointment of Charles W. Hunt, of Iowa, to be a member of the Federal Trade Commission, the Senate in executive session on March 5 deferred action until a later date.

The fight against reappointment was led by Senator King, Democrat, Utah, who charged that Hunt was a reactionary and was not enforcing the law. The appointee was defended by Chairman Cummins of the Senate Judiciary Committee. Another attempt probably will be made this week to get action on the nomination, with indications that it will be confirmed when it comes to a vote.

Chamber Backs Downing Bill; Hits Retail Prices

The Chamber of Commerce of the State of New York has indorsed the Downing bill to make the State Public Service Commission a coal fact-finding agency. This action was taken by the Chamber at its regular monthly meeting at New York City last Thursday, following the presentation of a report on coal prices made by the Chamber's committee on public service in the metropolitan district. The organization did not go on record, however, until after Major Elihu Church, local fuel administrator during the 1922 crisis, had attacked the report and asked that it be referred back to the committee for further consideration.

The report, based upon a survey of prices charged by the cellar trade and peddlers for coal in bag lots, exonerated the cellar dealers of charging exorbitant profits although these dealers were charging 54 to 106 per cent over the prices they claimed to be paying for the coal at the retail pockets. "Profiteering is and has been going on," asserted the report and the large retailers must bear some of the onus of oppressive prices. At the same time, the report admitted that the co-operation of some retailers had held down bag prices in certain sections of the city. In offering its recommendations for the future the committee said:

> Your committee does not recommend at this time the establishment of a governmental body with regulatory and judicial power over coal. In fact, this Chamber is strongly opposed to federal regulation in actions taken in March, 1921, and December, 1925. What it does recommend is the establishment in the State of New York, as soon as possible, of a fact-finding agency which shall have the power to subpoena witnesses under oath, and thus obtain exact information upon actual costs of coal, upon profits obtained and upon what profit is reasonable. This fact-finding agency should begin its investigations at an early date that it may be ready and fully advised for action in the next fuel emergency. Generally the mere prospect of publicity of the fact that a seller has been found to be profiteering is sufficient to stop such practice.

Retailers Criticize Report

J. Vipond Davies presented the report and moved its adoption. The report, he said, had been criticized by the retail interests. The Chamber was asked by the New York State Retail Coal Merchants' Association to give the retail trade a hearing before taking final action, but this request was ignored by the Chamber.

Major Church, in moving that the report be referred back to the committee, condemned the committee for its failure to consult with the retailers and for comparing, without identifying, prices on screened bituminous with contract figures on mine-run coal. He also wanted to know whether Frederick H. Ecker, president of the Chamber and member of Governor Smith's coal advisory commission, had ever sought information through that commission.

Condemning the fact-finding proposal as useless for emergency operation, Major Church remarked that there were small boys who liked to collect "birds' eggs and lead pencils without knowing just why. When these boys grow up, they want to collect facts."

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Fayette-Greene Operators Canvass Coal Industry's Needs in Pennsylvania

Pennsylvania's fight for more favorable freight rates on coal and recognition by membership on federal agencies will continue unswervingly until its aim has been accomplished, U. S. Senator David A. Reed told 322 coal and coke operators representing 92 per cent of the bituminous tonnage of the western Pennsylvania field at the third annual banquet of the Fayette-Greene Coal Producers Association at the White Swan Hotel, Uniontown, Pa., March 6.

Operators, intelligently organized and directed, must get into the fight, said Charles O'Neill, secretary-treasurer of the Central Pennsylvania Coal Producers Association. William H. Donner, president of the Donner Steel Co., gave instances of alleged rate discrimination against Pennsylvania coal. Many of these rates, he said, had been arbitrarily made during the war while the railroads were under federal control.

Delbert H. Pape, assistant executive secretary of the National Coal Association, spoke on the importance of research and statistics to the bituminous coal industry.

State to "Fight for Rights"

Senator Reed, in outlining the campaign now being waged in behalf of Pennsylvania's coal industry, showed how the state has been ignored in representation on important governmental agencies. "We know why so many of our mines are shut down, so many of our blast furnaces cold, so many of our train crews idle," said he, "and we intend not only to demand our rights but to fight for them, and this means not only to demand that Pennsylvania have a fair share in these appointments but to fight all appointments from other states until Pennsylvania's just claims are recognized."

Mr. O'Neill presented interesting data on tonnage changes in coal. He referred in detail to rate cases now pending, including the all-rail rate case to New England states from West Virginia, and the lake cargo and tidewater cases. "The wage question is being solved by the operators of Pennslyvania," he declared. "Reductions in wage levels are gradually being made throughout the state and accepted by the miners, despite opposition to this sound policy by the United Mine Workers. There has been no disposition on the part of of the railroads, however, to meet the necessity of the situation by readjustment of their freight rates on coal. The rates from Pennsylvania in all directions are in every instance on a much higher level per ton mile than the rates from the southern fields that are competitive with Pennsylvania and are rapidly taking their markets."

"It is true of coal in only a slightly less degree than it is of oil," said Mr. Pape, "that the burning of raw coal under a boiler involves the waste of certain constituent elements of the coal that could be much more profitably utilized for other purposes. Chemical research into methods of carbonizing coal and into the utilization of the by-products obtained during the process is a field which has as yet hardly been scratched and whose possibilities are almost immeasurable.

"In support of this statement let me quote a paragraph from a paper entitled 'A Critical Analysis of the Future Demand for Gasoline and Lubricating Oils for Automotive Uses,' read before a meeting of the Society of Automotive Engineers by its president, H. L. Horning. The quotation is as follows:

"' . . . coal is the most promising of all our sources of raw material. By this I do not expect the well-known aromatics derived in the usual distillation to be the source of coal fuels, but on the contrary, I expect developments in chemistry within the next decade to show us how to convert coal directly into motor fuels as primary products and with valuable byproducts. There probably exist today suppressed, known, or awaiting development, facts which constitute the very basis for this great step. I am absolutely certain that organic chemistry could solve this in a little time. When these changes will come about depends on economic causes and not for want of scientific ability. Economic changes will always lag behind scientific achievement.'

"While the development of more economical methods of burning coal may in the first instance tend to contract rather than expand its market and benefit the industry only after the reduction in the cost of coal as fuel has enabled it to replace oil and electricity, the discovery of new byproducts or of new methods of utilizing the byproducts already known may bring with it an expansion in the demand for coal of very large proportions. I need only refer to the effect of the by no means impossible development of satisfactory fuel for internal combustion engines from the distillation of coal."

Officials indicated that definite action would be taken within a week to launch an aggressive program to obtain relief for the region from the conditions attacked.

W. Russell Carr, local attorney, was toastmaster. G. Carl Areford of Uniontown is president of the Fayette-Greene Coal Producers Association; W. W. Parshall, vice-president; T. M. Whyel, treasurer, and J. Fred Shean, secretary.

British Dole in 7 Years Costs £240,000,000

Great Britain's out of work "dole," which is credited in many quarters with saving the nation from industrial disaster and is bitterly assailed by others as a soporific influence, has cost the government nearly £240,000,000 since it was first instituted, in January, 1919.

Sir Arthur Steel-Maitland, British Minister of Labor, stated in the House of Commons March 3 that the payments in unemployment insurance by the government totaled approximately £239,830,000. He added that 855,000 persons were "on the dole" for the week ended Feb. 20.

Believe 28 Dead in Explosion In Eccles (W. Va.) Mine

Twenty-eight miners were entombed and are believed to have perished as the result of explosions early in the evening of March 8 in mines Nos. 5 and 6 of the Crab Orchard Improvement Co., near Eccles, W. Va. Thirty-seven men were rescued and one body was recovered after the disaster, but officials of the company, in checking up at 1 a.m. following the blasts, held out little hope for the twenty-eight men still in the mine.

The first explosion, according to mine officials, occurred in No. 5, where twenty-nine men were working, and spread to No. 6, imprisoning thirty-seven others. Rescue crews went into No. 6 soon after the blast occurred, and brought out the thirty-seven survivors. Two of this crew are missing. They said this mine was little affected by the explosion. No. 5 mine was filled with poisonous gases and the rescue men could not go down the shaft. The body of the one man lost was found in a lateral connecting the mines.

Many of those rescued were burned and gassed. The shaft of No. 5 was wrecked by the blast, closing this entry to the rescuers, who were working through No. 6 in the effort to learn the fate of the entombed men. These men formed the night shift of No. 5.

The explosion occurred in the same mine that was wrecked by a gas explosion in April, 1914, with 186 fatalities. At that time it was an open light that ignited the coal gas and caused the disaster. No explanation of Monday's explosion has been received.

The Crab Orchard Improvement Co., which operates the mine in which the explosion occurred, is a subsidiary of the Stonega Coke & Coal Co. of Big Stone Gap, Va.

Mine No. 5 lies at the bottom of a 520-ft. shaft and is underneath Mine No. 6, which has a depth of 250 ft. A connecting shaft joins the two. No. 6 is located on the Sewell coal seam, while No. 5 is on the Beckley seam.

Open Coal Statistics Bureau In Huntington

The Bureau of Coal Statistics of the high-volatile fields of southern West Virginia, eastern Kentucky and Virginia was opened Feb. 25 in the First Huntington National Bank Building, Huntington, W. Va. F. C. Respess, formerly of Williamson, is secretary of the bureau, which will compile reports of past sales in the high-volatile fields.

The bureau is sponsored by several coal associations and directed by officers of these associations. Bureau officers are: William L. Cummins, of Red Jacket; D. H. Morton, president of the Kanawha Coal Operators' Association, of Charleston; S. W. Patterson, of Huntington; J. S. McKeever, of the Kanawha association; G. W. Bausewine, Jr., secretary of the Williamson association, and D. C. Kennedy, secretary of the Kanawha association.

At present reports are being received from the Kanawha and Williamson fields, but Logan, northeastern Kentucky and the Clinchfield valley will be covered later.

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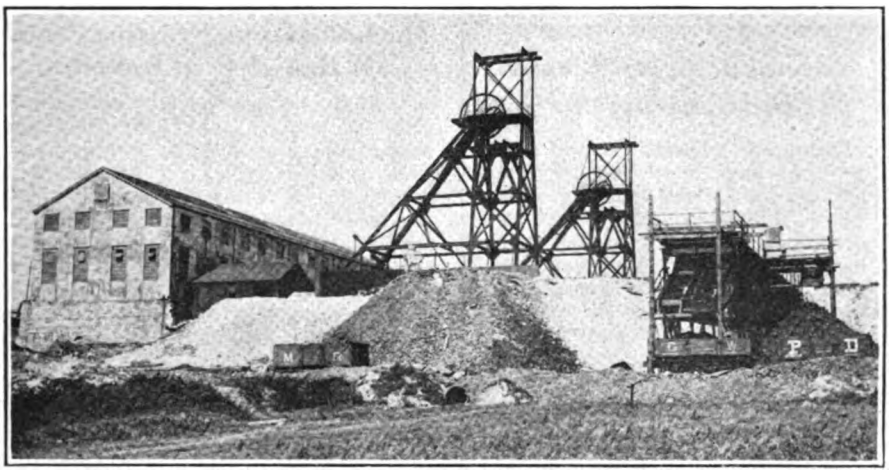

New Chislet Colliery at Westbere Court, Kent, England

This mine, four miles from Herne Bay, is one of five in Kent, England, and therefore not far distant from London. The British Government proposes to guarantee the principal and interest on a loan of $10,000,000 for the development of the Kentish fields, to be spent by Messrs. Pearson & Dorman Long, Ltd.

Ask Federal Aid for Coal Industry in Canada

Protection to the coal mining industry of Canada such as the United States Government grants American coal interests, is asked of the Dominion Government, in a resolution adopted March 3 at the opening session of the 28th annual general meeting of the Canadian Institute of Mining and Metallurgy. The meeting lasted three days at the Windsor Hotel, Montreal.

A request for government protection of Canadian coal interests against the dumping of American coals originally was put in the form of a resolution adopted at the western meeting of the association held at Winnipeg last November.

W. LeB. Ross, of Winnipeg, declared that the interests of not only the west but the east were involved in this matter, that coal being produced in the western provinces needed protection against the dumping of coal in their parts by United States interests, as well as in the Maritimes.

Ford Tipple at Stone, Ky., Destroyed by Fire

Fire of undetermined origin completely destroyed the coal tipple of the No. 5 operation of the Fordson Coal Co., located near Stone, Ky., at 10:30 p.m. March 5, causing damage estimated at $50,000. Until checked by a volunteer bucket brigade the flames threatened to spread into homes of miners.

The fire, which was confined to the tipple by the volunteer firemen, threw 225 miners temporarily out of employment. Officials of the coal company announced, however, that the workmen would be given employment in other operations of the company until the tipple of the No. 5 mine can be replaced. All equipment in the tipple was destroyed.

Plans have already been discussed by mine officials for the replacement of the tipple with a modern one of entire steel construction, and it is expected that work on the new structure will begin in the next few days.

Double Tracking Held Up By I. C. C. Ruling

With the rejection by the Interstate Commerce Commission of the application of the Van Sweringen interests of Cleveland to consolidate a number of railroads in the Middle West, particularly the Chesapeake & Ohio, the Hocking Valley, the Nickel Plate and Erie, officials of the Hocking Valley announce that completion of the work of double tracking the Hocking Valley from Columbus to Toledo has been held up until a favorable ruling is had from the Commission. A part of the double tracking project was completed last summer and it was planned to go ahead with the work at once, completing the line from Columbus into Waybridge, near Toledo. The project to build a line 63 miles in length from Gregg, Pike Coounty, Ohio, to Valley Crossing near Columbus, connecting the Norfolk & Western and the C. & O. and carrying coal traffic now routed over the N. & W. from Waverly into Columbus also has been abandoned.

Names Committee to Arrange N. C. A. Convention

Morton L. Gould, president of the National Coal Association, last week named the following committee to select the date and place and outline the program for the 1926 meeting of the National Coal Association: Telford Lewis (chairman), vice-president, Jasahill Coal Mining Co., Johnstown, Pa.; D. C. Kennedy, secy., Kanawha Coal Operators' Association., Charleston, W. Va.; Otis Mouser, president, Stonega Coke & Coal Co., Philadelphia, Pa.; C. F. Richardson, president, West Kentucky Coal Co., Sturgis, Ky.; Hugh Shirkie, president, Shirkie Coal Co., Terre Haute, Ind.; C. F. Spencer, president, Pittsburg & Midway Coal Mining Co., Pittsburg, Kan.; Ezra Van Horn, general manager, Clarkson Coal Mining Co., Cleveland, Ohio.

At a meeting at the Waldorf-Astoria, New York City, on March 23, the committee will consider invitations from commercial and civic bodies representing thirty-four cities.

Pittsburgh Coal Co. Has Deficit in 1925 Due to Curtailed Operations

High wages paid to coal miners and the suspension of operations at many mines because they were being operated at a loss are blamed for a deficit of $1,266,940 in the revenues of the Pittsburgh Coal Co. for 1925, according to W. G. Warden, chairman of the board of directors. This compares with a net loss of $454,083 in 1924.

The annual report shows gross receipts of $33,832,177 for 1925, against $44,025,345 in the preceding year. The company has earned nothing on either the preferred or common stocks for the last two years. The general balance sheet shows current assets of $16,332,718 and current liabilities of $2,781,529. Total assets were valued at $158,262,244.

In his report to stockholders Mr. Warden said:

"The extremely difficult conditions confronting the company in 1924 continued without abatement during 1925. Facing the certainty that the price of soft coal in its markets would continue to be fixed by the producers employing non-union labor, including those of the remote freight rate-favored districts of southern West Virginia and eastern Kentucky, and that in consequence it would not be possible to market the product of the company's mines except at prices below production costs under the existing wage scale continuing until April 1, 1927, your officers early in the year, with other producers in Pittsburgh, urged the officers of the United Mine Workers to meet in conference looking to a return to the wage scale of November, 1917. The request, however, was refused notwithstanding that twice during the year 1917 and again in 1920 they had been granted upward revisions of the wage scales then in effect.

"After careful study of every phase of the situation so developed, it was the unanimous judgment of your directors that the mines ought not longer be operated at a loss. Accordingly, the company's mines in the Pittsburgh district were closed down one after another and before the end of May all had been closed, operations of its Ohio mines having been discontinued early in the preceding year."

The mines were reopened in November, according to Mr. Warden, on a wage scale equal to that of November, 1917. The number of men employed has steadily if slowly increased, until at this date at all of the mines of the company there are about 3,000 men at work, producing approximately 12,000 tons a day, equal to 17 per cent of capacity.

C. & O. to Open Coal Bids

Word has been received in Charleston that the Chesapeake & Ohio R.R. will open bids March 15 on from 105,000 to 135,000 net tons of coal to supply its fuel needs during the next coal year. The bids will be submitted to the headquarters of the fuel department in Richmond, Va.

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Heroism Awards Voted To West Virginia and Alabama Coal Miners

The Joseph A. Holmes Safety Association on March 5 voted awards for heroism to Lee Fetty and John McNeil, of Farmington, W. Va., and to R. D. Taylor, of Attala, Ala.

Mr. Fetty, who was machine boss in the No. 8 mine of the Jamison Coal & Coke Co., Farmington, W. Va., was on duty in the 20th right section of the No. 8 Mine on the night of Jan. 14, 1926, when an explosion occurred in the 7th right group of entries, which resulted in the loss of the lives of 19 persons. The explosion shut off the ventilation from the section of the mine in which Fetty was working and he stated that he felt a puff of air such as is produced by a fall of roof in the mine, following which he noticed that the air had ceased to circulate. He also found that the air compressor had stopped and there was no electric power at the air compressor.

Find Safety in Stable

After having gotten together all of the men he decided that the air compressor station was too small in which to barricade the men and conducted them to the 20th left entry, adjoining an underground stable, and directed the men to remain there under the seal of the doors and other barricades that they might construct until fresh air reached them. He then made an exploration toward the shaft and found that he was able to get down only to the 16th left entry, which was about 1000 ft. from the stable. At this point he encountered very strong afterdamp and retreated and reported to the men that it would not be possible for any men to get through the afterdamp. Three men disregarded his instruction, however, and attempted to go out through it, two of them losing their lives, the third being able to retreat to the barricade.

In Barricade Nineteen Hours

The general superintendent of the mine, W. C. Dobbie, stated that in his judgment, after talking with all of the men who were saved by barricading, Mr. Fetty was wholly responsible for gathering up the men and directing them to the 20th left, where they barricaded themselves. After having been in this barricade for 19 hours, Fetty went out into the main entry and discovered that fresh air was beginning to circulate. He then led all of the men in the barricade toward the shaft and on their way out they met the men who were engaged in conducting the air into the mine.

John McNeil, a compressor engineer at No. 8 mine, was on duty in the compressor station of the mine at the time of the explosion and assisted Mr. Fetty in the protection of their fellow workmen.

While R. D. Taylor saved no life he jeopardized his own life in an effort to protect one of his comrades on Dec. 19, 1925, at the bottom of the No. 2 slope, Attala Mine, Sloss-Sheffield Steel & Iron Co., in Alabama. A crew of miners had finished their day's work and preparations were being made to fire a round of 10 holes, charged with 40 per cent gelatin dynamite, each charge to be fired with a detonator by means of fuse. A pump was located 32 ft. above the bottom of the slope and preparatory to firing the charges the suction pipe was removed and carried into the pumproom by Alex Logan and Oscar Harris. Harris opened the electric switch in the pump room and called "All right," which R. D. Taylor, another workman, understood as a signal to light the fuse, which he proceeded to do. It appears that when Harris threw the oil switch he fell into the electric wires.

Logan stood on the slope near the entrance to the pumproom to display his light so Taylor would be able to see his way back to safety. Upon lighting all of the fuses he started up the slope and Logan, who was 40 ft. further up the slope, called out "There's a dead man in there." Taylor turned and could see the prostrate form of Harris. He immediately rushed to the bottom of the slope, hoping to be able to cut off the fuses. He succeeded in cutting off three or four, but as some of the shorter fuses had burned down to the collar of the hole he immediately retreated up the slope a distance of 50 ft., where he found refuge in a room. Immediately following the discharge of the several shots Taylor and Thomas returned to Harris and moved his body from contact with the wires and endeavored to resuscitate him, but without success.

New Directors Elected

Scott Turner, president of the association, presided. George S. Rice, General W. H. Bixby, Alan H. Willett, and J. J. Rutledge were elected directors for the ensuing year. James F. Callbreath was elected first vice-president and William Green second vice-president. T. T. Read resigned as secretary of the association, as he enters upon his new duties with the American Institute of Mining and Metallurgical Engineers March 15.

Economic Crises Blamed On Governments

Economic fluctuations and crises are not invariably the result of private initiative, but are oftentimes influenced, as regards the development of international trade, by harsh measures of government, according to a report drawn up by the mixed committee on economic crises for the League of Nations Council and made public at Geneva, Switzerland, March 5. Modification of the methods employed by the authorities since the war, in the opinion of the committee, an Associated Press dispatch says, would attenuate the gravity of world economic crises.

The committee places emphasis on the necessity of establishing complete, accurate indices for the measurement of fluctuations of economic activity and the compilation of statistics of industrial production and stocks as a guidance for further studies.

Mechanization Pressing Need Of British Coal Industry

Grouping of collieries by mergers, in order to bring about greater mechanization and higher efficiency in operation, is advocated by Sir Richard Redmayne, K.C.B., as one of the chief needs of the British coal industry. Sir Richard, who is a member of the Safety in Mines Research Board and formerly was Chief Inspector of Mines, offered this suggestion in the course of a lecture recently delivered at the University of Sheffield, England. It was the first of a series of six lectures by authorities on "Some Problems of the Mining Industry."

Sir Richard divided his talk into three parts: the economics of production, of distribution and of consumption. More extensive use of machinery was necessary he said, in order to increase output per man per shift. Only in this way, he thought, could Great Britain keep pace with Germany, her chief competitor, whose labor costs were lower. Cheaper production, he said, would help the industry not only in Great Britain but throughout the world, as it would encourage the more extensive use of coal.

If the coal producers would combine to form a selling association and retail their own coal, said he, quite a saving could be made to the consumer. A colliery in Northumberland started to retail its own coal and reduced the price of coal to the consumer about 7s. a ton. All of Germany's coal was being sold by a syndicate and very few dealers were being employed in the cities.

Sees Economy in Carbonization

In the matter of consumption of the coal he thought that the greatest saving could be effected through carbonization. All of the coal could not be made into metallurgical coke nor could all coals be made into low-temperature cokes for domestic use. By combining a low-temperature carbonization plant with an electric generating plant the greatest power could be gotten from the coal and the valuable byproducts of distillation recovered.

Tennessee Products Corp. Issues Bonds

The Tennessee Products Corporation announces a new issue of $1,500,000 first mortgage 6½ per cent ten-year sinking fund bonds, which is being marketed by Rogers Caldwell & Co.; Taylor, Ewart & Co. and the American National Co. The Tennessee Products Corporation recently was formed by the merger of the Chattanooga Coke & Gas Co., Inc.; Bon Air Coal & Iron Corp. and J. J. Gray, Jr., and owns or controls properties located at Chattanooga, Goodrich, Eastland, Clifty, Rockdale, Bon Air, Ravenscroft, Clarksville, Collinwood and Lyle, Tenn. The proceeds from the sale of these bonds and certain junior securities will be used for the acquisition of properties and for working capital, betterments and corporate purposes.

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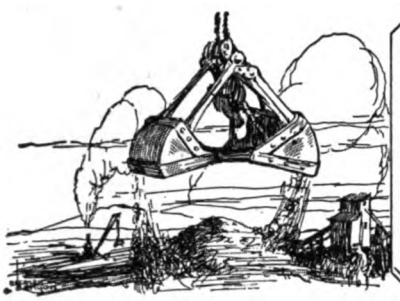
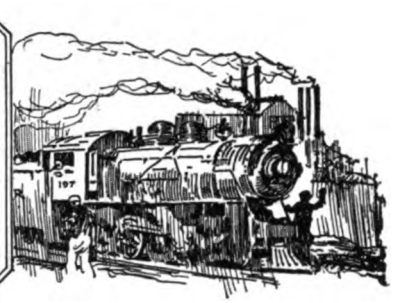


Production And the Market



Sharp Drop in Output and Ease in Price Decline Feature Bituminous Coal Market

The coal trade of the country is still engaged in working out the problems created by the juxtaposition of the unexpected resumption in anthracite mining and the seasonal decline in soft-coal demand. The readjustments necessary are being effected with surprisingly few major upsets to business. Such changes as have taken place were, for the most part, anticipated and discounted.

Sharp reductions in the production of bituminous coal and a milder rate of decline in price levels mark the course of the market. Output the last week in February, according to the Bureau of Mines, dropped to 10,895,000 net tons. Preliminary figures point to further declines during the first week in March. Nevertheless, there is too much unsold coal on wheels to make the situation comfortable.

However, even that admittedly bad situation has been ameliorated somewhat by sharper weather in the West and by railroad purchases of tonnages rejected by retailers in the East. A check against adding to these accumulations is found in the increasing number of mine shutdowns.

Price Levels Descending

Spot prices on bituminous coal are again at the same levels as ruled a year ago. *Coal Age* Index for March 8 was 167 and the corresponding price was $2.02. Compared with the preceding week this was a loss of two points in both index figure and average price. Generally speaking, all tidewater prices receded. Inland, prices on sized coal weakened, but quotations on slack advanced. This latter increase was due more to decreased output than to any expansion in industrial demand.

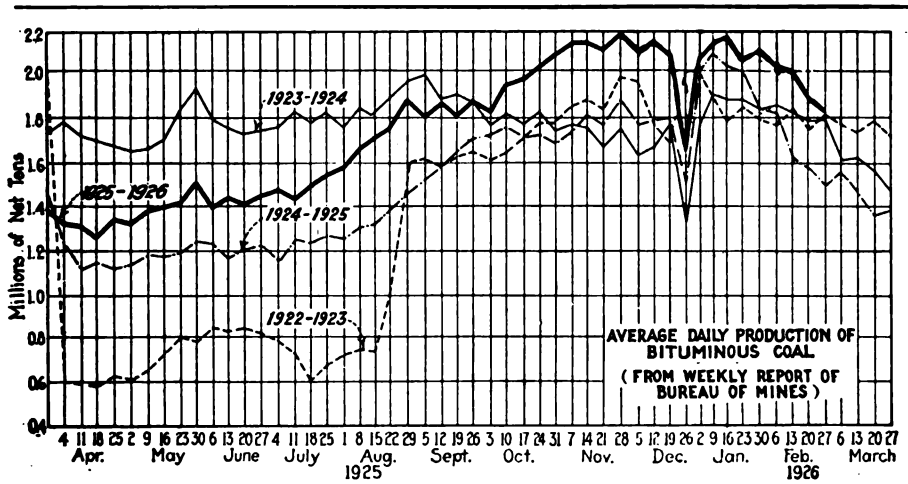
Contract developments to date have been kept well under cover. At present the outlook in the East from the standpoint of prices is not promising and the freedom with which coal is moved in all parts of the country gives the buyer the initial advantage in price haggling. Much, of course, will depend upon the development of the lake trade. The revival of the lake rate fight will not assist an early clarification of the situation.

Anthracite Production Up

Anthracite production, which got off to a bad start, made a quick recovery the last week of February, when the output reached 1,611,000 net tons. This tonnage is being fed out over as wide an area as possible—particularly by the larger producers. Some of the smaller independents are racing for the markets which will pay the highest prices. The day of extravagant premiums, however, will be short and its decline already has set in.

The most interesting feature in the current anthracite situation is the apparent scarcity of the usually despised pea coal. New York complained of this two weeks ago; Philadelphia protested last week. There also is a better demand than usual from household consumers for No. 1 buckwheat. In the steam trade, however, the small sizes are facing hot competition from the bituminous coals and independent prices are slipping.

Production of beehive coke is rapidly declining. For the week ended Feb. 27 the decrease was over 26,000 tons. The ovens must now look to the metallurgical trade for an outlet to their production. There has been an increase in orders placed by the foundries, but spot buying of furnace coke has been negligible. Some operators are entering the gas market with raw coal.



Estimates of Production

(Net Tons)

	1925	1926
BITUMINOUS		
Feb. 13	9,758,000	12,011,000
Feb. 20 (a)	9,464,000	11,509,000
Feb. 27 (b)	8,855,000	10,895,000
Daily average	1,501,000	1,847,000
Coal yr. to date.. (c)	433,506,000	494,597,000
Daily av. to date..	1,550,000	1,765,000
ANTHRACITE		
Feb. 13	1,824,000	35,000
Feb. 20 (a)	1,838,000	406,000
Feb. 27 (b)	1,605,000	1,611,000
Coal yr. to date... (c)	79,163,000	42,735,000
BEEHIVE COKE		
Feb. 20 (a)	259,000	353,000
Feb. 27 (b)	254,000	321,000
Cal. yr. to date.. (c)	2,182,000	2,782,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalise number of days in the two years.

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Middle Western Screenings Up

Advances of 5 to 25c. per ton featured the market in screenings in the Middle West last week. The increase was due to curtailed output following the slump in demand for prepared sizes rather than an expansion in the requirements of industrial consumers. Illinois, Indiana and western Kentucky mine-run, on the other hand, have not benefited by the change.

Prices on prepared coals have been fairly well maintained. Southern Illinois 6-in. lump commands $2.75@$3, with strip-pit offerings 50c.@$1 under those figures. Central Illinois is $2.50 @$2.75. The widest range is in Indiana—$2.25@$3. A cold snap helped the market, but it is realized that these flurries can have no lasting effect.

More mines are closing down every day and some of the miners are deserting the fields. Further demoralization of union operations in Illinois and Indiana is feared as a result of the announcement that one of the largest producers in the first-named state has taken over the output of a number of mines in non-union western Kentucky.

Outlying Fields Also Hard Hit

The other Illinois producing districts are faring no better than the central and southern fields. Some mines in Duquoin and Jackson County are having a hard time to find a market for two days' output; only the most fortunate can average four days a week. Contract tonnage represents the bulk of the movement from the Mt. Olive section. Operators in the Standard district still seem bent upon seeing how much tonnage can be sold at a loss. There are unconfirmed rumors that several Belleville mines will go on a cooperative basis.

Eastern coals had hard sledding in the Chicago market last week. One eastern Kentucky operator cut his circular from $2.50 to $2.25 and competing producers soon followed his lead. Not to be outdone, some West Virginia shippers cut 4-in. high-volatile block to $2, although the general range is $2.25@$2.75. Smokeless factors have held lump, egg and nut at $3.50@$4, but mine-run is to be picked up at $1.75.

Up to the close of last week there had been no real movement of anthracite into Chicago. The fact that shipments were en route, however, induced retailers to let go of scanty stocks in their yards at $17 for egg, range and nut. Shippers of first quality coke are busy catching up on unfilled orders and prices are strong.

Kentucky Domestic Slump Grows

Demand for prepared coal from Kentucky mines still is slipping. Intermittent cold spells do not bolster up the market, as retailers are more interested in cleaning up yard stocks than in ordering more coal forward. A quarter has been clipped off the top prices on block coals. Eastern Kentucky block is $2.25@$2.75; lump, $2@ $2.25; egg, $1.75@$2; nut, $1.65@$2,

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	Mar. 9, 1925	Feb. 22, 1926	Mar. 1, 1926	Mar. 8 1926†
Smokeless lump	Columbus	$3.60	$4.35	$4.35	*$3.75@$4.00*
Smokeless mine run	Columbus	1.90	2.50	2.35	*2.00@ 2.25*
Smokeless screenings	Columbus	1.15	1.60	1.25	*1.00@ 1.35*
Smokeless lump	Chicago	3.10	4.10	4.10	*3.50@ 4.00*
Smokeless mine run	Chicago	1.75	2.10	2.10	*1.75@ 2.15*
Smokeless lump	Cincinnati	3.25	4.35	4.00	3.75@ 4.25
Smokeless mine run	Cincinnati	2.00	2.35	2.10	2.00@ 2.25
Smokeless screenings	Cincinnati	1.60	1.35	1.30	1.10@ 1.50
*Smokeless mine run	Boston	4.30	4.85	4.70	*4.35@ 4.60*
Clearfield mine run	Boston	1.95	2.00	2.05	*1.85@ 2.10*
Cambria mine run	Boston	2.30	2.30	2.40	*2.10@ 2.50*
Somerset mine run	Boston	2.10	2.10	2.15	*1.90@ 2.25*
Pool 1 (Navy Standard)	New York	2.65	3.05	2.90	*2.70@ 3.05*
Pool 1 (Navy Standard)	Philadelphia	2.70	2.90	2.90	*2.65@ 3.00*
Pool 1 (Navy Standard)	Baltimore	2.25	2.30	2.30	*2.25@ 2.30*
Pool 9 (Super. Low Vol.)	New York	2.05	2.55	2.35	*2.20@ 2.40*
Pool 9 (Super. Low Vol.)	Philadelphia	2.05	2.45	2.45	*2.20@ 2.50*
Pool 9 (Super. Low Vol.)	Baltimore	1.85	2.15	2.10	2.00@ 2.20
Pool 10 (H.Gr.Low Vol.)	New York	1.75	2.30	2.10	*1.90@ 2.15*
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.70	2.15	2.15	*1.90@ 2.25*
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.70	1.95	1.85	1.85@ 1.90
Pool 11 (Low Vol.)	New York	1.55	2.10	1.90	*1.70@ 2.00*
Pool 11 (Low Vol.)	Philadelphia	1.55	1.95	1.95	*1.75@ 1.85*
Pool 11 (Low Vol.)	Baltimore	1.50	1.75	1.75	1.70@ 1.80
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.50	1.60	1.60	1.50@ 1.70
Pool 54-64 (Gas and St.)	Philadelphia	1.45	1.60	1.60	*1.35@ 1.55*
Pool 54-64 (Gas and St.)	Baltimore	1.65	1.75	1.55	1.50@ 1.60
Pittsburgh sc'd gas	Pittsburgh	2.50	2.65	2.45	2.40@ 2.50
Pittsburgh gas mine run	Pittsburgh	2.20	2.10	2.10	2.00@ 2.25
Pittsburgh mine run (St.)	Pittsburgh	1.95	2.05	2.05	2.00@ 2.10
Pittsburgh slack (Gas)	Pittsburgh	1.30	1.05	1.20	**1.25@ 1.30**
Kanawha lump	Columbus	2.10	2.25	2.25	*1.85@ 2.35*
Kanawha mine run	Columbus	1.50	1.55	1.55	1.40@ 1.70
Kanawha screenings	Columbus	.55	.60	.60	**.60@ .85**
W. Va. lump	Cincinnati	2.05	2.25	2.25	2.00@ 2.50
W. Va. gas mine run	Cincinnati	1.35	1.50	1.50	1.40@ 1.60
W. Va. steam mine run	Cincinnati	1.30	1.30	1.30	**1.25@ 1.50**
W. Va. screenings	Cincinnati	1.05	.85	.80	**.75@ 1.00**
Hocking lump	Columbus	2.35	2.50	2.50	2.25@ 2.75
Hocking mine run	Columbus	1.50	1.50	1.50	1.35@ 1.70
Hocking screenings	Columbus	1.10	.90	.95	**1.00@ 1.15**
Pitts. No. 8 lump	Cleveland	2.30	2.30	2.30	**2.25@ 2.50**
Pitts. No. 8 mine run	Cleveland	1.80	1.85	1.85	1.85@ 1.90
Pitts. No. 8 screenings	Cleveland	1.40	1.10	1.10	**1.20@ 1.30**

Midwest	Market Quoted	Mar. 9, 1925	Feb. 22, 1926	Mar. 1, 1926	Mar. 8, 1926†
Franklin, Ill. lump	Chicago	$3.10	$3.00	$3.00	$3.00
Franklin, Ill. mine run	Chicago	2.35	2.40	2.40	2.35@ 2.50
Franklin, Ill. screenings	Chicago	2.00	1.55	1.55	**1.60@ 1.75**
Central, Ill. lump	Chicago	2.85	2.60	2.60	2.50@ 2.75
Central, Ill. mine run	Chicago	2.20	2.10	2.10	2.00@ 2.25
Central, Ill. screenings	Chicago	1.90	1.10	1.10	**1.35@ 1.50**
Ind. 4th Vein lump	Chicago	2.85	2.85	2.85	2.75@ 3.00
Ind. 4th Vein mine run	Chicago	2.35	2.30	2.30	2.25@ 2.35
Ind. 4th Vein screenings	Chicago	1.95	1.70	1.70	1.65@ 1.75
Ind. 5th Vein lump	Chicago	2.50	2.15	2.15	2.00@ 2.35
Ind. 5th Vein mine run	Chicago	2.10	1.95	1.95	1.85@ 2.10
Ind. 5th Vein screenings	Chicago	1.80	1.15	1.15	**1.25@ 1.35**
Mt. Olive lump	St. Louis	2.85	2.75	2.75	2.75
Mt. Olive mine run	St. Louis	2.35	2.15	2.15	2.15
Mt. Olive screenings	St. Louis	1.75	1.40	1.40	1.40
Standard lump	St. Louis	2.50	2.50	2.50	2.50
Standard mine run	St. Louis	1.80	1.80	1.80	1.75@ 1.85
Standard screenings	St. Louis	1.40	1.15	1.15	1.10@ 1.25
West Ky. block	Louisville	1.85	2.00	1.85	1.75@ 2.00
West Ky. mine run	Louisville	1.35	1.35	1.35	1.25@ 1.50
West Ky. screenings	Louisville	1.25	.85	.90	.85@ 1.00
West Ky. block	Chicago	2.00	2.05	2.05	*1.65@ 1.85*
West Ky. mine run	Chicago	1.35	1.50	1.50	1.25@ 1.75
South and Southwest					
Big Seam lump	Birmingham	2.60	2.35	2.35	2.25@ 2.50
Big Seam mine run	Birmingham	1.75	1.75	1.75	1.50@ 2.00
Big Seam (washed)	Birmingham	1.85	2.10	2.10	2.00@ 2.25
S. E. Ky. block	Chicago	2.35	2.60	2.60	2.25@ 3.00
S. E. Ky. mine run	Chicago	1.50	1.85	1.85	*1.50@ 1.85*
S. E. Ky. block	Louisville	2.25	2.75	2.60	*2.25@ 2.75*
S. E. Ky. mine run	Louisville	1.35	1.55	1.40	1.35@ 1.50
S. E. Ky. screenings	Louisville	1.00	.80	1.00	.90@ 1.10
S. E. Ky. block	Cincinnati	2.10	2.35	2.25	*2.25@ 2.50*
S. E. Ky. mine run	Cincinnati	1.35	1.40	1.50	1.25@ 1.75
S. E. Ky. screenings	Cincinnati	1.10	.85	.75	**.90@ 1.10**
Kansas lump	Kansas City	4.25	4.50	4.50	4.50
Kansas mine run	Kansas City	3.00	2.85	2.85	2.75@ 3.00
Kansas screenings	Kansas City	2.50	2.40	2.40	2.35@ 2.50

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**; declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	March 9, 1925 Independent	March 9, 1925 Company	March 1, 1926 Independent	March 1, 1926 Company	March 8, 1926† Independent	March 8, 1926† Company
Broken	New York	$2.34	.....	$8.00@$9.25	$9.00@14.50	$8.25@$9.25	*$9.00@11.50*	$8.25@$9.25
Broken	Philadelphia	2.39	.....	9.15	9.00@12.50	9.00@ 9.25	9.00@12.50	9.00@ 9.25
Egg	New York	2.34	$8.25@$8.75	8.75@ 9.25	9.25@14.00	8.75@ 9.25	*9.25@11.50*	8.75@ 9.25
Egg	Philadelphia	2.39	8.90@ 9.25	8.80@ 9.25	9.25@12.50	9.15@ 9.25	9.25@12.50	9.15@ 9.25
Egg	Chicago*	5.06	8.17@ 8.40	8.08	.....	8.13	.....	8.13
Stove	New York	2.34	8.75@ 9.25	9.00@ 9.50	9.60@14.00	9.25@ 9.50	*9.60@11.50*	9.25@ 9.50
Stove	Philadelphia	2.39	9.35@ 9.90	9.15@ 9.50	9.60@12.50	9.35@ 9.50	9.60@12.50	9.35@ 9.50
Stove	Chicago*	5.06	8.80@ 9.00	8.53@ 8.65	.....	8.33@ 8.58	.....	8.33@ 8.58
Chestnut	New York	2.34	8.50@ 9.25	8.75@ 9.40	9.25@14.00	8.75@ 9.15	*9.25@11.50*	8.75@ 9.15
Chestnut	Philadelphia	2.39	9.25@ 9.80	9.25@ 9.40	9.25@12.50	9.00@ 9.15	9.25@12.50	9.00@ 9.15
Chestnut	Chicago*	5.06	8.61@ 9.00	8.40@ 8.41	.....	8.33@ 8.53	.....	8.33@ 8.53
Pea	New York	2.22	4.50@ 5.50	5.50@ 6.00	6.50@ 9.00	6.00@ 6.35	*6.00@ 8.00*	6.00@ 6.35
Pea	Philadelphia	2.14	5.00@ 5.75	6.00	6.50@ 7.50	6.00@ 6.50	6.50@ 7.50	6.00@ 6.50
Pea	Chicago*	4.79	5.36@ 5.75	5.36@ 5.95	.....	5.65@ 5.80	.....	5.65@ 5.80
Buckwheat No. 1	New York	2.22	2.00@ 2.75	3.00@ 3.15	3.00@ 5.00	3.00@ 3.50	*2.50@ 3.50*	3.00@ 3.50
Buckwheat No. 1	Philadelphia	2.14	2.25@ 3.00	3.00	3.00@ 3.50	3.00	3.00@ 3.50	3.00
Rice	New York	2.22	1.80@ 2.25	2.00@ 2.25	2.25@ 3.00	2.00@ 2.25	*2.00@ 2.50*	2.00@ 2.25
Rice	Philadelphia	2.14	1.70@ 2.25	2.25	2.25	2.25	2.25	2.25
Barley	New York	2.22	1.30@ 1.50	1.50	1.75@ 2.50	1.60@ 1.75	*1.50@ 1.75*	1.60@ 1.75
Barley	Philadelphia	2.14	1.50	1.50	1.75	1.75	1.75	1.75
Birdseye	New York	2.22	1.35@ 1.60	1.60	.....	2.00	.....	2.00

*Net tons, f.o.b. mines. †Advances over previous week shown in **heavy** type; declines in *italics*

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Western Kentucky block is $1.75@$2; lump and egg, $1.50@$1.75.

Optimists envisage a dollar minimum on screenings in the near future. Current offerings show western Kentucky at 85c.@$1 and eastern Kentucky at 90c.@$1.10. Western Kentucky nut and mine-run are $1.25@$1.50, but the upward swing in screenings is expected to boost nut. Eastern Kentucky mine-run is $1.35@$1.50.

The contract outlook is still very uncertain. Many buyers think they will be safe in playing the spot market; some sellers have no desire to renew business on the same basis in effect in 1925-26. In the meantime, the volume of steam tonnage moving is the best feature of the market.

Weather Helps Northwest

King Winter came to the aid of the docks at the Head of the Lakes last week and lightened the fears of operators who were beginning to view their piles of domestic coal with misgivings. Under the stimulus of weather demand, shipments were increased to dock-consuming territory. Prices, particularly upon smokeless coals, recovered from a dragginess which had threatened reductions. Progressive improvement is reported in industrial demand and the docks again are edging Illinois and Indiana out of some business in the Twin Cities. Stocks on the docks are estimated at 3,500,000 tons.

The weather also toned up drooping domestic trade at St. Paul and Minneapolis. Some retailers have started to advertise all-rail anthracite for sale. Little response is made to pleas for renewals of steam contracts. Spot prices on industrial coals are heavy. Anthracite is coming into Milwaukee in increasing quantities and is readily absorbed by eager consumers. Retail prices are: Stove, $16.80; nut, $16.65; pea, $14.25; buckwheat, $11, curb or chute delivery.

Kansas operators are marking time, awaiting the official demise of the coal season. Mines are averaging two days a week. The slowing down of production has created a growing scarcity in screenings. Arkansas operations are at a low ebb. Steady curtailment is the rule in Colorado as domestic demand dwindles. This has cut down the number of "no bills" and strengthened the position of steam sizes. Prices are unchanged. Utah markets are at the mercy of the vagaries of the thermometer. Slack is firm at $1.50, although the immediate demand is not large.

Weather Flurry Relieves Cincinnati

A cold-weather flurry brought relief to the Cincinnati trade last week. It enabled West Virginia producers to get rid of considerable tonnage on wheels at the mines, but resulted in no appreciation in price levels. As a matter of fact, operators still are feeling their way on the price question. For example, there is a spread of 50c. in smokeless circulars on the larger screened sizes and the spot-market range, $3.75@$4.25, is 25c. under circular quotations. Mine-run has weakened to $2@$2.25 and slack is up to $1.10@$1.50, with the bulk of the tonnage moving at $1.25.

High-volatile prices on prepared sizes have been fairly well maintained. Quotations on mine-run and slack are stronger. Reduced production, of course, is the real support of the market at the present time. Movement through the Cincinnati gateway, according to the latest weekly interchange report of the American Railway Association, decreased 583 loads and the number of empties on their way to the mines decreased 1,219.

The Cincinnati retail situation is unchanged. River business is finding its stride with the approach of spring. Approximately 11,000 tons a week are now coming down the Ohio.

Central Ohio Marks Time

Aside from a slight weather stimulation to domestic trade the past week, the central Ohio market is featureless. Even this stimulus did not result in many orders for shipment. Large industrial consumers are in a comfortable position as regards reserve stocks on hand. The curtailment in production and the closing down of mines incident to the decreased demand for sized coal, however, have pushed quotations on spot screenings to $1@$1.15. Southern Ohio output is now less than 20 per cent of capacity.

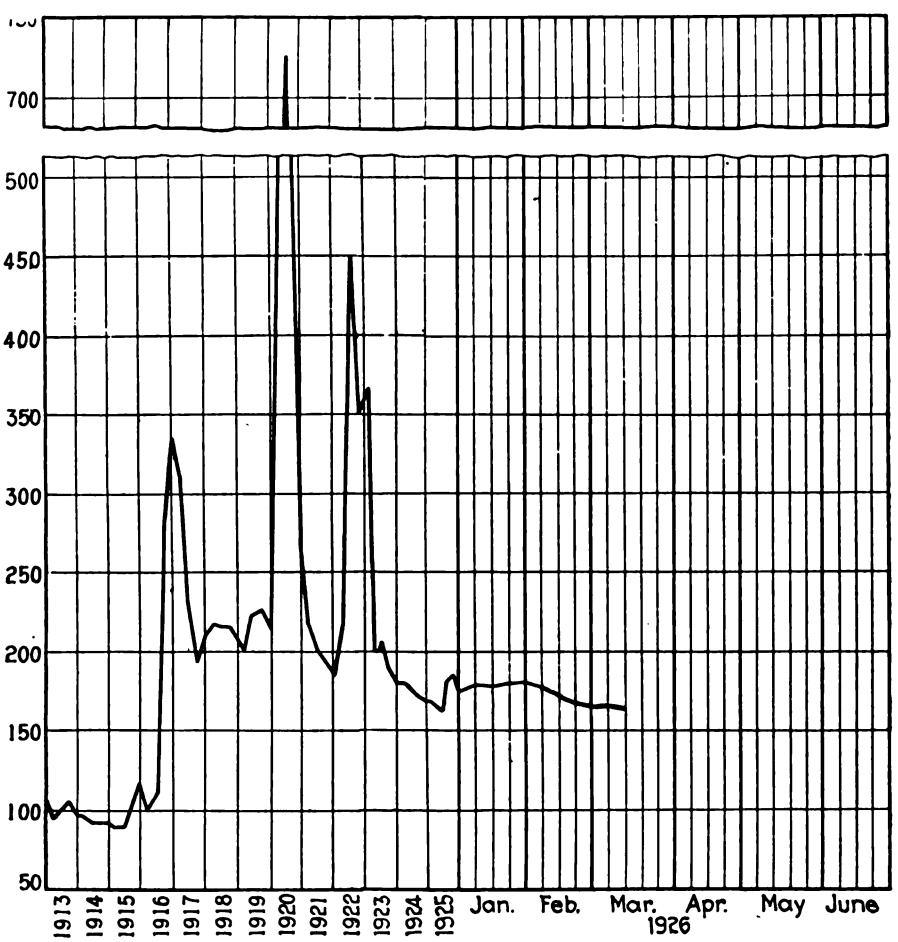
An increase of 15 to 20c. in the price of slack was the outstanding feature of the eastern Ohio market last week. Spot prices on other grades from the No. 8 field were unchanged. Distress coal, however, has diminished and fewer shippers are willing to take the risk of shipping coal on open billing.

During the week ended Feb. 27 the No. 8 field produced 212,000 net tons, or approximately 36 per cent of potential capacity, as compared with 248,000 tons the preceding week and 224,000 tons a year ago.

The effect of the resumption of anthracite mining on central Pennsylvania production is becoming more marked as the weeks go by. During the last week of February daily loadings of coal dropped 400 cars, as compared with a decrease of 200 cars the preceding week. Pool 1 coal is quoted at $2.80@$2.90; pool 71, $2.55@$2.65; pool 9, $2.35@$2.50; pool 10, $2.25@$2.30; pool 11, $2@$2.10; pool 18, $1.90@$2. Lump is $3.50; egg, $4; slack, $1.50.

Weakness Spreading in Pittsburgh

Weakness is spreading over the Pittsburgh district market. Domestic demand is down to the season-end dregs. Industrial and railroad consumption is heavy, but Pittsburgh district mines



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926				1925	1924
	Mar. 8	Mar. 1	Feb. 22	Feb. 15	Mar. 9	Mar. 10
Index	167	169	170	173	167	181
Weighted average price	$2.02	$2.04	$2.06	$2.10	$2.02	$2.18

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.

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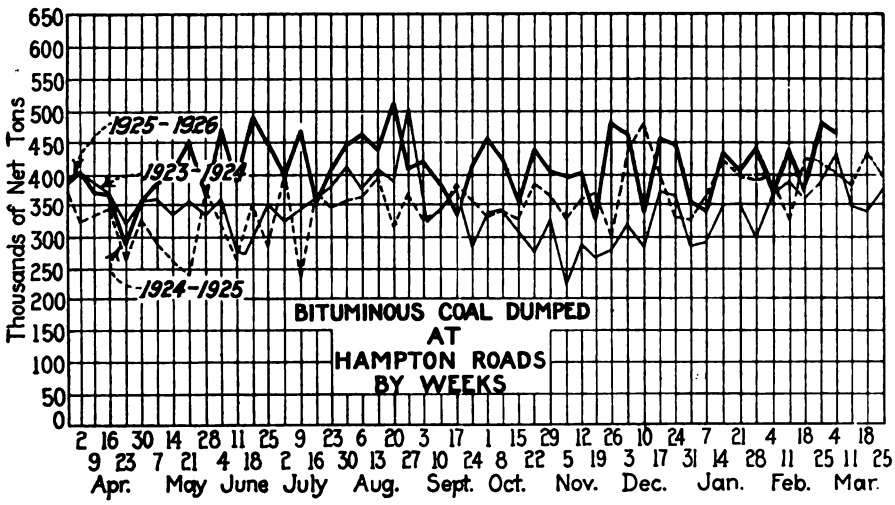


must fight non-union competition to retain an equitable share of this business. Production is dropping and probably does not exceed 20 per cent of capacity. This is reflected in stronger slack prices, which have advanced 20c. since the anthracite strike settlement.

The gloom characteristic of Buffalo trade opinion has, if anything, taken on a darker tinge. Quotations nominally are unchanged, but business is solicited so actively that it is impossible to present a true price picture. The industrial consumer who insists upon driving a hard bargain does not have to look far to find a seller who can be driven.

There is an unmistakable downward trend to bituminous prices in New England. Coal is piling up at most of the distributing points. Spot demand is moribund. Even those consumers who will use soft coal the coming season are waiting until the situation created by the anthracite strike has cleared up before making new commitments.

Downward Trend in New England

Prepared bituminous is offered freely around $3 mines. Slack has been a choice morsel for the bargain hunters. There is a weak demand for screened short-haul Pennsylvania bituminous, but this will die as soon as anthracite is moving in normal volume.

There are large accumulations of Pocahontas and New River coal at Hampton Roads which can be had at $4.40@$4.60, but there are few spot buyers. On cars at Boston and Providence quotations have sagged from $6.50 to $6 and $5.85.

The New York bituminous market is "shot to pieces." Spot demand has weakened and prices are on the downgrade. Reports of congestion at the local piers and en route brought more cancellations. Rejection of shipments in the terminals on the plea that the tonnage was of inferior quality added to the confusion. On Long Island alone it was announced that 575 cars of soft coal and 407 cars of coke had been rejected. The railroads are being appealed to to take over such coal.

Some foreign coal was received last week and additional cargoes are on the high seas. Consignees say that they will be able to move that tonnage without trouble. Screened bituminous coal from Pennsylvania and West Virginia has dropped out of the local picture.

Philadelphia Turns to Contracts

As at New York, the Philadelphia market for bituminous coal for domestic consumption seems to be on its last legs. There is more distress tonnage than shippers like to admit. Bargain-hunting steam coal buyers have absorbed considerable coal of that description. Producers are combing the market in an effort to persuade consumers to enter into contracts for the new year or to renew existing agreements. Although the major producers are holding out for a $2.65 base, there are others willing to take on tonnage at $2.20@$2.25.

The collapse of the demand for screened coal has forced many mines to close down because they cannot pick up enough industrial business to justify continuing operations. This has strengthened the position of slack coal, which is due for a further increase with the re-entry of cement mills into the market.

Dullness controls the Baltimore bituminous market. Buying of prepared coal is a hand-to-mouth business. Industrial coal moves through normal channels and does not stir up the spot market. Bunker trade, for the most part, has shifted to the Virginia ports. Despite that fact, however, there is no particular snap to the market at Hampton Roads. During the past week an effort was made to clear out old stocks in anticipation of April 1 contracts. Dumpings for the week ended March 4 dropped to 414,270 gross tons.

No Change at Birmingham

The Birmingham industrial market shows no material change. Spot buying of the lower grades of coal is slow and restricted, but medium and high grade fuels find a fair market. Washed coal is in active demand by the coking ovens. Bunker trade, too, has been healthy. Domestic demand has settled down to a weather proposition.

The gradual absorption of the large stocks of substitutes by consumers and railroads has helped the movement of anthracite to the New York market. As the stocks of soft coal and coke diminished, orders for hard coal increased, but the operators are not pressed to make deliveries. Under these circumstances, some of the independents are finding it difficult to exact the premium prices they asked when mining was first resumed.

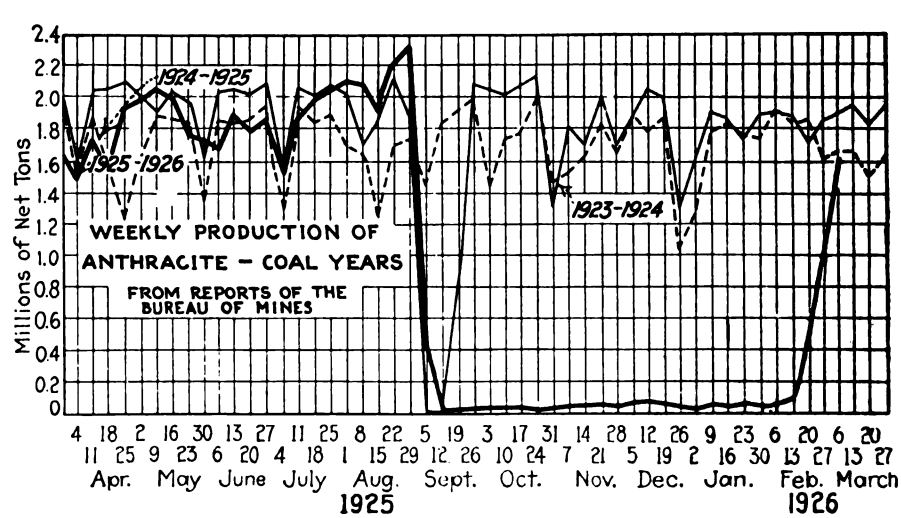
With plenty of soft coal on hand or under contract, some of the producing companies are confronted with accumulations of anthracite steam sizes. Company circulars are the top figures and some sales are made at less. Toward the end of last week barley was offered as low as $1.35.

Philadelphia Wants Anthracite

Philadelphia retailers are clamoring for anthracite. Independent shippers with premium coal are not deaf to these cries. The percentage of premium tonnage being absorbed is causing some distributors to change their ideas of retail prices. While there are many dealers who are holding egg and nut at $15.75 and stove at $16, others are asking $16.75 and $17 and in a few cases $17.50. Pea is $12 and $13. Retailers complain that they cannot get enough of this last size. Buckwheat also is in good demand.

In an effort to move some of the substitutes on hand, retailers have insisted that consumers take coke and anthracite in equal quantities. During the cold snap last week many were able to sell this idea to their customers. Retail coke prices are $4@$5 under the yard cost of that fuel.

Baltimore dealers are trying to distribute limited receipts of anthracite in a manner that will take care of the



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Car Loadings and Supply

	Cars Loaded All Cars	Cars Loaded Coal Cars
Week ended Feb. 20, 1926	931,743	169,913
Preceding week	917,144	171,903
Week ended Feb. 21, 1925	925,295	165,359

	Surplus Cars All Cars	Surplus Cars Coal Cars	Car Shortages All Cars	Car Shortages Coal Cars
Feb. 23, 1926	227,511	88,629	.....	.....
Feb. 15, 1926	232,031	90,604	.....	.....
Feb. 22, 1925	256,230	113,302	.....	.....

greatest number of customers. Little independent tonnage is being purchased. Retail prices are on a pre-strike basis.

Buffalo seems to have enough anthracite to meet current pressing demands—too much in fact to suit some distributors loaded up with high-priced coke or bituminous coal. Across the border, Toronto dealers are working at high pressure to take care of anthracite demand and to sell, where possible, a mixture of hard coal and coke. The large domestic anthracite is retailing at $16; pea is $13. Coke has been cut to $15, a reduction of $2.

Connellsville Abandons Hope

Connellsville has definitely placed the hope that there would be a revival in retail demand for coke in the limbo of forgotten things. The region is now concentrating its coke attention upon metallurgical business. Standard furnace coke is $3.25@$3.50; foundry coke, $4.50@$5. Production has decreased sharply. Some mines are now seeking to sell the raw coal to the gas trade.

Blast furnaces have bought little spot or prompt coke. It is probable, too, that they will postpone negotiating second-quarter contracts until the eleventh hour. Foundries have been fair buyers to cover requirements upon which orders were withheld during the price orgy.

The Connellsville *Courier* reports coke output in the Connellsville and Lower Connellsville regions the week ended Feb. 27 at 103,100 tons from the furnace ovens and 102,900 tons from the merchant ovens. Compared with the preceding week, furnace oven output decreased 7,600 tons and the output from the merchant ovens dropped off 18,560 tons.

New York Coal Imports

Custom House reports show that imports through the Port of New York during the months of November, December and January last included 180,465 tons of anthracite, 37,431 tons of coke, 5,148 tons of bituminous coal and shale and 20 tons of slack and culm.

Imports by months were:

November—46,342 tons of anthracite, valued at $478,843, an average cost of $10.33, and 2 tons of bituminous coal and shale, valued at $19.

December—83,272 tons of anthracite, valued at $836,227, an average cost of $10.04 per ton; 5,146 tons of bituminous coal and shale, valued at $28,130, an average cost of $5.46; 20 tons of slack and culm, valued at $138, an average cost of $6.90, and 33,342 tons of coke, valued at $216,143, an average of $6.48 per ton.

January—50,851 tons of anthracite, valued at $447,080, an average cost of $8.77 per ton, and 4,089 tons of coke, valued at $37,922, an average of $9.27 per ton.

New England Fuel Committee May Be Permanent

The New England Governors' Fuel Committee, according to statement by Vice-Chairman Eugene C. Haultman, will function until June 1, at least, and it is probable that arrangements will be made whereby the committee will continue as a permanent body. The committee believes it has done good work for New England and should continue to function as a protection, if nothing more, to the people of that section against the possibility of future fuel troubles.

Coke Output Sets New Record In January

Output of byproduct coke in the United States during January, according to reports by operators to the U. S. Bureau of Mines totaled 3,804,000 net tons, an increase of 44,000 tons, or 11.7 per cent, compared with the preceding month. The coke plants operated at about 92 per cent of capacity.

Beehive coke production continued to increase during January, the total being estimated at 1,381,000 net tons, an increase of 74,000 tons, or 5.7 per cent, compared with December.

Monthly Output of Byproduct and Beehive Coke in the United States.*

(In Thousands of Net Tons)

	Byproduct Coke	Beehive Coke	Total
January, 1926	3,804	1,381	5,185
December, 1925	3,760	1,307	5,067
November, 1925	3,557	1,213	4,770
October, 1925	3,402	1,006	4,408
1925 monthly average	3,332	893	4,225
1924 monthly average	2,833	806	3,639
1923 monthly average	3,133	1,615	4,748

*Excludes screenings and breeze.

Coal consumed in both beehive and byproduct coke plants in January was 7,644,000 tons, 5,466,000 tons being consumed at byproduct plants, and 2,178,000 tons at beehive plants.

Estimated Monthly Consumption of Coal in Manufacture of Coke

(In Thousands of Net Tons)

	Consumed in Byproduct Ovens	Consumed in Beehive Ovens	Total Coal Consumed
January, 1926	5,466	2,178	7,644
December, 1925	5,403	2,062	7,465
November, 1925	5,111	1,913	7,024
October, 1925	4,888	1,587	6,475
1925 monthly average	4,787	1,371	6,158
1924 monthly average	4,060	1,272	5,332
1923 monthly average	4,523	2,507	7,030

Of the total output of byproduct coke during January, 3,153,000 tons, or 82.9 per cent, was made in plants associated with iron furnaces, and 651,000 tons, or 17.1 per cent, was made at merchant or other plants.

Coal Produced in Utah, Virginia and Washington in 1924

(Exclusive of Product of Wagon Mines)

State and County	Net Tons: Loaded at Mines for Shipment	Net Tons: Sold to Local Trade and Used by Employees	Net Tons: Used at Mines for Steam and Heat	Net Tons: Made Into Coke at Mines	Net Tons: Total Quantity	Value: Total	Value: Average per Ton	Number of Employees: Underground Miners[b]	Number of Employees: Underground All Others	Number of Employees: Surface	Number of Employees: Total	Average Number of Days Worked[a]	Average Tons per Man per day
Utah													
Carbon	3,710,507	28,515	52,779	268,930	4,060,731	$10,867,000	$2.68	2,162	918	863	3,943	186	5.53
Emery	274,727	8,351	399	.....	283,477	814,000	2.87	129	51	49	229	135	9.18
Uintah	.....	4,184	.....	.....	4,184	17,000	4.06	7	3	2	12	120	2.92
Other counties[c]	122,027	10,350	7,388	.....	139,765	359,000	2.57	71	51	24	146	146	6.54
Total	4,107,261	51,400	60,566	268,930	4,488,157	$12,057,000	$2.69	2,369	1,023	938	4,330	182	5.70
Virginia													
Dickenson	783,552	6,111	4,574	.....	794,237	$1,583,000	$1.99	373	271	184	828	224	4.27
Lee	1,125,880	11,493	2,729	.....	1,140,102	2,150,000	1.89	876	379	314	1,569	201	3.61
Montgomery	39,500	532	721	.....	40,753	132,000	3.24	78	28	65	171	166	1.43
Russell	1,569,607	27,718	4,748	.....	1,602,073	3,224,000	2.01	829	626	377	1,832	216	4.04
Tazewell	1,775,075	19,019	7,336	.....	1,801,430	3,629,000	2.01	782	845	408	2,035	212	4.17
Wise	4,320,695	101,721	25,243	716,821	5,164,420	10,543,000	2.04	3,107	2,050	854	6,011	243	3.54
Other counties[d]	141,913	1,936	6,600	.....	150,449	562,000	3.74	86	56	91	233	221	2.93
Total	9,756,162	168,530	51,951	716,821	10,693,464	$21,823,000	$2.04	6,131	4,255	2,293	12,679	226	3.73
Washington													
King	571,953	25,804	13,536	600	611,893	$2,062,000	$3.37	424	280	155	859	236	3.02
Kittitas	1,005,919	19,643	31,038	.....	1,056,600	3,893,000	3.68	1,098	300	240	1,638	163	3.95
Lewis	81,850	20,597	5,188	.....	107,635	298,000	2.77	79	46	39	164	166	3.95
Pierce	321,749	3,857	13,229	48,739	387,574	1,838,000	4.74	326	287	170	783	234	2.12
Other counties[e]	460,588	22,465	6,912	.....	489,965	1,598,000	3.26	265	69	80	414	237	4.99
Total	2,442,059	92,366	69,903	49,339	2,653,667	$9,689,000	$3.65	2,192	982	684	3,858	202	3.41

[a] Note that figures of men employed and days worked do not include mines that operated in 1923 but were idle the entire year 1924; they do include many mines operated for a short time only in 1924. The number of active mines of commercial size in Utah was 37 in 1923 and 39 in 1924; in Virginia, 168 in 1923 and 115 in 1924; in Washington, 56 in 1923 and 58 in 1924.

[b] Includes also loaders and shotfirers.
[c] Grand, Iron, San Juan, Sevier and Summit.
[d] Pulaski and Scott.
[e] Cowlitz, Thurston and Whatcom.
Statistics compiled by U. S. Bureau of Mines.

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Foreign Market And Export News

Shipping Delays Upset Welsh Coal Movement; Tyne Spot Trade Slow

Though the general aspect of the coal trade in South Wales is promising, and there is enough business in hand to ensure a fair degree of activity for the next two months, the position for immediate shipment is less favorable on account of shipping irregularities, with the consequent arrears in deliveries. Where the tonnage is that should be ready in Welsh ports nobody seems to know.

A serious handicap has been the sharp rise in freights for South America and the Mediterranean, representing 6s. in the former case and around 2s. 6d. per ton in the latter. This rise has meant serious loss to many exporters who accepted cheap c.i.f. contracts some months ago.

As a rule, the collieries, are well booked to the end of April, and the output in Wales has risen from around 700,000 tons per week last September to over 1,000,000 tons. In addition to this there is the possibility of the Cambrian Collieries reopening. These mines were closed in August, 1924, when they employed around 3,500 men. Besides the 200,000 tons for the Paris, Lyons & Mediterreanean Ry., reported last week, orders have been booked for 25,000 tons for the Portuguese Rys. and 20,000 tons for the Spanish Andalusian Rys.

The market at Newcastle is irregular due largely to shipping delays, higher prices and higher freights. In consequence there is a fair quantity of coal on the market for ready sale at less than current prices. Most of the collieries are well booked into March.

Output by British collieries during the week ended Feb. 20, according to a special cable to *Coal Age*, totaled 5,420,000 gross tons, compared with 5,400,000 tons in the preceding week.

Industrial Demand Rules Belgium

Demand is undoubtedly better for Belgian industrial coals, although stocks are still available, reports Brussels under date of Feb. 18. French coal, however, which has increased about 15 fr., is less a factor than ever and the same is true of German free coal. Domestic trade, however, is not very large, because of milder weather, but there are no surplus stocks available.

It is declared that the coal fields producing lean and anthracitic sizes alone make money, all the others being in deficit.

The Coke Syndicate quotes 125 fr. nominally. Indemnity coke is 120 fr., but it is possible to get fuel at 115 fr. and even less.

French Domestic Demand Eases; General Outlook Good

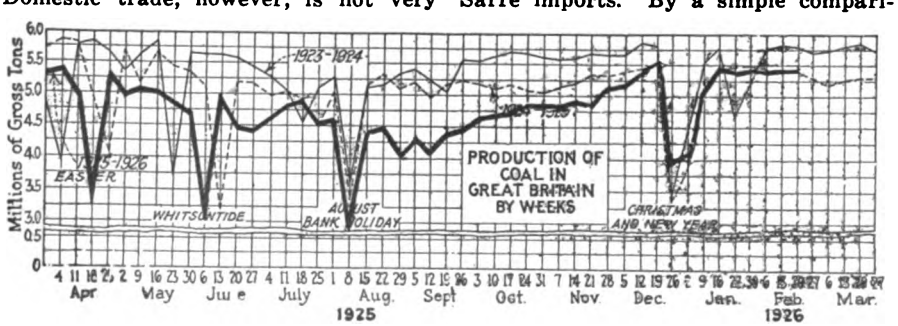
Paris, France, Feb. 18.—The market for French coal remains satisfactory; there is more easiness, however, in domestic consumption, due to milder weather. Scarcity of flaming coal continues.

Russian anthracite is hard to move because it is not successful in the stoves used in flats (salamanders). Donetz cobbles, however, give satisfaction in central heating plants, but prices are considered too high in comparison to those of Welsh anthracite.

Receipts of Ruhr coke have been on the increase, but it is reported that with March deliveries of indemnity coke will be reduced in volume and prices increased over 10 fr. French metallurgical plants will have their allotment of coking smalls cut from 120,000 to 90,000 tons per month. These changes are attributed to a depletion of funds at the disposal of the Agent of Payments (Dawes plan).

In 1925 France imported 18,296,419 metric tons of coal, as compared with 25,106,584 tons in 1924. The 1924 figures, however, included 5,214,030 tons from the Sarre, now covered in French production. In 1925 France exported 4,606,443 tons of coal, as against 2,245,098 tons in 1924. Exports in 1924 did not include shipments from the Sarre. What part of 1925 exports came from the Sarre cannot be determined from the published figures, but it probably approximated 2,300,000 tons.

If we add to the output of 1925 (48,033,564 tons) the amount of the imports, and if we deduct the exports, we arrive at a total of 61,724,000 tons, which represents the tonnage put at the disposal of consumers in the past year. This does not include the stocks existing on Dec. 31, 1924, nor the Sarre imports. By a simple comparison we may say that in 1924 the consumption fixed in this way had come to 67,816,000 tons.



Polish-Italian Contract Signed

The Polish Ministry of Industry and Commerce has announced the conclusion of a contract with Italy by which Poland will export 500,000 metric tons of lump coal to that country annually, payment to be cash against delivery. It is not known whether all or only half of this amount will be used for the Italian railways. Poland, in return, is to give special concessions for the importation of Italian oranges upon which there have been special restrictions heretofore.

Export Clearances, Week Ended March 4, 1926

FROM HAMPTON ROADS

	Tons
For Trinidad:	
Br. Str. Baron Douglas, for Port of Spain	3,345
For Nova Scotia:	
Br. Str. Sambro, for Halifax	989
For Brazil:	
Br. Str. Selton Hall, for Rio de Janeiro	8,333
Br. Str. Dumfries, for Rio de Janeiro	4,698
Braz. Str. Aracaju, for Rio de Janeiro	1,786
Br. Str. Bradclyde, for Pernambuco	7,346
For Cuba:	
Br. Str. Baron Sempill, for Havana	3,300
For St. Lucia:	
Br. Str. Baron Garioch, for Port Castries	3,447
For Jamaica:	
Nor. Str. Odland 1, for Kingston	1,007
For Dominican Republic:	
Nor. Str. Andres, for San Pedro	1,029
For Bermuda:	
Br. Str. Glenpark, for St. Georges	2,529
For French West Indies:	
Nor. Str. Bur, for Fort de France	6,179
For Mexico:	
Nor. Str. Navarra, for Puerto	1,999

Hampton Roads Coal Dumpings*

(In Gross Tons)

	Feb. 25	Mar. 4
N.&W. Piers, Lambert's Pt.:		
Tons dumped for week	151,884	170,257
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	117,164	113,135
C.&O. Piers, Newport News:		
Tons dumped for week	162,932	130,878

*Data on cars on hand, tonnage on hand and tonnage waiting withheld due to snippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS

	Feb. 27	March 6†
Pool 1, New York	$6.00@$6.25	*$5.75@$6.00*
Pool 9, New York	5.40@ 5.70	*5.30@ 5.55*
Pool 10, New York	5.25@ 5.50	*5.00@ 5.25*
Pool 11, New York	4.85@ 5.25	*4.50@ 4.80*
Pool 9, Philadelphia	5.30@ 5.55	*5.10@ 5.40*
Pool 10, Philadelphia	5.10@ 5.25	*4.95@ 5.15*
Pool 11, Philadelphia	4.75@ 5.00	*4.60@ 4.80*
Pool 1, Hamp. Roads	4.50@ 4.65	*4.50@ 4.60*
Pool 2, Hamp. Roads	4.20@ 4.30	**4.30@ 4.35**
Pools 5-6-7, Hamp. Rds.	4.10	*4.00@ 4.10*

BUNKERS

	Feb. 27	March 6†
Pool 1, New York	$6.25@$6.50	*$6.00@$6.25*
Pool 9, New York	5.65@ 5.95	*5.55@ 5.80*
Pool 10, New York	5.50@ 5.75	*5.25@ 5.50*
Pool 11, New York	5.10@ 5.50	*4.75@ 5.05*
Pool 9, Philadelphia	5.55@ 5.80	*5.35@ 5.65*
Pool 10, Philadelphia	5.35@ 5.60	*5.20@ 5.40*
Pool 11, Philadelphia	5.00@ 5.25	*4.85@ 5.05*
Pool 1, Hamp. Roads	4.65	*4.60*
Pool 2, Hamp. Roads	4.30	**4.35**
Pools 5-6-7, Hamp. Rds.	4.15	*4.10*

Current Quotations, British Coal, f.o.b. Port, Gross Tons

Quotations by Cable to *Coal Age*

Cardiff:	Feb. 27	March 6†
Admiralty, large	23s.@24s.	**23s.@24s.**
Steam smalls	12s.@13s.	*12s.*
Newcastle:		
Best steams	16s.@16s.6d.	*15s.6d.@16s.*
Best gas	19s.	*17s.6d.*
Best bunkers	17s.	*16s.9d.*

†Advances over previous week shown in **heavy type**; declines in *italics*.

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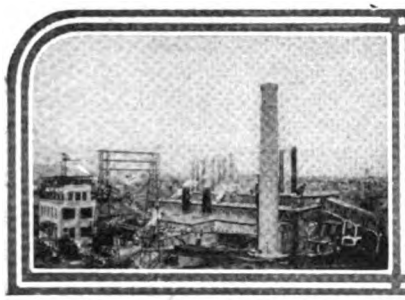
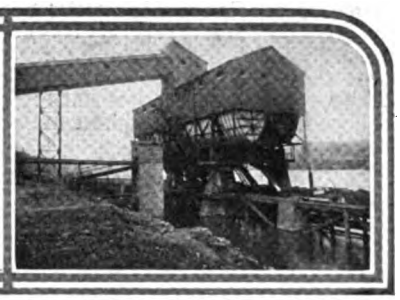


News Items From Field and Trade



ALABAMA

Preparations are being made by Moss & McCormack to sink two slopes at their operations near Carbon Hill, Walker County, where they are developing extensive mining operations. These slopes will be about 850 ft. deep and will tap the Jagger seam of coal. The company is now producing coal from the Corona seam through six drift openings. A large mining camp is nearing completion and tipple buildings, washery and preparation machinery of the most modern type have been erected and placed in operation. A mechanical loader has been installed in one of the openings and the company plans to add a number of additional machines of this kind, if they prove satisfactory. The mines are located on a spur which taps the main line of the Frisco railroad at Carbon Hill. Main offices of the company are in Birmingham.

INDIANA

The Knox Consolidated Coal Co., Indianapolis, is considering the rebuilding of the power house at its Bruceville mine, near Bicknell, and of the tipple at Indian Creek mine. The Bruceville power house was destroyed by fire Jan. 13, with a loss of $25,000, and the Indian Creek tipple was partly destroyed by fire Jan. 2, causing a loss of approximately $65,000.

The Prior Coal Co., Marion, has filed a final certificate of dissolution.

The LeNoir Coal Co., Bloomfield, has filed a final certificate of dissolution.

ILLINOIS

The Illinois Miners' Examining Board will hold sessions this month as follows: Duquoin, Miners' hall, March 12; Centralia, Miners' Hall, March 13; Staunton, Labor Temple, March 15; Springfield, State House, March 16; Danville, court house, March 17; Farmington, Moose Hall, March 18; Peoria, court house, March 19, and Lincoln, City Hall, March 20.

A loss of almost 50 per cent of the coal in Illinois results from present methods of coal mining, according to a report of the State Geological Survey, located at the University of Illinois. The survey covers eleven fields in twenty-seven counties, representing nearly the entire output of the state. In the mining of 69,785,000 tons of coal, the report states, 67,045,000 tons was lost. Pillars account for most of the loss, the average being 39 per cent, but investigation showed, the report says, that 32 per cent of the loss was avoidable.

Plans are being made for the opening of the old Tazewell County coal mine, at Pekin.

KANSAS

Incomplete reports from Kansas coal mines, James A. Sherwood, state mine inspector, announced March 1, showed a production of 4,705,820 tons. Six shaft mines and three shovel mines had not yet sent in complete reports to the inspector's office. The total production from all mines in 1924 was 4,491,069 tons. The nine mines yet to report on last year's business are expected to raise the total to the neighborhood of five million tons.

KENTUCKY

An involuntary petition in bankruptcy was filed last week in the U. S. District Court at Louisville against the Rockport Coal Co., operator of two Ohio County mines located at Rockport and Centertown. Assets of the company were estimated by the attorneys at $100,000 and liabilities were said to be $125,000 to $150,000. It was charged that in addition to the alleged fact of its insolvency the company made preferred payments to certain creditors. The company's coal mines, it is said, have never resumes operations on their original scale since the 1924 strike. The firm is incorporated in Kentucky with H. L. Tucker, Central City, as president and R. C. Reid, Rockport, as secretary.

The Harlan-Jellico Coal Co., Louisville, operating a mine in Harlan County, has changed its name to the Dougherty Coal Co. The company is owned by the Dougherty interests of Louisville.

A bill has been passed by the lower house of the Kentucky Legislature to create a central purchasing department, for state needs of every kind. Coal, instead of being purchased by several buyers, would all go through one buying office. It is an administration bill and is almost certain to become a law.

NEW YORK

Edward W. G. Borer, Philadelphia, was elected a director of the By-Products Coke Corp. at the annual meeting in Syracuse, Feb. 23, after a vote of stockholders increasing the number of directors from 14 to 15. C. D. Caldwell, president, announced that application will be made to list stock of the company on the New York Stock Exchange. Stockholders voted to reduce the number of preferred shares from 50,000, $100 par, to 20,000, $100 par, and increase the number of common shares from 100,000, $100 par value, to 200,000, no par. It will be distributed to present owners on a two to one basis. Principal offices of the company were transferred from Syracuse to New York City.

MASSACHUSETTS

Deliveries of bituminous coal by retail dealers in Massachusetts during January were reported as 369,621 tons, which is an increase of over 60,000 tons over deliveries in the preceding month. Coke deliveries increased from 46,665 tons in December to 66,781 tons in January. Deliveries of foreign and domestic anthracite and semi-anthracite totaled 83,710 tons in January, which makes the total amount of anthracite delivered this winter up to Feb. 1 3,802,000 tons, as compared with the total deliveries last year (April 1, 1924, to March 31, 1925) of 5,115,717 tons.

MONTANA

The Northern Pacific R.R. reports that a saving of $700,000 was effected in 1925 through the use of coal from the open pit mines in the Rosebut strip of Montana.

PENNSYLVANIA

Officials of the St. Clair colliery announce that operations will be resumed in the course of a few days. This mine was one of the few that suffered during the long anthracite strike through a walkout by maintenance men. The interior of the mine is now being put in readiness for work. The breaker has a normal production of 1,000 tons a day when going at full speed.

The Consumers Coal Co., Harmarville, has reopened its mine after being closed for six weeks on account of obstruction of navigation in the Allegheny River by ice. About 450 men have returned to work. The coal of this mine is shipped largely to Follansbee, W. Va., for conversion into coke.

Since the settlement of the anthracite strike the following coke ovens have been blown out in the Connellsville field: Washington Coal & Coke Co., Star Junction, 100; A. M. Byers Co., Orient plant, operated by Hillman Coal & Coke Co., 160; all ovens at the Republic plant of the Republic Iron & Steel Co.; all the ovens at the several

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plants of the Corrado interests; part of the ovens at the Tower Hill plants of the Hillman Coal & Coke Co.; Snowdon Coke Co., 200; Union Connellsville Coal & Coke Co., closed down entirely; all ovens of the Footedale plant of the H. C. Frick Coke Co.

The washery of the Pittston Coal Co., near Pittston, was destroyed by fire Feb. 21. It had been idle during the anthracite strike, and workmen were preparing it for a resumption of operations when the fire occurred. The owners announce that the structure will be rebuilt.

A step toward segregation of the coal properties from other holdings of the Lehigh Coal & Navigation Co., was taken Feb. 23 at the annual stockholders' meeting, when a resolution was adopted providing for the appointment of a committee of three stockholders and three members of the board of managers to study the company's financial structure and report recommendations. The resolution asserted that the recent suspension of anthracite mining had resulted in bringing to public notice "so-called earning figures" of the large producers, and added: "Said figures as applied to the Lehigh Coal & Navigation Co. are misleading, as the actual earnings and the total net assets, apart from the coal lands and improvements, are far in excess of earnings and actual value of said coal lands and improvements." Samuel D. Warriner was re-elected president of the company.

The Pittsburgh Coal Co. reports production for the week ended February 27 by its eight mines in western Pennsylvania operating on the 1917 scale was 33,304 tons, a new high record. Banning No. 2 mine, which has been operating since last August, set up a new record with 7,732 tons.

The Hudson Coal Co.'s new breaker at Olyphant will supplant the Eddy Creek, Miles Slope and Olyphant breakers. The new coal-preparing plant will centralize the Mid-Valley output of the Hudson mines. It will be electrically equipped throughout and embody modern flotation processes for better preparation of the coal.

Anthony R. Panne, of Old Forge, president of the Old Forge Colliery local of the Pennsylvania Coal Co. and for years touted by the union as a radical, has been named a field worker and organizer of District 1, United Mine Workers. Rinaldo Cappellini, president of District 1, announced the appointment.

Much protest is heard throughout the anthracite region because of the delay on the part of Governor Gifford Pinchot in appointing seven anthracite mine inspectors to fill vacancies caused by death or resignation. Some of the vacancies have existed for months. Three bituminous mine inspectors also have to be appointed. In the list of ten vacancies one has existed for two years.

Coal interests in the Pittsburgh district have been successful in having the government revise its plans in connection with the Youghiogheny River basin. Another survey will be made with a view to development. A recent report by Major Daly, in charge of the U. S. Engineers in the Pittsburgh district, disapproved the project for development, which occasioned emphatic protests by the Pittsburgh Coal Co. and others, who declared there were millions of tons of coal in the river basin that will be needed in this district shortly, and the only economical means of getting it out will be via river.

For a consideration of $1,600,000, the Wheeling Coal Co. sold to the Redstone Coal & Coke Co. all its rights of way, titles, privileges, rents, liberties, property and 987 acres of virgin coal lands, situated in Luzerne township, Pa., according to a deed filed Feb. 25. The Wheeling Coal Co. is a Wheeling (W. Va.) concern, while the Redstone Coal & Coke Co. is a Pittsburgh corporation. The transaction was concluded by Isaac M. Scott, president of the Wheeling company, and E. T. Weir, president of the Redstone concern.

State foresters and foresters in the employ of the Philadelphia & Reading Coal & Iron Co. have decided to work together to accomplish the reforestration of the Pottsville region. A large number of trees will be planted this year, and with the watchmen keeping vigilant outlook on high towers which have been provided, it is believed fires can be promptly conquered. Over 350,000 trees already planted are in a flourishing condition.

Pine Forest mine, in the Pottsville region, which was idle for more than two years, has resumed operations. with seventy-five men at work. John Boyd has been placed in charge of the plant.

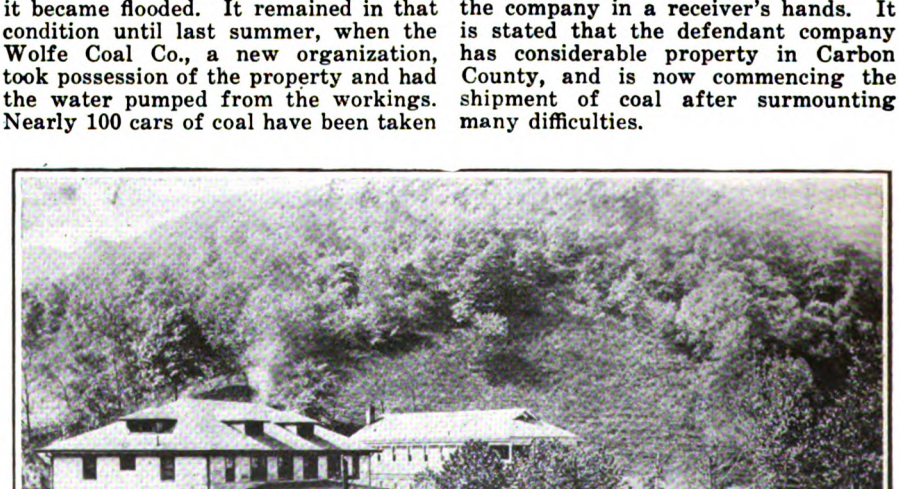
When operations were resumed in the anthracite field after the long strike coal was hoisted from the old Woodside mine, near Freeland, for the first time in 38 years. This mine was abandoned by Coxe Bros. & Co. back in 1888, when it became flooded. It remained in that condition until last summer, when the Wolfe Coal Co., a new organization, took possession of the property and had the water pumped from the workings. Nearly 100 cars of coal have been taken from the mine since the strike and officials say that the tonnage will be increased later. The coal is being prepared for market at a Lehigh Valley Coal Co. breaker at Drifton.

One new breaker was finished and another almost ready for operation when the anthracite miners recently resumed work after their long strike. The new all steel and electrically equipped plant of the Coleraine Colliery Co., near Hazleton, was tested two days after the strike ended and was accepted. It is intended to prepare about 400 tons of coal a day at this plant for the present, but later the tonnage will be doubled. The breaker cost $100,000. The new breaker of Madeira, Hill & Co., at Marion Heights, is almost ready for work. Three shifts are at work on the structure. Work on this plant was halted during the strike because of a dispute between the union and employers as to the loading of coal.

UTAH

The Salt Lake County Commissioners have asked for new coal bids after rejecting three. The lowest price offered on slack was $3.40. Because the city authorities were getting this coal at $3.20 it was decided to advertise for more bids. It was understood by the Commissioners that a number of bids had miscarried.

Those seeking to place the Great Western Coal Mines Co. in the hands of a receiver were severely scored last week by District Judge L. B. Wight, of Salt Lake City. Counsel for the petitioner is said to have sought the receivership without acquainting the coal company officials with the fact. It was declared that none of the creditors outside of this petitioner wanted to place the company in a receiver's hands. It is stated that the defendant company has considerable property in Carbon County, and is now commencing the shipment of coal after surmounting many difficulties.



Consolidation Coal Co. Provides Recreation Center at Van Lear, Ky.

The employees of the Millers Creek Division of the Consolidation Coal Co. have a new club house and a modern recreation building located within a few hundred feet of the company's office building and store at Van Lear, Ky. The club house (left) has strictly modern plumbing, five bathrooms, showers, and is heated by a steam controlled vacuum vapor system.

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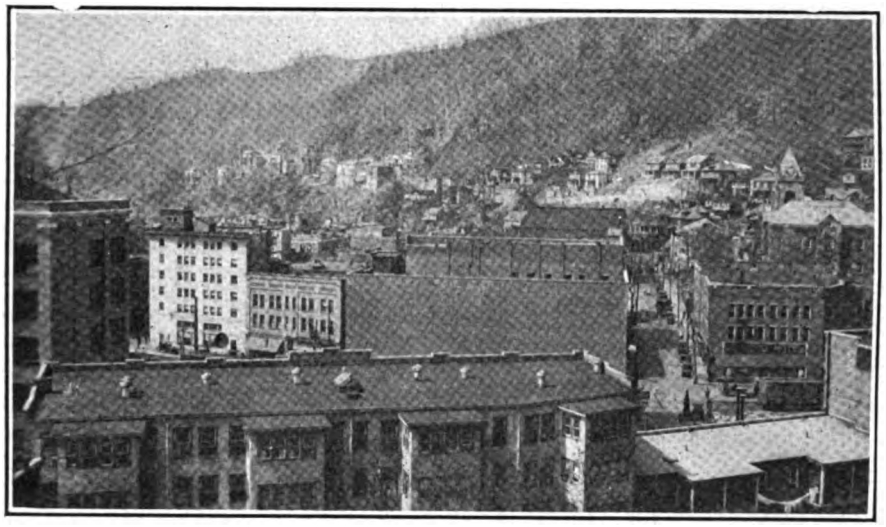

A Busy Mining Community in the Hills of West Virginia
That mining is on a profitable basis in this region is evidenced by this view of the mining town of Welch, W. Va. Substantial business buildings comprise the central part of town while the residential section, as may be seen in the background of the picture, extends well up the hillside.

VIRGINIA

Negotiations have been closed for the purchase of the Gunton Park properties of the Smokeless Coal Corp., of Pulaski, by the Gunton Park Anthracite Collieries Corp., a new company headed by former Senator L. Heisler Ball, of Delaware, the principal stockholders being Delawareans. The property, located seven miles west of Pulaski, comprises 1,200 acres. At a depth of 650 ft. a 7-ft. seam has been located in connection with three separate veins. Fifty cars of coal have been shipped to Northern markets during the preliminary developments. Proceeds from the sale of $600,000 7 per cent bonds will be expended in equipping and electrifying the mines and building a standard gage connection to the Norfolk & Western, one mile distant. It is contemplated having the mines equipped and producing coal by April 1.

WEST VIRGINIA

The capital stock of the Glogora Coal Co. has been increased from $500,000 to $1,000,000; that of the Blue Ridge Coal Corporation from $200,000 to $400,000; of the Export Coal Co. from $150,000 to $300,000; of the Hubball Guyan Coal Co. from $25,000 to $100,000.

The Grey Eagle Mining Co., organized under the laws of the State of Delaware, in which Thomas A. Shewey, of Grey Eagle, and others are interested, has been authorized to transact business in West Virginia.

The Crown Coal Co. has purchased from the Whyel Coal & Coke Co., Harry Whyel and the P. V. & K. Coal Co. 2,200 acres of coal land in the Arnettsville section. The deal involves a consideration of approximately $1,000,000, it is stated.

Charles E. Hawker and Cecil H. Humphrey, of Fairmont, have obtained a controlling interest in the Rosedale Coal Co. operating in the Monongalia field and Mr. Hawker has been elected president and Mr. Humphrey general manager. The new board of directors includes Edward G. Donley and A. J. Garlow, of Morgantown, and Charles F. Clement, of Philadelphia. The company was formerly owned by John L. Hatfield, W. S. John, Mrs. Asa Sterling and Isaac Van Voorhis. Under the reorganization the company will be closely affiliated with the Winslow Coal Co., of Pittsburgh, which conducts a large brokerage business in the soft coal area. An increase in capital stock has been authorized to build additional houses for miners and to erect a new tipple in order to increase production from 2,500 to 4,500 tons per day.

One of the largest intensified safety drives in southern West Virginia will be staged in the Logan field on March 21, when safety meetings will be held at Braeholm, Amherstdale and Lundale. Robert M. Lambie, chief of the state Department of Mines, will address the meetings.

Stockholders of the Crystal Block & Coke Co. have elected directors for the current year and the Crystal Block Mining Co., a subsidiary concern, has chosen practically the same directors. The only change in the directorate of the Crystal Block Coal Co. was in the election of L. A. Osborn in the place of Howard N. Eavenson. The board as elected includes Col. Edward O'Toole, Dr. R. V. Shanklin, J. M. Tulley, J. H. Barker, E. O'Toole, Jr., L. A. Osborn and L. E. Wood. On the board of the mining company are Colonel O'Toole, Dr. R. V. Shanklin, J. H. Barker, L. E. Wood and Howard N. Eavenson. The Crystal Block Mining Co. recently declared a 50 per cent cash dividend.

Although strenuously opposed by representatives of its stockholders, sale of the Lewis mine of the Hudson Coal Co. to the Wentz Corporation, of Philadelphia, for $340,000, was confirmed on Feb. 18 by Judge Birk S. Stathers of the Circuit Court of Harrison County. The mine, located on the Baltimore & Ohio R.R. near Wolf Summit, in Harrison County, was offered for sale on Feb. 6 and the Wentz Corporation was the only bidder. When the sale came up for confirmation on Feb. 15, stockholders of the Hudson company raised objections to the confirmation on the ground that the mine had been appraised at $1,000,000. Since last May the mine has been operated under the receivership of P. H. Knode, of Philadelphia, employing about 250 men.

Since installing new equipment, including shaker screens, loading booms, etc., costing $25,000 at the Vanbail mine, the Vanbail Coal Co. has been able to increase its capacity from 150 to 200 tons a day.

A safety meeting was held Saturday evening, Feb. 27, by employees of the Pocahontas Fuel Co. at Jenkinjones, McDowell County. The chief addresses were by Thomas Stockdale and William D. Lee, district state mining inspectors. A. V. Sprole, director of safety of the Pocahontas company, was in charge.

Members of the senior class in mining engineering in West Virginia University at Morgantown, were given a thorough and practical course in mine rescue and first aid training. R. M. Lambie, chief of the state department of mines, will be in charge. It is planned to give the training in a coal mine in the Scott's Run section. The students entered the mines with self-contained breathing apparatus, flame safety lamps, all-service gas masks. Burrell methane indicator, carbon monoxide and various approved equipment.

The Blue Ridge Coal Corporation of Charleston, is erecting a new tipple and equipment of shaker screens and loading booms at Brush Creek, Boone county. A three-track tipple is also being erected at No. 2 mine, and it is being equipped with shaker screens and loading booms. A year ago the company erected a new tipple and obtained shaker screens and loading booms at mine No. 3. The work of erecting the plants is in charge of J. J. Ross, the president of the company.

McComas, in the Matoaka district, has the largest mining extension school in the state, according to officials of West Virginia University. Fifty-seven men are enrolled in the McComas class. Coal company officials are urging the men to attend the school and they report that there is a marked improvement in efficiency along mining lines.

P. D. Costello, superintendent at the Jamison No. 8 mine of the Jamison Coal & Coke Co., states that a contract has been given for boring holes in front of the workings at No. 8 mine, in which vacuum pumps will be installed to draw the gas from coal to be mined. This safety measure was determined upon following the explosion in Jamison No. 7 mine last year. The company also is installing air-driven puncher machines in No. 8 mine to replace the electric driven cutting machines, as an additional safety measure. The installation will be completed within a few weeks, it is stated. Since the explosion in No. 8 mine, Jan. 14, almost the entire working has been dusted with limestone.

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Personal

There is an opening on the editorial staff of *Coal Age*. Please address J. E. Spurr, *Coal Age*, 10th Ave. and 36th St., New York, giving such information as would be of interest.

J. W. Powell, formerly a consulting mining engineer of Welch and Charleston, W. Va., who is at present chief mining engineer of the Autonomous Industrial Colony Kusbas, Kemerovo, Siberia, arrived in Welch last week. Mr. Powell is on vacation for three months and expects to return to Siberia in May or June. While in the United States he will investigate coal-cleaning equipment, coal-cutting and conveying machinery, storage-battery locomotives, mine cars and haulage equipment and coal- and rock-drilling machines and other coal-mining equipment. Mr. Powell reports great progress in the development of coal mines in the Kuznets coal basin during the past two years.

John Laing, president of the Wyatt Coal Co., residing in Charleston, W. Va., sailed March 6 from New York City for a Mediterranean tour. Mr. Laing, who is accompanied by his family, will visit the Holy Land, Italy, France and the British Isles.

S. Pemberton Hutchinson, president of the Westmoreland Coal Co., Philadelphia, and former president of the National Coal Association, is a passenger on the "Lapland," which sailed from New York March 6 on a Mediterranean cruise.

Oswald Cooper, lately connected with the Chicago office of the West Virginia Coal & Coke Co., who was recently operated upon for appendicitis, has resigned and will be connected with mining operations with which his father, Dr. Cooper, of Beckley, W. Va., is connected.

The resignation of **A. H. Lichty** as vice-president in charge of industrial relations of the Colorado Fuel & Iron Co. has been announced, to take effect the end of March. According to present plans, it was said, the vacancy created by this resignation will not be filled, the work handled by Mr. Lichty being distributed among other officials, in accordance with a reorganization policy which is being put into effect. Mr. Lichty has been with the Colorado Fuel & Iron Co. for the last five years. No announcement has been made of his plans for the future.

A. M. Bingham has resigned as secretary-treasurer of the Temple Anthracite Coal Mining Co., Scranton, Pa. It is reported that in the near future Mr. Bingham probably will embark in business with Frank Hemelright, formerly president of the Temple company, who is now on a trip to Honolulu. Mr. Bingham's resignation was announced soon after the retirement of his chief. Mr. Bingham continues as a director in the coal company in which he has been prominently identified for more than 25 years. Mr. Bingham resides at Dunmore, Pa.

H. G. Ecker, general manager of W. H. Bowater, Inc., 25 Broadway, New York City, returned from England last week on the "Mauretania."



William P. Jennings

William P. Jennings, recently appointed president of the Temple Anthracite Mining Co., Scranton, Pa., has also been elected president of the Temple Coal Co., Mount Lookout Coal Co., Lackawanna Coal Co., Ltd., and the East Bear Ridge Collieries Co., as well as a director of these companies. He succeeds F. H. Hemelright, who has retired. Before joining the Temple companies Mr. Jennings was for 38 years in the service of the Pennsylvania Coal Co. and the Hillside Coal & Iron Co., where he rose from door boy to general superintendent.

P. M. Snyder has announced the appointment of **J. F. Cornwell** as purchasing agent for the subsidiary companies of the Massachusetts Gas Co. operating in the Winding Gulf and other smokeless fields of West Virginia. Mr. Cornwell has been with the New River company since 1924 as assistant purchasing agent.

Otis Mouser, who for thirty years has been connected with the Wentz coal interests, has been named to succeed the late Col. D. B. Wentz as president of the Virginia Coal & Iron Co. and of the Stonega Coke & Coal Co., as well as chairman of the board of directors of the Hazle Brook Coal Co. and the General Coal Co. **E. B. Leisenring** is the new president of the Hazle Brook Coal Co. **Col. Ralph H. Knode** has been chosen president of the General Coal Co.

Joseph P. Jennings, formerly superintendent of the Southern division of the Pennsylvania Coal Co. and the Hillside Coal & Iron Co., has been appointed general superintendent, in charge of all the colleries of the two companies. He succeeds his brother, William P. Jennings, who recently became president of the Temple Anthracite Mining Co. Other Pennsylvania-Hillside officials promoted are **Jesse Palmer**, mine inspector in the Northern division, who has been made superintendent of the Northern division, and **John M. Dobbie**, mine inspector in the Southern division, who has been named superintendent of the Southern division.

Traffic

New England Seeks Permanent Rail Rates from West Virginia

Petitions have been filed with the Interstate Commerce Commission by the New England Governors' Fuel Committee and the New England Traffic League asking that the present temporary rates on bituminous coal from southern West Virginia be made permanent. April 30 is the date set for the expiration of the emergency rates.

It is understood that New England's plea will be directed primarily toward the maintenance of rates on all sizes of low-volatile coal, while shippers of high-volatile coal in southern West Virginia seek permanent rates on that grade of coal to all Northeastern points, including New England.

The petitions will seek further hearings in I. C. C. Docket No. 15,006, commonly known as the anthracite substitute case.

Supporting petitions have been filed by the Boston Chamber of Commerce, Associated Industries of Massachusetts, Manufacturers' Association of Connecticut, Springfield (Mass.) Chamber of Commerce, New Haven Manufacturers' Association, Associated Industries of Maine, Connecticut State Manufacturers' Association, Associated Industries of Vermont, Providence (R. I.) Chamber of Commerce, New Hampshire State Chamber of Commerce and Portland (Maine) Chamber of Commerce.

The Kanawha Coal Operators' Association of Charleston, filed a petition with the Interstate Commerce Commission in Washington, D. C., on March 3, for a further hearing and for an order requiring the permanent continuance of through routes and just and reasonable rates to the six New England states, New York, New Jersey, Pennsylvania, Delaware and Maryland. The four points asked for in the petition are: First, a further hearing; that the commission by order require the respondent carriers to maintain the temporary or emergency rates; that they maintain permanently for the future through routes and joint rates on bituminous coal from the Kanawha-Coal River district and that the commission may enter orders for rates that are reasonable and just.

Stays Reconsignment Privilege On Anthracite at Detroit

In I. & S. 2619 the Interstate Commerce Commission has suspended from March 5 until July 13 several tariffs of the Grand Trunk and Wabash in connection with the reconsigning privileges on anthracite at Detroit, Milwaukee Junction, West Detroit and Port Huron, Mich. The suspended schedules propose to cancel free diversion and reconsignment privileges at those points and assess regular diversion and reconsignment charges in lieu thereof. Hearing is set for March 24 at 10 a.m., at the Detroit Board of Commerce Building, Detroit, Mich. The American Wholesale Coal Association is the principal complainant in this proceeding.

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Coming Meetings

American Mining Congress. Southern industrial development conference, Hotel Peabody, Memphis, Tenn., March 15-17. Acting secretary, Henry M. Payne, Southern Division, American Mining Congress, Memphis, Tenn.

Heating and Ventilating Exposition at new Madison Square Garden, New York City, March 17-23. E. P. Frenz, Hotel McAlpin, New York City.

New England Coal Dealers' Association. Annual meeting, State Armory, Worcester, Mass., April 7 and 8. Secretary, E. I. Clark, 141 Milk St., Boston, Mass.

American Welding Society. Annual convention, 29 West 39th St., New York City, April 21-23. Secretary, M. M. Kelly, 29 West 39th St., New York City.

National Retail Coal Merchants' Association. Ninth annual convention, New Willard Hotel, Washington, D. C., May 17-19. Resident vice-president, Joseph E. O'Toole, Transportation Bldg., Washington, D. C.

Electric Power Club. Convention at The Homestead, Hot Springs, Va., May 24-27. Secretary, S. N. Clarkson, B. F. Keith Bldg., Cleveland, Ohio.

The American Mining Congress. Annual Exposition of Coal Mining Equipment, May 24-28, at Cincinnati, Ohio, in conjunction with the annual meeting of practical operating officials. Assistant secretary, E. R. Coombes, Washington, D. C.

International Geological Congress. The fourteenth congress will be held in Madrid, Spain, commencing May 24, 1926. From May 5 to 22 excursions of interest to the visiting delegates will be arranged. Information concerning the congress can be obtained from the secretary of the organizing committee, Enrique Dupuy de Lome, Plaza de los Mostenses, 2, Madrid, Spain.

Midwest Retail Coal Merchants Association. Annual meeting, May 25 and 26, at Kansas City, Mo. Secretary, James P. Andriano, St. Joseph, Mo.

Western Canada Fuel Association. Annual meeting at Winnipeg, Manitoba, Can., May 27 and 28. Secretary, W. H. Morrison, Winnipeg.

American Wholesale Coal Association. Annual meeting at Toledo, Ohio, June 7-9. Treasurer, R. B. Starek, Union Fuel Bldg., Chicago, Ill.

Association of Iron & Steel Electrical Engineers. Exposition and convention at Hotel Sherman, Chicago, Ill., June 7-10. Secretary, J. F. Kelly, 1007 Empire Bldg., Pittsburgh, Pa.

American Institute of Electrical Engineers. Annual convention, White Sulphur Springs, W. Va., June 21-25. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

American Society for Testing Materials. Convention at Haddon Hall, Atlantic City, N. J., June 21-25. Secretary, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

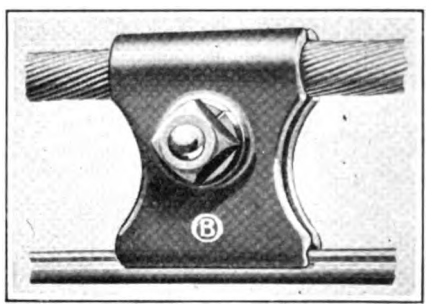
American Society of Mechanical Engineers. Spring convention at San Francisco, Calif., June 28-30. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

New Equipment

Clamp Makes a Flexible Trolley Line

A new duplex wire clamp lately developed by the Ohio Brass Co. is employed in the construction of a flexible type overhead for mine trolley systems. The feeder cable is strung above the trolley wire and also acts as the messenger wire from which the contact wire is suspended.

The construction possesses the same advantages as the high-grade catenary systems used on electrified railroads, namely, the wire is level without sag and free from the rigidity of other types of construction which develop excessive and destructive wear at hanger supports.



Clamp Ties Feeder and Trolley

Trolley wire and feeder are held together by this clamp thus making a flexible trolley line with many feeder tap connections.

To make possible this type of overhead, at low cost and in practical form for mining conditions where low headroom is a factor, this new type of duplex trolley-feeder wire clamp has been developed. The feeder cable is suspended from a regular feeder sling or clamp attached to an insulated hanger. These duplex clips which grip the cable in the upper half and the trolley wire in the lower half are spaced at intervals on either side of the hangers. A bolt, nut and lock washer are used to tighten the grip after the clip is adjusted to position. This construction is said to be both permanent in character and economical in cost.

Gear-drive Gasoline Locomotives Announced in Four Sizes

A new line of gasoline gear-driven locomotives, ranging in size from eight to twenty tons, is announced by the Davenport Locomotive Works, Davenport, Iowa. In these, geared transmission replaces the roller-chain transmission and individual wheel drive of the present Davenport gasoline locomotives, although the manufacture of the original type will also be continued.

Many new features of design and construction have been incorporated, among which is a three-point suspension principle with cross equalizer to give improved tracking qualities. Semi-elliptic springs have been employed because of the wider distribution of stresses and better dampening of shock obtainable with this type. A fully inclosed, roomy, all-steel cab is provided for comfort and convenience in operation.

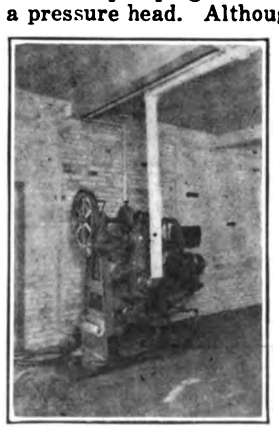
Open, accessible design has been used in these machines to facilitate quick adjustments and repair, and the construction is rugged and simple throughout. Various new mechanical features have been incorporated. The master clutch is a step jaw clutch which is always halfway in when the faces are engaged, thus eliminating the possibility of chipped corners on the clutch faces.

Both engine and transmission have individual force feed lubrication systems with pressure gauges in the cab. Alemite fittings are provided for the journals at the driving wheel.

Climax engines are used—six cylinders in the sixteen- and twenty-ton sizes and four cylinders in the eight- and twelve-ton—with four speeds forward and four reverse. Both speed and direction selection clutches slide on splined shafts for accurate, positive engagement and lock automatically in position. These advantages will be readily appreciated by practical coal mining men.

It Pumps Sludge Against Moderate Pressure Head

Careful preparation of coal by the wet process, that is coal washing, has brought its own problems in the way of sludge recovery and disposal. In the accompanying illustration is shown a diaphragm pump recently developed by the Dorr Co., of New York, and intended for use in pumping silt or sludge against a pressure head. Although this machine is a new development it has already demonstrated its utility in this type of service.



Diaphragm Pressure Pump

As ordinarily constructed a diaphragm pump is intended to operate against little or no head. Machines of the type here shown, however, are operating successfully against heads up to 35-lb. per square inch.

This pump, known as the Dorrco, has been installed in several operations and is working against pressures ranging

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up to as much as 35-lb. per square inch. Because of the design and construction of the machine, however, no noticeable strain is placed upon the diaphragm and the machine handles the coal sludge without difficulty.

With Line Oiler Air Drills Never Lack for Oil

A constant supply of lubricating oil is necessary for the up-to-date hammer drill if it is to work with maximum efficiency and minimum upkeep cost. If it were not for the human equation, the oil reservoir of the hammer drill itself would be amply large enough to supply this need, but as it is always necessary to take the human factor into consideration, the extra weight that would necessarily be added to the hammer drill to secure the increased reservoir capacity would be detrimental. For this reason, the Sullivan Machinery Co., Chicago, Ill., has designed a line oiler, which is shown in the accompanying cut, to meet this need.

OILER INSERTED IN LINE

This oiler, which is known as the "J-C" line oiler, consists essentially of an egg-shaped casting, of a net weight of 7 lb. and strong enough to stand the abuse of underground work, simple in principle of operation, and with an oil reservoir of sufficient capacity so that it requires only two fillings per eight-hour shift. The common method of using the oiler is to attach it with ordinary hose connections to the end of the air hose and then to use a short length of hose (8 to 10 ft.) between the oiler and the drill to be lubricated. It is possible to use lubricating oils of varying viscosity by merely changing the feed nozzle of the oiler. Experience has proved that hammer drills equipped with this oiler give better performance with less upkeep.

An arrow on the oiler indicates the direction of the flow of air through it. Part of the air is deflected into the oil reservoir, forcing the lubricant out through the nozzle into the air line. A plugged hole is provided for filling the oiler.

It is well recognized that adequate lubrication is essential to the proper operation of most machines. Rock drills are carefully constructed pieces of mechanism and sensitive in operation. It is, threfore, highly important that they be efficiently oiled not only in order that they may work properly, but also to reduce wear and maintenance charges.

Crawler Loader Has Large Capacity

A new crawler loader, known as the "Grizzly," has been placed on the market by the Link-Belt Co. of Chicago. This machine contains many improvements, in design and detail of construction, and is said to handle crushed stone, gravel, sand, phosphate and like materials at the rate of 1½ cu.yd. per minute, or about 140 tons per average hour.

This loader is a one-man machine. Its propulsion, operation, and care can be handled entirely by one worker of average intelligence. Four units make up this machine, namely, the elevator, the chassis, the power plant, and the crawler. The unit system of construction is employed enabling the operator to inspect the machine easily, and to make any adjustment or repair without tearing the whole machine apart.

Special attention has been given to the lubrication of moving parts, all of which are provided with Alemite fittings or grease cups placed within reach of the operator. All bearings and moving parts are large enough to keep wear to a minimum, thus assuring long life to the complete unit.

It is claimed by the builder that any one can learn to operate this machine with but a few minutes' instructions. It can travel forward and reverse; and turn right or left when traveling in either direction. The starting, turning, and stopping are all controlled by two hand levers, which automatically apply brakes when stopping. The elevator is controlled by separate hand lever, which operates a steel clutch. This disengages automatically when machine is started in reverse.

The buckets used in the elevator are of special design, with reinforced edges to reduce wear. They are spaced closely enough, on double strands of malleable iron and steel chain, to insure a steady delivery of material to the delivery chute the principle involved being that close spacing of buckets permits a lower speed of the elevator, with consequent less wear of parts.

Head and foot sprockets are made of manganese steel, cast in two parts, and clamped on hexagonal steel shafts. This eliminate troublesome keys. The hexagonal shafts are journaled, and are run in babbitted bearings, oil-grooved, and provided with Alemite fittings. The driving wheel on the elevator head shaft is provided with a safety breaking pin. The chute at the head of the elevator, as ordinarily furnished, is of the swiveling type. It operates through an angle of 180 deg. and can be controlled from the operator's platform.

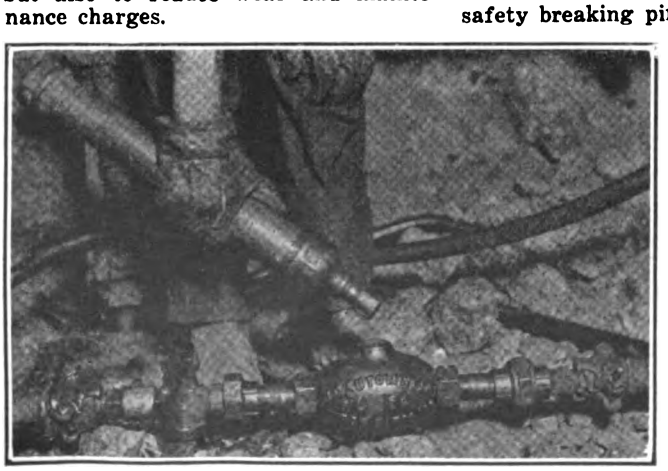
The feeder consists of manganese steel paddles, securely bolted to the hexagonal foot shaft, and so arranged as to produce a steady feed of material to the buckets. Feeder adjustment and collapsing mechanism are both controlled by a hand wheel within reach of the operator.

The chassis is made of heavy angles, plate and channels, securely riveted together, making a substantial support for elevator and machinery. A large steel casting is riveted to the chassis, forming the connection to the front crawler shaft. The rear of the chassis is supported on a large steel bracket casting, pinned to the rear axle.

The power plant is a simple, compact, gasoline unit of 30 hp. at 1,200 r.p.m., equipped with a governor; an electric motor may be substituted if desired. The truck transmission has 3 speeds, giving 33 ft. or 66 ft. per minute in the forward direction, and 29 ft. in the reverse.

All driving and control machinery for crawler and elevator is housed-in. All shafts are of turned and all gears of cut steel. Bearings are bronze-bushed. The housing is dust tight, and partly filled with oil, which assures sufficient lubrication to all parts.

All drives are made by means of roller chains, running on steel sprockets. All are protected by sheet steel guards. The crawler is of channel and plate construction, riveted together, making a rigid housing for sprockets and idlers. The sprockets are of the self-cleaning type, made of steel, bronze-bushed. The treads are made of special heat-treated steel, cast in one piece, 11 in. wide, 11⅞ in. pitch, and run on cast steel idlers, also bronze-bushed, with large chambers for lubrication. A special design of shoes and sprockets guarantees self-cleaning. The rollers are of large diameter, and keep the bearings up out of the dirt.



Keeps Drill Oiled

The line oiler shown here should be as close to the drill as possible. It can be used with all pneumatic tools

Association Activities

Open billing of coal was vigorously condemned at a meeting of the **Chicago Wholesale Coal Shippers' Association** held Feb. 26 at the Illinois Athletic Club in Chicago. T. C. Irwin, of the Abbott-Irwin Coal Co., introduced a resolution, which was unanimously adopted, protesting against the shipment of coal without orders. The practice was held to be one of the crying evils of the coal industry and the Chicago wholesalers desired to go on record as definitely opposed to it.

Obituary

William M. Strachan, widely known in Indiana mining circles, died Feb. 17, at Rochester, Minn., where he had gone for treatment following an illness. Mr. Strachan was superintendent of the Fort Harrison Mining Co., of Terre Haute, having under his supervision the Wabash, Talleydale and Bardyke mines.

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Economic Theories Clash in Lake Rate War—P. 387

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COAL AGE

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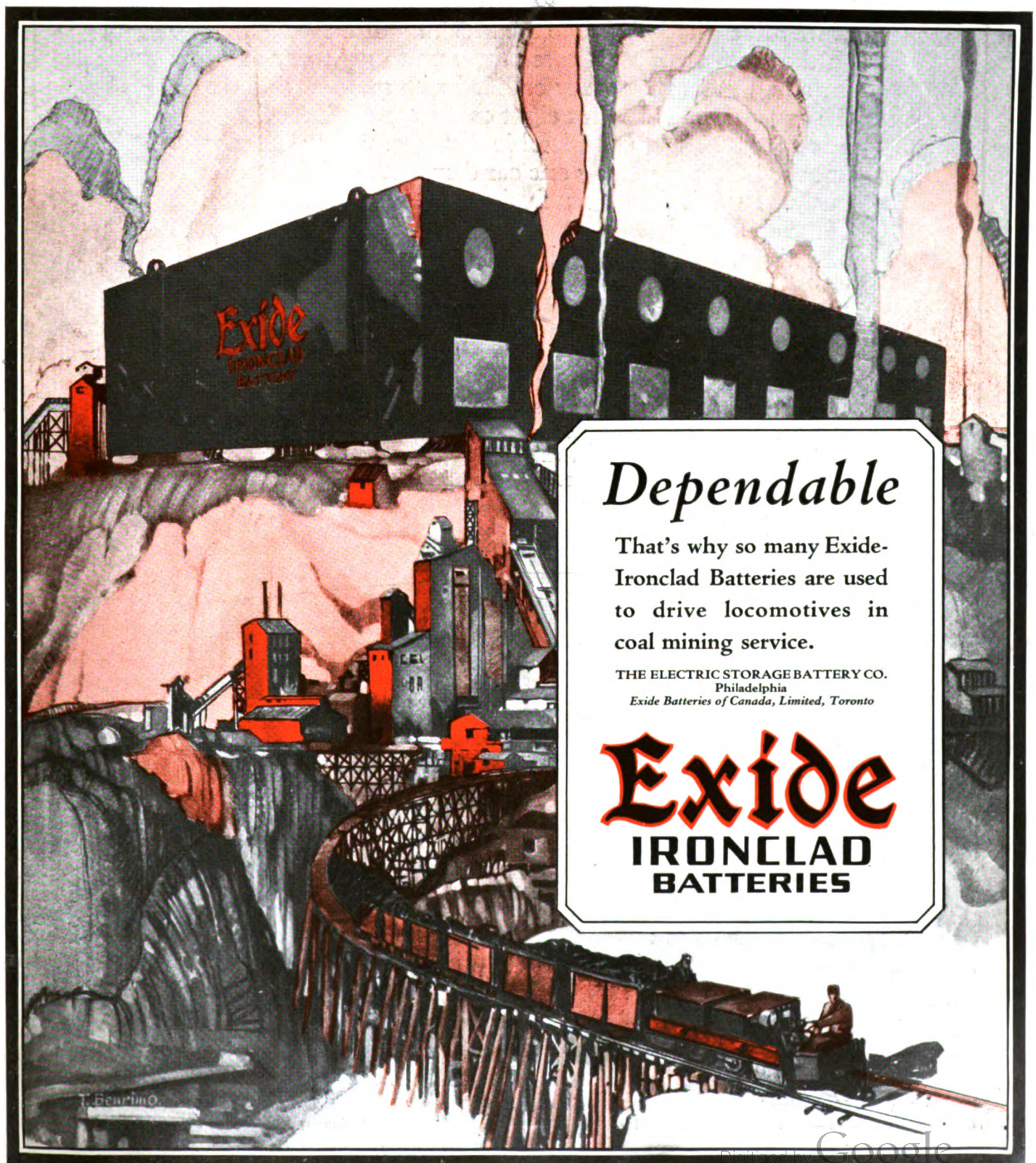

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"....You will be interested to know that we had a runaway of fifty-five empties, due to the breaking of the hitching pin on the motor, which allowed the cars to get away and run for a half mile, when they collided with seventeen others on the empty track. All but eight cars were derailed, the track was torn up for a considerable distance, trolley poles were knocked down, but only one car damaged, and that not seriously. I think this is conclusive evidence of the sturdiness of the equipment. The cars are working fine....and the men like them. We have weighed loads as high as 4,100 lb., which is more than twice the capacity of the old cars. (Which had less than 2,000 lb.). Our mine organization is sold on this type of equipment."

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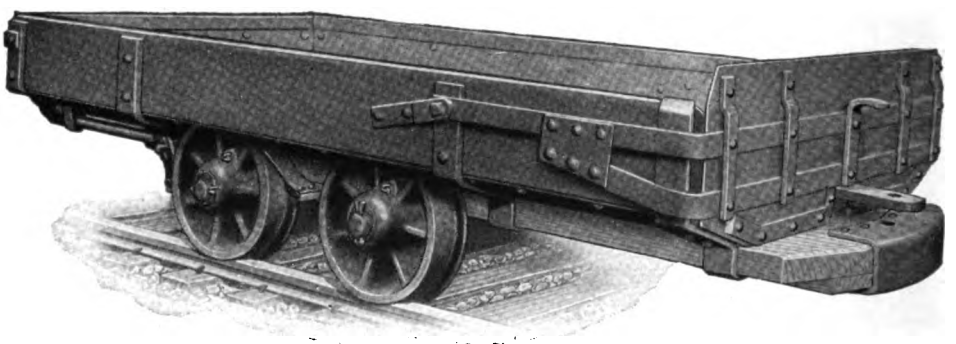

This low type, maximum capacity car is lowering haulage costs, by decreasing trips, and providing the maximum ratio of coal capacity to dead weight. It saves time in spotting, and reduces roof and bottom work. Ideal for use in low seams, and with mechanical loaders.

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 29 — New York, March 18, 1926 — *Number* 11

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Lake Cargo Rate Case Raises Big Economic Issues Between Competing Fields 389
BY SYDNEY A. HALE.

Fans with Blades that Curve Backward Best Meet Varying Mine Pressures 393
BY LOUIS W. HUBER.

Coal Men Discuss Loading with "Mechanicals" 398
BY R. DAWSON HALL.

Consumers Had 45,000,000 Tons of Soft Coal Feb. 1 404

Government Ownership and Private Management of British Coal Mines Urged in Royal Commission Report 407

Wheeler Bill Proposes Seizure of Coal Mines in Emergency 405
Offers Bill to Regulate Coal and Prevent Strikes 405
L. I. Dealers Embargoed for Refusing Soft Coal 406
N. Y. Retailers to Discuss Anthracite Situation 406
Smoke Ordinance Revived in New York 406
Nineteen Mines Sealed by Court to End Stream Pollution 406
Was Horning Explosion Caused by Switch of Cutting Machine Igniting Gas? 408
California Mine Ships Coal 409
Kansas Union Men Restless, Would Close Strippings 409
Rival of Coronado Case Results in Second Mistrial 409
Jail Awaits Bittner 409
May Defer Action on Oddie Bill 410
Many Arrests as Troops Leave Southern Indiana 410
Two-Year Pact Accepted by Nova Scotia Miners 410
Ohio Companies to Expand Byproduct Coke Plants 410
Lawton Gets 60 Days in Jail 410

Editorials 387
Underground Operation 400
Practical Pointers 402
News Items from Field and Trade 411
Traffic 414
Weekly Review and the Market 415
Foreign Market and Exports News 420
New Equipment 421

Carloads of Thermal Units

It is said that one reason for the decline in the tonnage of coal has been the fact that the miners have been disciplined and have produced better coal and that the operators have been cleaning the coal more carefully at tipples and sending a better product to market. If the tonnage declined, the heat units marketed did not.

All of which shows that coal preparation, not only better quality but better size is in the air. No one who wants a good market can continue to operate without some kind of preparation. Next week Thomas Fraser, of West Virginia University, will give some facts and advice on the problem of sizing and hand cleaning, an important matter now machine loading and scraping put all the coal seam on the mine car without discrimination and perhaps some of the roof and floor also.

Take Another Look

Some of the heavily pitching seams have been opened by headings driven in the coal. That was best perhaps in the days when the market was unestablished and rockwork unduly expensive, but is it the way to do the work today? In Washington State a mine saved a big lift, an exceedingly lengthy haul, an unequal hoisting load, much trouble with snow and a number of inconveniences by putting a rock slope up to the surface. There are lots of concerns which have saved money by such rockwork, notably Sublet and Kenilworth.

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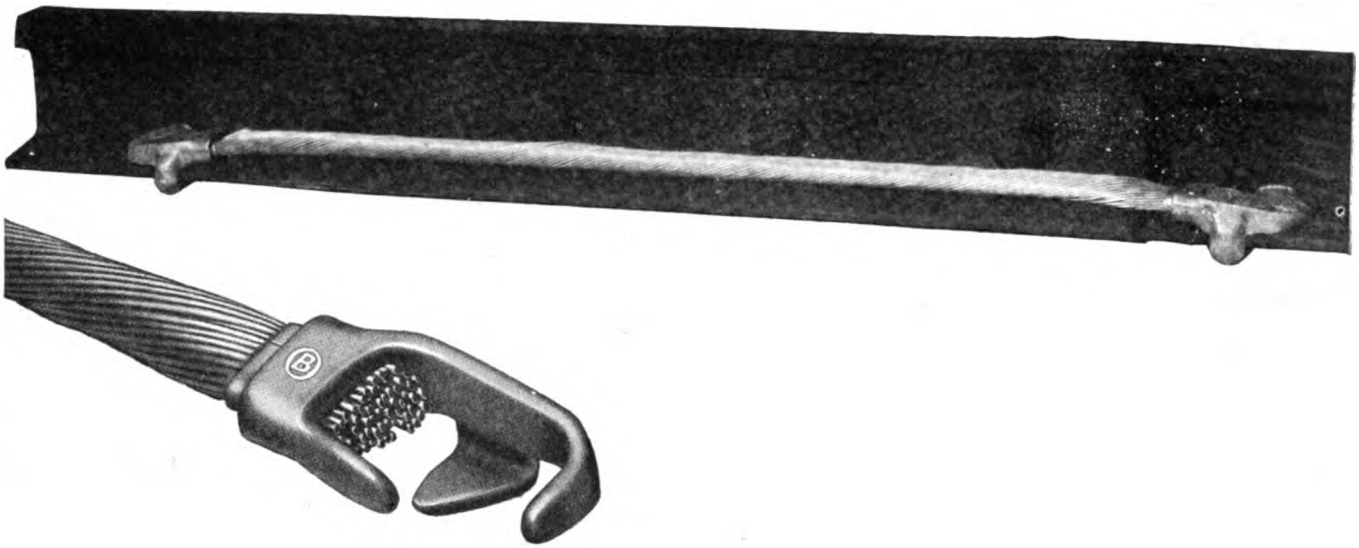

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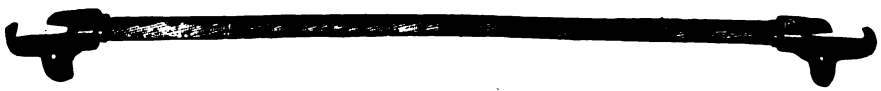

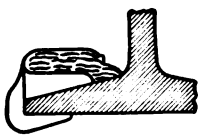

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 29 NEW YORK, MARCH 18, 1926 Number 11

Dangerous Legislative Principles

THE SENATE COMMITTEE on interstate commerce has submitted a favorable report upon a bill to enlarge the membership of the Interstate Commerce Commission and to reorganize it upon a basis of mandatory regional representation. In pursuance of this latter aim, the bill (S. 2808) splits the country into seven territorial groups. One to three members of the Commission—the number varying with the size of the group and its commercial importance—would be appointed from each group. The total membership of the Commission would be increased from eleven to thirteen.

Proponents of the measure seek to justify such a regional reorganization on the ground that "the very structure of our government is based upon local self-government and local representation in the general government." They say that we should "bring together in the Commission as near as may be a personal knowledge of the transportation conditions and problems that exist in the different sections of the country." This from a committee that only recently refused to indorse a Presidential nomination to the Commission because the appointee had been a railroad director ought to provoke tears from those who hold consistency the most virtuous of vices.

Were inconsistency the only defect it might well be overlooked. But objection strikes deeper than that. The Congressional idea of local interests has been effectively exemplified in the log-rolling rivers and harbors appropriations bills in days gone by and in unanimous-consent action upon measures to flatter local pride with federal buildings far beyond community needs. The injection of anything akin to that idea in railroad regulation would be a national calamity.

The fear that a regional reorganization would open the way to a consideration of disputes from the standpoint of sectional desires instead of the national good is not as fanciful as it might seem. Since western Pennsylvania and Ohio were denied the relief they sought in the decision on cargo lake rates handed down last year, the energetic junior Senator from Pennsylvania has been outspoken in his criticism of the Commission and in his demand that a son of the Keystone State should sit on the rate regulating board. Had there been a Pennsylvanian on the Commission, is the implication, the decision would have been different. Of course, this ignores the fact that a Kentuckian opposed dismissing the complaints, but it illustrates what some Congressmen, at least, expect from regional representation.

No industry is more dependent upon transportation than the coal industry. To no industry are rate relationships between competing groups of mines more vital. Whether the Commission was right or wrong in the *Lake Cargo Coal cases* is beside this issue. What the industry needs, what the railroads need, what the country needs is a tribunal which will decide questions in the light of what it believes is just to all concerned. To break down the Commission into groups acting as watch-dogs over the private or sectional interests of individuals or communities would invite public distrust.

The Interstate Commerce Commission has won and held public confidence because the public felt that the Commissioners had divested themselves of all personal, partisan or sectional interests. Indeed, where there has been any suggestion that private opinion or past associations might color impartial judgment, individual Commissioners have refrained from participating in the decision. To insist upon such a reorganization as now proposed would be a backward step.

Danger, But No Signal

ACCUMULATING evidence that mechanical sparks and sparks resulting from static electricity may ignite mine gas further emphasizes the plain truth that the only sure way to prevent an explosion is to keep an explosive mixture from accumulating. The leaving open of a mine door and the resulting accumulation of gas has been, apparently, the underlying cause of a number of explosions.

The use of mine doors without an alarm or signal to indicate when they have been left open may be compared to operating a single-track railroad without block signals. Changing the single-track to a double-track road is the surest way of preventing head-on collisions, but when traffic does not permit of this expenditure, the installation of a signal system goes a long way toward eliminating the danger.

The same with the mine door. The safest way is to supplant the door by building an overcast, but this is not always possible or practicable. Then why not equip every door with a signal which has an indicator at some point where there is a man on constant duty. Not an unreliable open-circuit signal, but an "honest-to-goodness" closed-circuit signal such as used on railway or fire-alarm systems.

There are many variations and possibilities as to the arrangement. Cost is about the only limiting factor, and this can be held to a figure which is relatively insignificant compared to the risk eliminated. The time is sure to come when chance of a dangerous suspension of ventilation because of such a simple cause as a door being left open unnoticed will be practically eliminated.

Competition and Modern Merchandising

THE COAL MERCHANT or retail distributor is confronted with the same or similar problems encountered by other merchants. His commodity is an exceedingly useful one under certain circumstances and is in demand at certain times. Nobody buys it, however, except as a necessity. It falls into the class of commodities characterized by a large seasonal and usually a smaller continuing demand. Demand is difficult

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to gage beforehand. Supplies are necessary and the amount of these supplies is related to demand, proximity of supply and reliability of transportation. Coal merchants like other merchants seek to avoid overextension in stocks on hand. Unlike other merchants they do not plan a selling campaign nor do they seek to sign up their customers in advance of requirements except in those instances where the coal merchant has studied modern methods of selling. Nevertheless, many of the more active coal distributors advertise sparingly and but relatively few follow up this initial concession to competition.

The ancient business policy of placing the goods upon the shelf, in this case the coal in the bin, hanging a firm name above the door and nailing a board carrying the word "office" above a desk in a corner, or a little room at the side, and installing a telephone, rules in the coal trade far more than it should. In contrast with this the live merchant has not only his delivery facilities well organized but he has analyzed the possibilities of the business and has classified all of his probable clients within economic distance of his supply depot. His classification dissects the business into large users or industries and steam power plants, apartment houses and office buildings, and buyers of relatively small quantities. His card index supplies all of the necessary information about each prospective customer. The total annual requirement which represents his theoretical market is estimated and his next objective is to obtain as large a proportion of this market as possible consistent with good collections. Necessarily he will seek to avoid "bad accounts" and "slow payers." The activities of his competitors will be studied and where one or more are quite successful in their business, the reasons for this success will be investigated as far as practicable. Out of this survey of possibilities an annual selling campaign can be intelligently planned and an adequate control of selling expense established.

Modern business is aggressive and seeks the buyer in the most direct way. Either the coal dealer undertakes to be his own salesman or he employs one or more salesmen who not only have "selling" experience but who also know something about coal, combustion and the ordinary difficulties which are experienced in using solid fuel for specific purposes. Back of all salesmanship is a certain amount of service for, unless the salesman has something to offer besides his commodity, he will have nothing to distinguish his solicitation from that of every other salesman. Any service which he can give to the buyer, as in the selection of the best grade of coal for the specific conditions, or in pointing out better ways of stoking that will result in greater efficiency, will, as a rule, be appreciated and remembered. Good-will is greatly developed through resourceful salesmen.

Another element in selling is the co-ordination of sales with a delivery campaign. Low-cost distribution is obtained when the trucks and wagons are continuously employed. With careful planning it is possible to accomplish this over a considerable period. The salesmen are therefore acquainted with the plan for low-cost delivery and schedule the delivery of their orders in accordance with this plan.

In many communities especially the smaller ones, the aggregate coal business is not sufficient to saturate the labor employed and the trucking facilities available. It is for this reason that the coal dealer frequently branches out into the building materials line and thus reduces overhead and operating costs during a period when the coal business is slack.

Existence of individual coal dealers is not alone determined by competition but largely by intelligent analyses of local situations and an aggressive policy having as its fundamental purpose the accumulation of good will and satisfactory service back of the firm's name.

Coal Land a Poor Investment

AT SEVEN PER CENT compound interest, money doubles itself about every ten years. When that investment is on land and taxes have to be paid, ranging in Pennsylvania bituminous regions from 15c. per acre in Center County to $46.59 per acre in Fayette County, as the Coal & Coke Committee of the American Institute of Mining & Metallurgical Engineers has shown, that doubling occurs much more speedily. The tax itself may be equivalent to 3 per cent. In consequence it does not profit any company to load itself with large reserves. All it needs is enough land to complete the life of its present operations.

Let some one else carry the load. If there were not so many volunteering to do it, the price of coal lands would decline, but whether it will or will not, it is better to purchase coal lands when one desires to work them and not to carry them year after year. Many of the larger corporations are "land poor" and will never get out of their more distant idle lands the money they are pouring into them. Unfortunately, to many operators land is like the bear of the story: they are as afraid to let go as to hold on to it.

An operator a few years ago was ready to join a combine then in process of formation. This new corporation *in posse* had no large land reserves, and the operator mentioned regarding it as essential that his virgin land should be accepted and at his own high figure. But the suggested combine hesitated to take the land at his price and consequently refused to take the mines also. As a result the combine failed to materialize. In a short while the operator with the magnificent land reserves went to the wall. He had loaded himself down too heavily with his virgin territory.

It is better to sell coal land at a slight loss than to carry it indefinitely as a continual burden on the company's exchequer.

Fire Extinguishers in Mines

THE FACTS thus far known regarding the Horning mine disaster suggest the necessity for adequate fire-fighting equipment in coal mines. In its earliest stages the mine fire, which later caused the explosion, was of no consequence so far as the intensity of the flame was concerned. Even so the jackets and coats which were utilized in attempts by the attendants to beat out the fire were no match for the flame and merely served to chase it from one spot to another, on and under the cutting machine which caused the fire. To all appearances this fire could have been easily extinguished by a hand extinguisher.

An extinguisher may not be needed often; but when it is—it is needed badly. Some day mine laws may be enacted compelling the installation of a small fire extinguisher on cutting machines and locomotives and larger portable units at strategic points.

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Lake Cargo Rate Case Raises Big Economic Issues Between Competing Fields

Interstate Commerce Commission Opens Way to Renewal of Battle of Northern and Southern Districts for Tonnage Mastery

By Sydney A. Hale
Special Contributor, *Coal Age*



Car Dumper at Ashtabula Harbor

A FORTNIGHT AGO word came from Washington that the Interstate Commerce Commission had reopened the question of rates on lake cargo coal. In a few lines it was stated that the Commission had taken favorable action upon the petitions of western Pennsylvania producers and their allies for a reconsideration of its decision of last July in *Lake Cargo Coal Rates, 1925*, 101 I.C.C. 513.

Behind this simple announcement, however, lies a bitter struggle between Pennsylvania, Ohio and northern West Virginia, on the one hand, and southern West Virginia and eastern Kentucky, on the other, for the lion's share of a business which has averaged 23,750,000 net tons per annum for the past fifteen years and which at times has approached the 30,000,000-ton mark. The tonnage is large enough to appeal to any producing district. Moving during the months of the year when production generally is caught in the valley of the seasonal rhythm, the lake trade is doubly attractive.

Thirty years ago this business, then totaling 4,071,157 tons, was the exclusive possession of the northern district—i.e., Pennsylvania, Ohio and the Fairmont field of West Virginia. In 1923, when the total lake cargo shipments aggregated 29,839,918 tons, these same districts controlled only 62.61 per cent of the tonnage. The records for 1924 and 1925 "show so great a further loss of lake cargo business by these complaining districts," said counsel for the Pittsburgh group in his appeal to the Commission, "as to justify the assertion that they are now practically out of this market."

BUSINESS SHOWS TREMENDOUS GROWTH

The tremendous growth in the total volume of cargo coal shipped up the lakes to the Northwest since 1896 has pushed up actual tonnages from all fields, but some tonnage records are slipping fast. Western Pennsylvania and southern Ohio are the hardest hit. The Hocking district actually shipped less coal to the lakes in 1923 than it did in 1901. The Pittsburgh district, which furnished 65.54 per cent of the lake cargo tonnage in 1896, furnished only 26.74 per cent in 1923, and, as before suggested, figures for 1924 and 1925 would show up still more unfavorably. The share of the No. 8 Ohio and Cambridge fields, on the other hand, from 5.15 per cent to 15.66 per cent in 1923.

Protesting producers from the northern districts insist that their failure to maintain their grip upon the lake business to the exclusion of the southern fields is due primarily to the rate adjustments governing the transportation of coal from the Appalachian region to

Table I—Origin of Coal Cargo Shipments to Great Lakes: 1901-1923

	Ohio						West Virginia								
Year	Pittsburgh Tons	Per Cent	Hocking Tons	Per Cent	No. 8 and Cambridge Tons	Per Cent	Fairmont Tons	Per Cent	Kanawha and Kenova-Thacker Tons	Per Cent	New River—Pocahontas Tons	Per Cent	Kentucky Tons	Per Cent	*Total Tons
1901	3,197,748	55.50	1,513,646	26.27	274,554	4.77	739,011	12.83	.....	.....	.....	.....	.....	.....	5,761,416
1902	4,008,899	54.12	1,966,795	26.55	439,424	5.93	912,401	12.32	.....	.....	.....	.....	.....	.....	7,407,490
1903	5,460,215	56.64	1,631,485	16.93	577,509	5.99	1,119,288	11.61	.....	.....	.....	.....	.....	.....	9,639,934
1904	5,507,775	59.43	1,645,177	17.75	332,654	3.59	975,309	10.52	.....	.....	.....	.....	.....	.....	9,267,571
1905	6,249,054	59.79	1,312,428	12.56	547,197	5.24	884,407	8.46	.....	.....	.....	.....	.....	.....	10,451,496
1906	8,013,970	60.00	1,361,205	10.19	966,731	7.24	1,208,392	9.04	.....	.....	.....	.....	.....	.....	13,356,825
1907	9,270,775	55.11	2,125,692	12.64	1,577,630	9.38	1,321,299	7.86	1,723,460	10.24	204,746	1.22	.....	.....	16,821,695
1908	7,529,632	51.39	1,378,465	9.41	1,817,463	12.40	1,226,329	8.37	2,165,955	14.79	128,865	0.88	.....	.....	14,650,305
1909	7,842,971	51.09	1,999,670	7.82	1,650,890	10.75	1,277,011	8.32	2,017,767	13.15	1,034,544	6.74	7,849	0.05	15,350,559
1910	10,197,127	50.31	1,464,684	7.23	2,190,492	10.81	1,611,005	7.95	2,935,634	14.48	1,397,155	6.89	11,031	0.06	20,267,249
1911	10,071,930	46.57	1,370,925	6.34	2,598,943	12.01	1,784,279	8.25	3,488,151	16.13	1,963,409	9.08	9,818	0.05	21,627,003
1912	9,893,870	46.43	1,223,249	5.74	3,062,175	14.37	1,686,729	7.92	2,580,206	12.11	2,611,452	12.25	26,651	0.13	21,310,004
1913	12,261,334	45.70	1,397,718	5.21	4,022,483	14.99	2,161,523	8.06	3,543,969	13.21	2,486,454	9.27	397,120	1.48	26,830,347
1914	10,216,126	47.48	734,456	3.43	495,658	2.32	2,214,672	10.36	4,093,109	19.14	2,294,734	10.73	858,827	4.01	21,383,617
1915	9,350,166	43.48	315,846	1.47	1,993,303	9.27	2,030,408	9.44	4,131,188	19.21	2,514,347	11.69	701,174	3.26	21,507,374
1916	8,672,829	35.12	827,906	3.35	4,326,344	17.52	1,617,945	6.55	5,088,254	20.60	2,986,218	12.10	919,758	3.73	24,692,936
1917	6,659,447	24.82	2,907,625	10.84	4,613,891	17.20	1,029,201	3.84	6,074,183	22.64	3,154,270	11.75	1,188,766	4.43	26,828,756
1918	7,371,448	26.18	3,216,221	11.42	5,930,972	21.07	1,317,284	4.68	5,826,384	20.69	2,011,715	7.15	1,314,554	4.67	28,156,501
1919	6,512,051	29.93	1,072,424	4.93	4,611,734	21.20	828,383	3.81	3,707,875	17.04	2,851,164	13.11	1,425,466	6.55	21,755,869
1920	6,203,444	27.71	2,575,086	11.50	4,577,799	20.45	1,284,041	5.73	3,164,591	14.13	1,667,816	7.45	1,375,323	6.14	22,390,654
1921	5,907,489	26.42	668,577	2.99	4,660,551	20.84	1,014,514	4.54	3,878,047	17.34	2,639,449	11.80	2,624,194	11.73	22,363,899
1922	4,002,214	21.54	1,288,269	6.93	1,902,859	10.24	1,369,969	7.38	3,433,213	18.48	1,937,216	10.43	3,091,089	16.64	16,577,658
1923	7,977,903	26.74	919,927	3.08	4,671,174	15.66	3,169,505	10.62	4,964,672	16.64	2,894,073	9.70	3,297,476	11.05	29,839,918

* Includes tonnage of minor lake shipping districts analyzed in Table II.

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TABLE II—Lake Coal Cargo Shipments from Minor Producing Districts

(In Net Tons)

Year	Pennsylvania, Excluding Pittsburgh	Northern Ohio	Cumberland-Piedmont	Other Districts*	Per Cent of Total†
1901	.....	36,457	.....	.....	0.63
1902	.....	79,971	.....	.....	1.08
1903	.....	63,654	50,093	737,690	8.83
1904	.....	10,941	.....	795,715	8.71
1905	227,356	39,627	9,733	1,181,694	13.95
1906	241,504	81,445	49,224	1,434,354	13.53
1907	311,618	192,228	94,247	.....	3.55
1908	236,928	89,387	77,281	.....	2.76
1909	212,518	67,911	39,428	.....	2.08
1910	245,116	112,786	102,219	.....	2.27
1911	155,877	140,126	43,545	.....	1.57
1912	158,719	32,213	34,750	.....	1.05
1913	301,179	225,826	32,741	.....	2.08
1914	423,609	16,465	35,961	.....	2.23
1915	269,535	175,178	26,229	.....	2 18
1916	94,709	147,723	11,250	.....	1.03
1917	889,369	299,880	6,307	5,817	4.48
1918	778,285	389,541	.....	97	4.14
1919	567,784	155,646	8,642	14,700	3.43
1920	1,066,989	453,829	21,459	277	6.89
1921	754,001	208,994	4,352	3,731	4.34
1922	1,288,695	194,608	676	68,865	8.36
1923	1,582,102	361,567	796	723	6.51

* For 1903 to 1906 inclusive the figures represent tonnages shipped from southern West Virginia; during that period (see Table I) shipments from the Kanawha and Kenova-Thacker and the New River-Pocahontas districts were not reported separately. From 1907 to 1923 the figures in this column cover shipments from Virginia and Tennessee.

† The figures in this column are the percentage of the total lake cargo shipments shown in Table I which the aggregate shipments covered in Table II represents.

the lower lake ports for transshipment. They insist that the rates they are charged are *per se* unreasonable and that the relationship between those rates and the charges in effect from the southern regions unduly prefer the latter and unjustly discriminate against them.

These questions are not new. They have been before the Interstate Commerce Commission in one form or another since 1912. Their importance, however, has grown because the encroachment of the southern fields upon consuming territory served by the northern districts has been increasing year by year. Southern West Virginia is pushing east and west; eastern Kentucky is winning new markets west and south. These districts stand as a barrier to southern expansion of the northern fields. They contest with Ohio and Pennsylvania for tonnage in the Northwest.

In the Middle West, Ohio and Pennsylvania must battle with Illinois and Indiana as well as with southern West Virginia and eastern Kentucky. Illinois is thoroughly alive to this latter competition. Coal-producing interests of that state intervened in *Lake Cargo Coal Rates, 1925*, with the generous proposal that there be no reduction in the rates from the Pittsburgh and Ohio fields, but that the differentials over those rates from the southern districts be widened.

Labor Intensifies Conditions

In recent years, the competitive situation between the northern and eastern districts of the Appalachian region has been further intensified by changes in the labor status of these districts. Ohio and western Pennsylvania are predominatingly union; southern West Virginia is predominatingly non-union; eastern Kentucky, too, has been free from dictatorship by the United Mine Workers of America. This is a phase of the situation which has been little stressed—particularly by the politicians who have injected themselves into the proceedings since the Interstate Commerce Commission dismissed the complaints of the northern districts last summer.

The mines that have lake cargo coal rates are divided into fifty-three originating districts, taking twenty-one different rates, ranging from $1.34 to $2.88 per ton. Many of these districts, however, "participate slightly, if at all, in this traffic. During the five-year period 1910-1914 only eighteen districts, and during 1923, only twenty-eight districts, shipped lake cargo coal. In 1923 sixteen districts shipped approximately 95 per cent of the total." These districts were the Middle, No. 8, Cambridge, Hocking and Pomeroy districts in Ohio; the Freeport, Pittsburgh and Connellsville districts in Pennsylvania; the Fairmont, Kanawha, Tug River, New River and Pocahontas districts in West Virginia and the Big Sandy, Hazard and Harlan districts in Kentucky. The controlling base rates are $1.63 from the No. 8 and Cambridge fields, $1.66 from Pittsburgh, $1.81 from Fairmont, $1.91 from the southern West Virginia and eastern Kentucky high-volatile districts and $2.06 from Pocahontas and New River. The history of these rates is summarized in Table III.

Tried to Cut Southern Rates

The first clash of the conflicting interests came to a head before the Commission in 1912. Late in 1910 and during the first quarter of the following year the Chesapeake & Ohio, Baltimore & Ohio, Kanawha & Michigan and Norfolk & Western railroads, stirred to action by complaints of the Pittsburgh and Ohio No. 8 fields that existing rates unduly preferred West Virginia, filed tariffs advancing those rates. The Baltimore & Ohio proposed to increase its Fairmont rate from 96.75c. to $1; the other lines proposed to advance Kanawha and Kenova-Thacker from 97c. to $1.0625 and Pocahontas-New River from $1.12 to $1.2175.

The Commission suspended the tariffs on protests of affected shippers. Upon hearing, the Norfolk & Western assumed the burden of justifying the increase. The Commission, in *Advances in Coal Rates by C. & O. Ry. Co.*, 22, I.C.C. 604, held that the Norfolk & Western was entitled to the increase from the Thacker and Pocahontas districts, but that the other three roads and their connections had not made out a case. In order to preserve established relationships, the Norfolk & Western canceled the tariffs naming the higher rates and restored its old charges.

Simultaneously the Commission announced its deci-

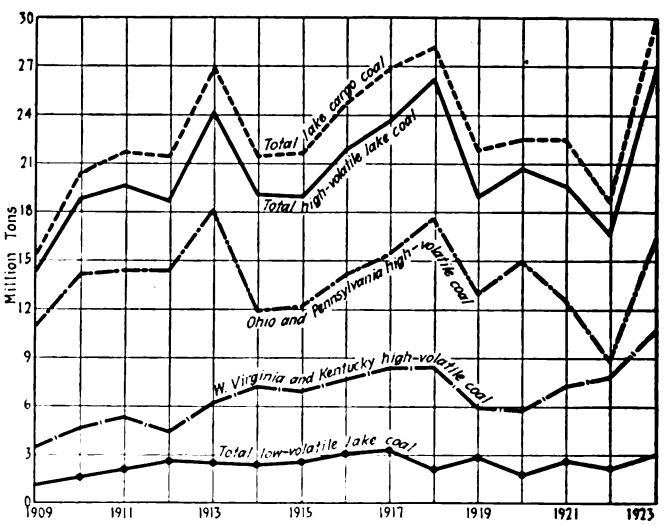

Fig. 1—Lake Cargo Coal Shipments: 1909-1923

This chart, based on the data incorporated in Table I and adapted from an exhibit filed in *Lake Cargo Coal Rates, 1925*, shows graphically the trend of lake shipments from the high- and low-volatile fields.

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sion in the first formal complaint specifically attacking the rates from the Pittsburgh district to the lakes: *John W. Boileau vs. P. & L. R.R. Co.*, 22 I.C.C. 640. The order in this case directed the defendant carrier to reduce its rate on cargo coal to Ashtabula Harbor from 88 to 78c. per ton. The finding was based largely upon a study of the costs of transportation—one of the pioneering excursions of the Commission into that field of railroad economics. In commenting upon the complainant's contention that the rates attacked were unreasonable as compared with those in effect from West Virginia, the Commission declared that the evidence indicated that the rate complained of—which had fluctuated between 70c. and $1 from 1887 and 1900—had been raised step by step for the purpose of permitting competing coal fields to participate.

A petition for a modification of the order was filed. This petition asked for a further reduction in the Pittsburgh rate and the establishment of a differential in favor of Pittsburgh against competing West Virginia districts. The Commission declined to modify its original order, holding that such modification would mean the fixing of minimum rates on West Virginia

TABLE III—Base Rates on Lake Cargo Coal Traffic

(Rates in Cents per Net Ton)

	From				
In effect	No. 8—Cambridge, Ohio	Pittsburgh District	Fairmont District	Southern High-Volatile	West Virginia Low-Volatile
1906	80	83	91‡	92	...
1911	85	88	96‡	97	112
May, 1912	75	78	90	97	112
Apr. 16, 1917	90	93	105	112	127
Aug. 13, 1917	90	93	108	118	133
June 25, 1918	127	130	145	155†	170
Aug. 26, 1920	183	186	201	211‡	226§
July 1, 1922	163	166	181	191	206
* Proposed Rates:					
A	*143*	*145*	*175*	*198*	*209*
B	*123*	*126*	*160*	*191*	*206*
Current Rates	163	166	181	191	206

* The first set of rates (Group A) was proposed by the examiners for the Interstate Commerce Commission and submitted in their tentative opinion in *Lake Cargo Coal Rates, 1925*. The second set (Group B) was suggested by the Pennsylvania and Ohio complainants in that case. The decision of the Commission, however, refused to change the existing rate structure.

† Also applicable to the Harlan, Hazard and McRoberts districts in eastern Kentucky. Since that date these districts have been on the same rate basis as southern West Virginia.

‡ South Jellico (Tennessee) group added.

§ Pocohontas-New River basis made applicable to Stonega.

traffic: *Boileau vs. P. & L. E. R.R. Co.*, 124 I.C.C. 129. Under the interstate commerce law then in effect the Commission's rate-fixing power was limited to establishing maximum rates.

In summing up its conclusions, however, the Commission made a statement with respect to the reasonableness of the Pittsburgh rate which has risen to plague it in later proceedings. The Commission said:

From the point of view of the specific cost of doing this particular business, the rate is still too high; but, as we have said before, cost is only one of the elements entering into a rate. When we consider the coal rates from all the fields which will be affected by this change in the Pittsburgh rate, the disturbance in established differentials, the possible deflection of the currents of coal trade, and its effect upon operators elsewhere, the effect upon the carriers directly involved and the indirect effect upon other carriers, and all the other valid considerations, we are forced to the conclusion that a rate lower than this would not be just and reasonable under the conditions disclosed by this record.

Four years later the Pittsburgh producers again attacked the lake cargo rates. The Commission, in an investigation instituted on its own motion, *Lake Cargo Coal Rates*, 46 I.C.C. 159, declined to pass upon the intrinsic reasonableness of the rates because of the abnormal conditions brought about by the entrance of

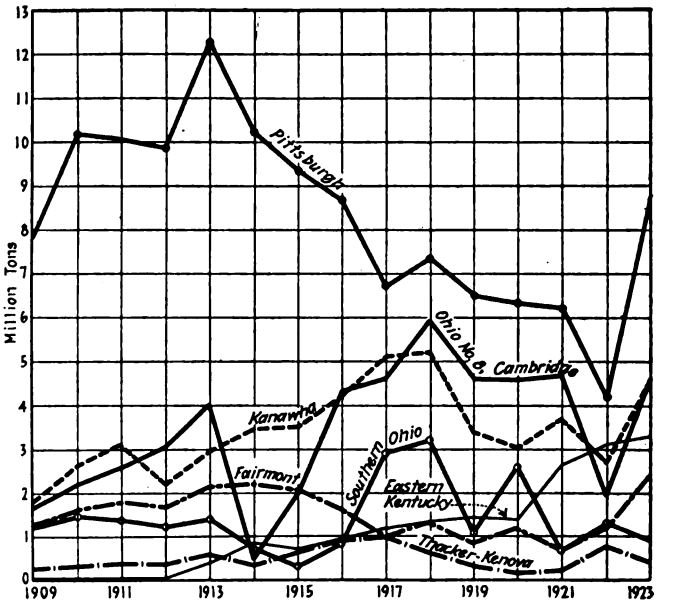

Fig. 2—High-Volatile Lake Cargo Shipments

This chart, a companion to Fig. 1, is a study in the trend of high-volatile coal shipments.

the United States into the World War. The Commission did, however, prescribe certain district relationships, which became effective on Aug. 13, 1917, four months after an increase of 15c. per ton had been made on all cargo rates.

In *Lake Cargo Coal Rates, 1925*, the old issues again were raised. Operators in Pittsburgh, Panhandle, Cambridge and Ohio No. 8 districts alleged that their rates were unjust and unreasonable and discriminated against them. Southern Ohio intervened to support that position, with the reservation that the rates from the southern Ohio fields should be continued on a parity with No. 8 and Cambridge rates. Fairmont charged that northern West Virginia rates were unduly high when compared with those in effect from the Pittsburgh and Ohio districts.

DRASTIC REVISION DISALLOWED

The examiners who heard the evidence recommended a revision changing every rate in effect on lake cargo coal. The proposed readjustment, summarized in Table IV, was sharply attacked by all parties to the record and was disregarded by the Commission. A similar fate awaited the elaborate costs studies upon which the Pennsylvania-Ohio complaints based their plea for

TABLE IV—A Rate Readjustment That Failed

Rates (in Cents per Ton) Suggested by Interstate Commerce Commission Examiners and Rates Now in Effect

District	Present Rate	Proposed Rate	District	Present Rate	Proposed Rate
Butler-Mercer	134	115	Ironton-Kentucky	191	175
Deerfield	148	115	Ohio River (W. Va.),		
Massillon	148–153	115	Belington, Kenova	191	185
Middle (Ohio)	148–163	130	Thacker, Big Sandy,		
Jackson Center	151	130	Kanawha	191	198
Freeport	151	142	So. Jellico-Hazard	191	209
Reynoldsville	151–156	142	Harlan-McRoberts	191	218
Oldham	153–158	142	Gauley	193	198
No. 8-Cambridge	163	142	Cumberland-Piedmont	193–288	198
Crooksville, Hocking, Shawnee	163	150	Vintondale	198	159
Pomeroy-Jackson County	163	167	Spangler-Bellwood	198	175
Pittsburgh	166	145	Cherry Tree	203	185
Saltsburg-Derry	171	150	New River, Tug River, Pocahontas	206	209
Connellsville	172	167	Clinch Valley No. 1	206	218
Ligonier-Blairsville	176	150	Clinch Valley No. 2, Oakdale (Tenn.),		
New Florence-Indiana County	181	159	Stonega	206	228
Fairmont	181	175	Clearfield	238	185
Altoona	188	167	Radford, (Va.)	241	228
Myersdale	188	185			

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a 40c. reduction. Admitting that progress had been made in cost accounting since the *Boileau case*, the Commission observed that "it by no means follows that our duty under the law to prescribe just and reasonable rates has been reduced or assimilated to a mathematical process."

The Commission found nothing offensive in the fact that the Ohio No. 8 district paid 9.87 mills per ton-mile for an average haul of 165 miles to the lake ports and the Pocahontas field paid only 4.85 mills per ton-mile for an average haul of 424 miles or that the other southern districts, as shown in Table V, also paid less per ton-mile than the northern fields. It dismissed the complaints.

Conditions the past lake season did not make the dismissal more acceptable to the Pittsburgh district. The suggestion that the Pittsburgh producers appeal to the Commission to reconsider its action met with a favorable response. Governor Pinchot appealed to the Pittsburgh Chamber of Commerce to ask for a reopening of the proceedings and promised state support in a fight against non-union competition in lake and seaboard markets. Subsequently the State of Pennsylvania filed a petition with the Commission.

The United Mine Workers, too, appears in the role of an unofficial ally. In some quarters its interest in the situation is credited with having stirred Governor Pinchot to action. The union, weaker in power than it has been for many years, is developing a new sensitiveness to actions which may prejudice the successful operation of union mines. In its present chastened frame of mind it is willing to do almost anything to assist union fields—except to consider a revision of the Jacksonville wage agreement. So the leaders of that labor organization are outspoken in their condemnation of what they say are rate decisions fostering the non-union fields.

Opponents of the northern districts are not behind their adversaries in pressing the fight. West Virginia, not satisfied with the rejection of the complainants' pleas in the case, professes to believe that coal producers within its borders, and not Pennsylvania and Ohio, are the real victims of the existing adjustment.

In a narrow, technical sense, in moving for a reconsideration of *Lake Cargo Coal Rates, 1925*, the petitioners are asking the Interstate Commerce Commission again to pass upon two transportation questions:

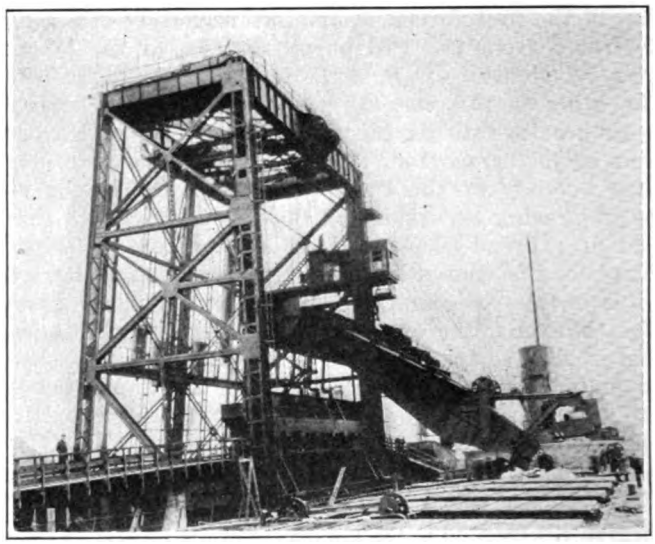
(1) Are rates of $1.63 and $1.66 per ton for average hauls of 165 and 172 miles excessive;

(2) Do differentials ranging from 18 to 43c. per ton for additional hauls ranging from 96 to 304 miles represent a fair spread or are they so low that they deprive the northern districts of their natural advantage of greater proximity to the lake ports;

In a broad sense, however, the issue involves the whole question of the part transportation adjustments should play in the allocation of markets. That is no simple problem. It is not simple because rate-making itself is a complex undertaking, involving the evaluation of many elements. It is not simple because it involves the examination of many factors to determine which are and which are not determined by the rate adjustment.

TABLE V—How Rates and Distances Compare

District	Average Distance to Lake Ports, Miles	Rate	Ton-Mile Earnings, Mills
Ohio No. 8	165.2	$1.63	9.87
Cambridge	172.2	1.63	9.47
Pittsburgh	177.1	1.66	9.37
Fairmont	261.2	1.81	6.93
Kanawha	362.8	1.91	5.27
Big Sandy	384.4	1.91	4.97
Hasard	419.2	1.91	4.56
Harlan	446.9	1.91	4.28
McRoberts	469.5	1.91	4.07
Pocahontas	424.8	2.06	4.85



Lake Cargo Coal Movement Is a High-Speed Business

Because the shipping season is limited by nature, the transportation end of the trade must be a highly co-ordinated business. Movement from mines to docks must be expedited, delays at the loading ports minimized. This calls for a high degree of managerial skill and efficient, high-speed machinery.

QUESTION A COMPLICATED ONE

There is, for example, the question of how much weight should be given to the cost of production. With a few exceptions mines in Ohio and Pennsylvania are paying day labor $7.50 for eight hours' work. In the southern fields the rate is probably $4 to $5—in some cases possibly less. Tonnage rates, too, are considerably higher in the northern districts, where the Jacksonville agreement, continuing the peak 1920 scale, is still in effect. Total labor production costs, it is estimated, are 25 to 65 per cent greater in the union areas than in the competing southern high-volatile districts.

To what extent are these changes responsible for the fact that the Pittsburgh district contributed only 14.5 per cent of the lake cargo total in 1924 and less than 9 per cent in 1925? Is the swing from union to non-union operation the explanation of the growth of Kanawha's share of this business, which increased from 11.58 per cent in 1909 to 25 per cent in 1924 and 29.75 per cent in 1925? What weight should be given to the fact that the average mine price on southern West Virginia high-volatile coals last year was $1.68, as compared with $1.97 for the No. 8 field and $2 in the Pittsburgh district? Is any special significance to be attached to the fact that the Pittsburgh mine average was 32c. higher than the West Virginia average quoted and the freight rate to the lakes 25c. per ton less?

Technically, such questions are outside the scope of the Commission's inquiry. Actually, however, they intrude into the case because of the way the issues have been framed. One side contends it is being deprived of its natural share of a desirable business because of a prejudicial rate adjustment. The other side answers that its opponents are trying to set up rate barriers to impede the free movement of tonnage and to narrow the territory from which consumers can draw their fuel supplies.

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Fans with Blades that Curve Backward Best Meet Varying Mine Pressures*

High Speeds Make Big Fans Unnecessary—Manometric Efficiency No Longer Gage of Good Fan Construction — Fan Should Meet Pressure Variations with Minimum Change in Air Delivered and Power Required

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Louis W. Huber

THOUGH centrifugal fans were first developed to ventilate mines and though the mines were the first places to be ventilated, mining men display much lack of knowledge on mine ventilation in general and on fan performances and characteristics in particular, even though it is true that mines are much better ventilated than they were twenty to thirty years ago.

The average mine operator is woefully dependent on the engineers in the service of mine-fan manufacturers when he is in the market for a fan, and this fact works to the disadvantage of both operator and manufacturer. The former may be imposed upon by an unscrupulous sales engineer and induced to buy a fan which is not suited to the mine. When it is operating it may be wasteful of power and may be even an accessory to a serious mine disaster. More often, however, it is the fan manufacturer who suffers. If the operator asks him to build a fan that will deliver a certain quantity of air against a certain specified pressure and requiring a specified horsepower when operating under these conditions, the manufacturer may build a fan that will comply with these specifications to the letter, only to find when the fan is installed that it is delivering a greater quantity of air against a lesser pressure or a lesser quantity of air against a greater pressure and is requiring more horsepower than specified in the first case and delivering less air than that specified in the second.

WITH forward-curved blades a 10-per cent rise in water-gage causes the fan that was delivering 100 per cent at maximum efficiency to deliver only 16 per cent of that quantity at that efficiency and the horsepower for maximum efficiency that was 50 is reduced to 19—not at all a satisfactory condition, for a 10-per cent increase in pressure is quite likely to occur. Also a 10-per cent drop in pressure gives an increase of 26 per cent in volume, but this demands of the fan motor a 28-per cent overload. This injures the motor unless it is of excessive capacity for the work that it should normally perform.

In either case the operator usually upbraids the manufacturer for not meeting specifications and refuses to pay for the fan. The trouble in either case outlined above is that the pressure necessary to force the specified quantity of air through the mine has been estimated incorrectly by the operator or his engineers. When a fan is designed and built to deliver a certain quantity of air against a certain specified resistance it will operate at its maximum efficiency only when it is working under the conditions for which it was designed. With these conditions changed the efficiency of the fan will be changed.

A basic consideration that cannot be overemphasized is that a definite pressure is necessary to force a given quantity of air through a mine. For example, if it takes a pressure of 1½ in. of water gage to force or draw 100,000 min.-ft. through a mine it makes no difference what means we use to cause the air to be coursed through the mine. We know from the mathematics of ventilation that the pressure necessary to cause ventilation varies directly as the square of the volume, when conditions causing resistance remain unchanged. This means that if a 2-in. water-gage pressure is required to force 100,000 min.-ft. through a mine, 8 in. will be required to force 200,000 min.-ft. and only ½ in. will be required to force 50,000 min.-ft. through. This simple and unfailing law is surprisingly often not understood. It is not at all rare for a mine-fan manufacturer to get an inquiry such as this: "We now have a fan at our mine that is delivering 50,000 min-ft. at 1 in. and we want more air; will you please quote us on a fan to deliver 100,000 min.-ft. at 1 in.?" Obviously it is impossible to build a fan that will do this, for, unless the ventilating system is changed so that the resistance is decreased, 4-in. pressure will be required to force 100,000 min.-ft. through the mine no matter what type or make of fan is used.

It is interesting to trace the development of the centrifugal mine fan and see how some of the old, obsolete and incorrect ideas and efficiencies still persist. Years ago when mines were first ventilated by means of centrifugal fans, the latter were direct-connected to

*Article presented to the American Institute of Mining & Metallurgical Engineers, at the annual meeting, February, 1926, and entitled "Operating Characteristics of Centrifugal Fans and Use of Fan-Performance Curve."

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steam engines. The speed or revolutions per minute of the fan depended on the steam-engine speed and was limited to the maximum speed of the steam engine. The pressure generated by a centrifugal fan depends on the peripheral velocity or tip speed—that is, the velocity or speed of the tips of the centrifugal-fan blades.

At first the mines to be ventilated were small. So also were the volumes and pressures required. As the mines became larger, the quantity of air and the pressures required became larger and so did the fans. As the fan speed was limited to the maximum speed of the steam engine, when a greater tip speed was required in order to generate higher pressures, the only alternative was to increase the diameter of the fan, so that higher tip speed could be attained, although the revolutions per minute of the fan remained the same. This condition resulted in the building of huge fans and of spreading the doctrine that it took a big fan to deliver a large quantity of air. Fans of 25-, 30- and 40-ft. diameter were common, and the records show that they were built as large as 60 ft. in diameter. Both the huge obsolete fans and the opinion that it takes a large fan to deliver a large quantity of air still remain with us to a certain extent today.

GET SPEED WITHOUT INCREASING DIAMETER

Now let us consider the development of another industry, that of electric-power generation, during the period just cited. In the early stages of electric-power generation, electrical engineers met with the same problem as mine-ventilation engineers; they had to drive their generators with the same slow-speed reciprocating steam engine. As the power output of an electric generator depends on the rate of cutting magnetic lines of force, when greater quantities of power and higher voltages were required it became necessary to increase the tip speed of the armature. This was accomplished at first by increasing the diameter of the armature and hence resulted in the building of large generators, the speed in revolutions per minute of which was low, but whose armature-tip or peripheral speed, and hence the rate of cutting magnetic lines of force, was high. We seldom find this type of generator in use in electric-power generation today, however; it has given way to the small, high-speed, and efficient generator. With the advent of the high-speed and efficient steam turbine, electrical engineers designed and made use of high-speed generators, and the result was smaller, more efficient, and less expensive units.

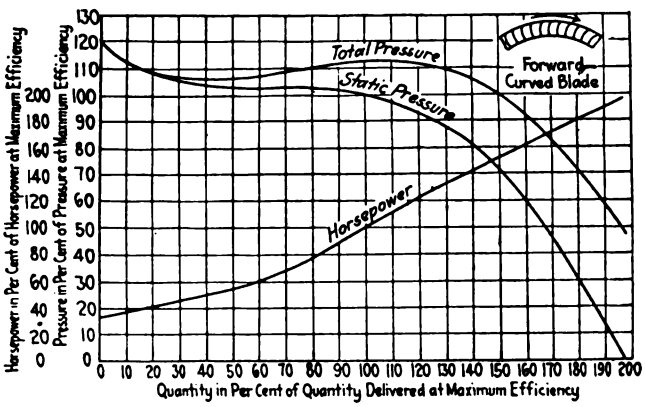

Fig. 1—Characteristic for Forward-Curved Blades

Take a given per cent of pressure and increase it or decrease it 10 per cent and note the position on the static-pressure curve which will result. Tracing downward note the horsepower at maximum efficiency for that point on the curve and tracing further downward note also the quantity of air delivered at that maximum efficiency. The result is startling. The fan is evidently not "stable" at constant speed.

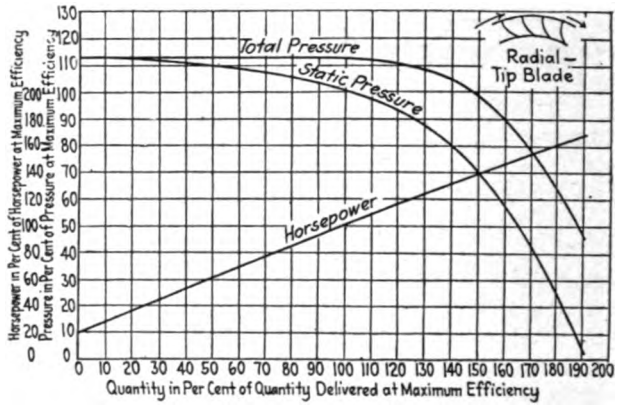

Fig. 2—Characteristic for Radial-Tip Blade

Here the static-pressure curve is flattened out where it has a drop for the forward-curved blade, and all the conditions are improved but not much as can be seen by making a trial. An increase in pressure of 10 per cent causes a 54-per cent decrease in volume and 44-per cent decrease in horsepower.

We frequently see extremely large slow-speed fans in use at our mines today; in fact it is rare to see smooth-running, high-speed, efficient ventilating units at mines, although they have been used for years for forced draft on mechanical stokers, for public-building ventilation, and on exhaust systems in factories.

Another relic of the old days that has been handed down to us along with the old-type fans is manometric efficiency. This no longer means anything to us, yet we see it in practically all mine fan tests, and it is frequently used in sales arguments. One manufacturer said to me not long ago that manometric efficiency as it is calculated is meaningless but that he still calculated and emphasized it because mining engineers demanded it.

MANOMETRIC RATIO FUTILE

Let us investigate manometric efficiency and see of what importance it really is. The definition of manometric efficiency is the ratio of actual pressure developed by the fan to the theoretical pressure or, as we express it in mine ventilation terms, actual water gage to theoretical water gage. In determining the manometric efficiency the actual water-gage pressure developed by the fan is measured, and the theoretical water gage is calculated from the tip or peripheral speed. The formula for calculating the theoretical water-gage pressure is:

$$w.g. = \frac{v^2 \times 0.078}{g \times 5.2}$$

The method by which the formula is obtained should be explained. In this formula water gage is expressed in inches of water. Let v = velocity of the periphery of the fan wheel in feet per second. This will be equal to

$$\pi \times \text{diameter in feet} \times \text{r.p.m.} \div 60$$

0.078 = weight of air in pounds per cubit foot under average conditions of temperature and pressure and g = the acceleration of gravity in feet per second per second. The above formula was developed for calculating the theoretical pressure developed by a straight-blade or paddle-wheel type fan and is only correct when used in connection with this type of fan. Let w = weight of air in pounds per cubic foot; q = quantity of air in cubic feet; v = velocity of periphery of fan wheel in feet per second; $q \times w = W$ = weight in pounds.

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$$W \div g = \text{mass} = M$$

Therefore, $qw \div g = M$ = mass of air moved by the fan.

Mv = momentum = $qw \times v \div g$; $qw \times v \div g$ = momentum of air in motion; it is also equal to the force producing or destroying this momentum; $qw = v \div g$ = a definite force and this force acts through v ft. per sec. Force multiplied by distance equals work. Therefore $qw \times v^2 \div g$ = work done in foot-pounds. Work is also equal to $p \times q$ or pressure in pounds per square foot multiplied by quantity in cubic feet. Therefore, $p \times q$ = work in foot-pounds; p, pressure in pounds per square foot, is also equal to $H \times w$ or height of air column in feet multiplied by weight of air in pounds per cubic foot. As $p \times q$ = work in foot-pounds and $p = H \times w$, $H \times w \times q$ = work in foot-pounds. Therefore $H \times w \times q = qw \times v^2 \div g$ and by transposing we get

$$H = \frac{q \times w \times v^2}{w \times q \times g} = \frac{v^2}{g}$$

As 1 in. of water in the gage equals 5.2 lb. per square foot the water gage equals $H \times w \div 5.2$, and if we assume the weight of air to be 0.078 lb. per cubic foot the expression becomes

$$w.g. = H \times 0.078 \div 5.2$$

We know from the preceeding that $H = v^2 \div g$ and by substituting the value $v^2 \div g$ for H the expression becomes

$$w.g. = \frac{v^2 \times 0.078}{5.2g}$$

This formula expresses the theoretical water gage that a straight-blade or paddle-wheel type fan which has no slippage around the tips of its blades will develop. By no slippage of air around the tips of the fan blades we mean that the velocity of the air leaving the fan blade is equal to the velocity of the blade tip. Obviously it would be impossible for air to leave the tip of a straight blade with greater velocity than that of the blade tip and the maximum possible velocity of air leaving a straight blade fan is equal to its peripheral velocity. It is evident then that formerly, when straight-blade fans were the only fans in existence and high peripheral velocity or tip speed was difficult and expensive to produce, it was highly desirable to have the air leaving the tips of the blades with a velocity as close to the peripheral velocity of the wheel as possible so that as high a pressure as possible was obtained by a given tip speed. This meant approaching 100 per cent manometric efficiency. Under these conditions all fan manufacturers strove to obtain it and it was under the circumstances a legitimate sales argument.

At the present time, however, by means of our high-speed electric motors and steam turbines we can easily get, with a comparatively small fan wheel, much more tip speed than is required to generate pressures sufficient for mine ventilation. Moreover, as our higher-speed motors and turbines are more efficient and inexpensive than those of lower speed, it is now desirable to have a fan of low manometric efficiency so as to make use of the high-speed machines on direct-connected ventilating units.

In the past few years, fan design, especially that applying to large constant-volume fans, has improved wonderfully after a long period of stagnation. Fans are now being built according to mathematical theory rather than by hit-or-miss methods. The increased activity in scientific fan design is due, in large degree, to the advent of the airplane. With the development of this new device the attention of our prominent physicists and mathematicians was attracted to the theory of air flow, and the study of aerodynamics was as thoroughly investigated and developed as thermodynamics and hydrodynamics. Much of the theory and mathematics of these two sciences have been incorporated into the theory and mathematics of air flow or aerodynamics, so that blade shapes and air passages in our modern scientifically designed fans are as carefully worked out as impeller shapes and passages in our steam turbines and centrifugal pumps.

Centrifugal fans can be classified according to the curvature of their blades. We will consider the following four general types: (1) The forward-curved blade fan—that is the fan with blades curved forward in the direction of rotation, (2) the radial-tip blade fan, (3) the partial backward-curved blade and the straight-blade or paddle-wheel type fan, and (4) the full backward-curved blade fan. In order to study the effectiveness and performance of these different types of fans it is advantageous to study their characteristic operating curves. These are illustrated in Figs. 1, 2, 3, and 4.

In order to construct a characteristic operating curve it is necessary to get data on the performance of a fan when it is operating at constant speed but against different resistances. To get these data the fan is set

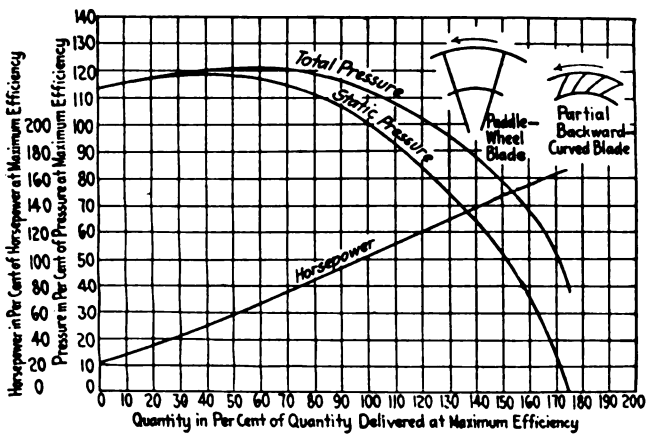

Fig. 3—Characteristic for Straight Paddle-Wheel Type or Partial Backward-Curve Blade

The steeply pitching static-pressure curve shows that a 10-per cent increase or decrease of pressure has less effect on volume at maximum efficiency than in either of the two previous instances. So the fan is "stable" in this regard. With a 10-per cent increase in pressure the decrease in volume would be 17 per cent and the decrease in horsepower 14 per cent.

up and is driven by means of an electric motor on which power readings can be easily taken. It is connected so that it discharges into a straight air duct.

At a point sufficiently distant from the fan so that a smooth flow of air is procured in the discharge air duct provisions are made to read static and velocity pressures. Average velocity pressure, static pressure and horsepower input are the three readings it is necessary to take for each resistance against which the fan operates. The fan is caused to run against different resistances by placing restrictions, usually in the form of orifice plates, in the end of the discharge duct.

The resistances vary from infinite resistance, when the duct is blocked tight so that no air can flow, to practically no resistance, the air flowing unhindered from the fan through the duct and into the outside

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atmosphere. The horsepower output and static pressure are observed for each resistance against which the fan operates and the average velocity pressure, from which the velocity and subsequently the volume of air delivered is calculated, is observed for all resistances except infinite resistance which allows no air to flow. These readings are taken simultaneously for each resistance against which the fan operates and the speed of the fan is kept constant.

Let us consider the action or performance of each of the aforementioned types of fans under conditions that occur in mine ventilation. A desirable requirement for mine fans is that they deliver a constant volume, not easily altered by changing conditions in the ventilating system.

DROP IN PRESSURE UNBALANCES FAN

Let us assume that each of these fans is operating at a mine at constant speed and at its maximum efficiency and something occurs down in the mine that decreases the resistance and causes the pressure against which the fan is operating to decrease 10 per cent. Short-circuiting of the air through opened doors, or through broken stoppings and overcasts could easily cause this. The driving of new splits or increasing of the size of entries would also cause a decrease in resistance.

With the forward-curved blade fan, Fig. 1, a 10-per cent drop in pressure would cause a 26-per cent increase in volume and a 28-per cent increase in horsepower. With the radial-tip blade fan, Fig. 2, this drop in pressure would cause a 26-per cent increase in volume and a 20-per cent increase in horsepower. With either the

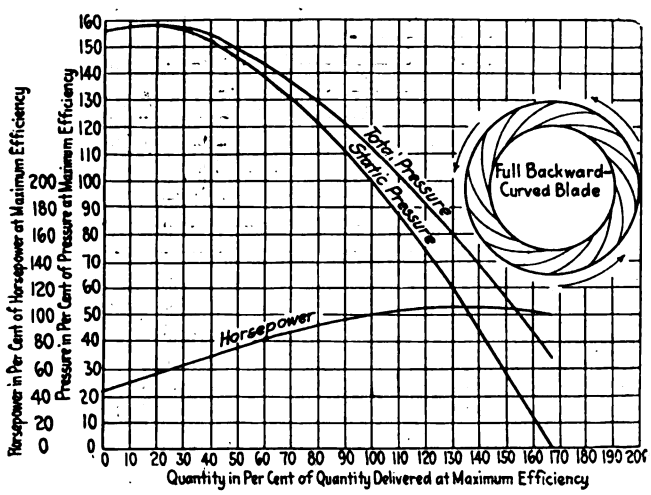

Fig. 4—Characteristic for a Full Backward-Curved Fan Blade

Here the pitch of the static-pressure curve is steeper than ever, and the horsepower characteristic is drooping. The maximum "stability" in consequence is afforded.. A 10-per cent increase in pressure decreases the volume only 9 per cent and the horsepower still less—only 3 per cent.

paddle-wheel type or partial backward-curved blade fan, Fig. 3, the increase in volume would be 13 per cent and the increase in horsepower 13 per cent. With the full backward-curved blade fan, Fig. 4, a 10-per cent drop in pressure would cause but an 8-per cent increase in volume and a 2-per cent increase in horsepower.

Now let us determine how a 10-per cent increase in pressure would affect the performance of each of these types of fans. We will assume again that each of these fans is operated at the point of maximum efficiency and at constant speed. An increase in resistance and, correspondingly, an increase in pressure, is caused in coal mines by falls and other obstructions in the aircourses, by installing smaller regulators, by extending the workings without providing new splits, etc. With the forward-curved blade fan, Fig. 1, a 10-per cent increase in pressure causes an 84-per cent decrease in volume and a 62-per cent decrease in horsepower. With the radial-tip blade fan, Fig. 2, this increase in pressure would cause a 54-per cent decrease in volume and a 44-per cent decrease in horsepower. With either the paddle-wheel or partial backward-curved blade fan, Fig. 3, the decrease in volume because of 10-per cent increase in pressure would be 17 per cent and the decrease in horsepower 14 per cent. With the full backward-curved blade fan the decrease in volume would be 9 per cent and the decrease in horsepower 3 per cent.

These considerations show us that the forward-curved blade fan is delicate and easily upset; that slight changes in operating conditions when it is running at its point of maximum efficiency will cause a large change in volume and horsepower and cause the fan to be operating very inefficiently. A fan of this type is not stable and should not be used for mine ventilation unless precautions are taken and determinations regularly made to prevent the resistance of the mine from changing. It is essential when a fan of this type is selected for mine ventilation that the resistance of the mine be accurately estimated in advance.

BACKWARD-CURVED BLADE FAN IS STABLE

The other types of fans are more stable as we proceed down the list in the order discussed above. The full backward-curved blade fan is by far the most stable and approaches a constant-volume fan. It will operate efficiently throughout a long range on its characteristic operating curve, a desirable quality with conditions in the mine constantly changing. Moreover at the present, with our incomplete knowledge of mine resistance, it is guesswork to estimate the resistance a mine will offer to a certain volume of air within at least 10 per cent of the actual resistance, unless we already have a fan operating at the mine. Certainly, under these conditions, a sensitive fan which will not work efficiently under conditions different from the peak for which it is selected is not the best fan for the job.

Table I—Effect of Ten-Per Cent Increase or Decrease in Pressure on Centrifugal Fans

	Resistance or Pressure Decrease 10 per cent Increase in Vol. Delivered by Fan, Per Cent	Resistance or Pressure Decrease 10 per cent Increase in Hp. Required by Fan, Per Cent	Resistance or Pressure Increase 10 Per Cent Decrease in Vol. Delivered by Fan, Per Cent	Resistance or Pressure Increase 10 Per Cent Decrease in Hp. Required by Fan, Per Cent
Forward-curved blade, Fig. 1.....	26	28	84	62
Radial-tipped blade, Fig. 2.....	26	20	54	44
Paddle-wheel or partially backward-curved blade, Fig. 3.....	13	13	17	14
Full backward-curved blade, Fig. 4	8	2	9	3

Next to the volume of air delivered by a fan the mine operator is interested in the horsepower the fan will require. On observing Figs. 1, 2 and 3 it is seen that the horsepower curves for each of these fans rises very steeply with increase in volume and decrease in pressure. If the forward-curved blade fan, Fig. 1, is run wide open, that is, against no resistance, it will require 196 per cent of the horsepower required at its point of maximum efficiency; the radial-tip blade fan, Fig. 2, 168 per cent, and the partial backward-curved blade or paddle-wheel type fan, Fig. 3, 165 per

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cent. A drop in pressure or decrease in resistance and increase in volume occur coincidentally.

It is evident that as such changes take place more horsepower is consumed and the driving motor, engine, or turbine must be of ample size and capacity to take care of this overload. This means that in installing the ventilating unit with any of these three types of

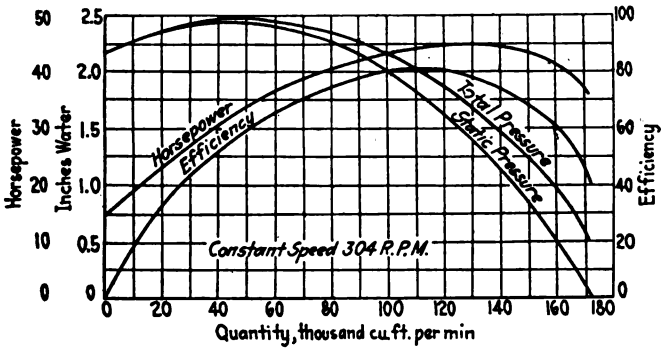

Fig. 5—Performance Curve Full Backward-Curved Blade Centrifugal Fan

This fan is designed to deliver 100,000 min.ft. against a static-pressure resistance of 2 in. of water gage when operating at 304 r.p.m. Note the drooping curves of the total and static pressures and of horsepower and efficiency giving the fan stability with a wide range of pressure. Such a curve should be supplied with every fan.

fans it is necessary to provide a driving motor that has excess capacity. It is common when installing such units to provide a motor that can deliver about 35 per cent more energy than is normally needed and, of course, this means a more expensive unit.

It will be observed on Fig. 4 that the full backward-curved blade fan has a drooping horsepower characteristic. The horsepower curve is self-limiting, and the horsepower required cannot exceed a certain maximum no matter how the resistance is changed. When this fan is run wide open against no resistance it requires no more horsepower than it does when operating at its point of maximum efficiency and under no conditions will it require more than 106 per cent of the horsepower required at this point. This means that if the fan required 100 hp. when operating at its point of maximum efficiency a 100-hp. motor that would stand a 6-per cent overload would be big and safe enough for the unit under any circumstances.

When coal mines generated their open power, the energy consumed in the different mining operations was not given much consideration. With the more general electrification of mines and the use of purchased power, mine operators began to give this important contribution to the cost of mining the attention it warranted. Even now the large power consumption of mine ventilation is not appreciated as it should be. A recent survey of the energy consumed in Illinois coal mines, made by the University of Illinois Mining Engineering Experiment Station, showed that ventilation as a consumer of power was as important as haulage and mining. This study, which included 50 representative mines in Illinois, showed the power consumption to be distributed as follows:

	Per Cent		Per Cent
Hoisting	17.2	Mining	22.1
Ventilation	22.2	Haulage	23.0
Pumping	5.0	Miscellaneous	10.5

When it is considered that ventilation requires as much power as haulage or mining and more than hoisting, it is readily apparent that it is important to have the ventilating unit operating as efficiently as possible. The mechanical efficiency of the fan is of equal importance with its operating characteristics and it may be more important. Fortunately, the mechanical efficiency of a full backward-curved blade fan is high. In fact, the efficiency of a well-designed full backward-curved blade fan is from 15 to 20 per cent higher than either of the first three types considered. Although this type of fan was first designed for forced-draft duty, it meets all the requirements of a good fan for mine ventilation as well as if it were originally designed for this purpose.

Much of the argument on whether a fan meets specifications and guarantees when it is bought would be avoided if fans were sold with a performance curve. The guarantee of a fan manufacturer usually states that the fan will deliver a certain quantity of air against a certain pressure when operating at a definite speed and that it will not require more than a specified horsepower. If the resistance of the mine is overestimated most fans will deliver more air against less pressure and will require more horsepower and, if the resistance is underestimated, they will deliver leess air against greater pressure and will require less horsepower. In either of these latter two cases it is an open question whether the fan is fulfilling the guarantee.

A performance curve as illustrated in Fig. 5 when compiled for a constant fan speed should indicate what quantity will be delivered, what horsepower will be required, and with what efficiency the fan will run when it is operating against different pressures or resistances.

The fan for which the performance curve shown in Fig. 5 is drawn is a full backward-curve blade fan designed to deliver 100,000 min.-ft. against 2-in. static-

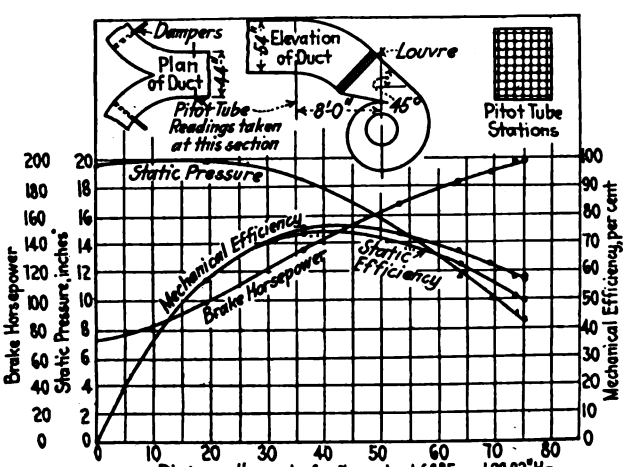

Fig. 6—Characteristic Operating Curve for Partial Backward-Curved Blade Fan

This fan was designed to deliver 42,500 min.-ft. against a static-pressure of 17.5 in. of water when operating at 1,200 r.p.m. The test was made after the fan was installed.

pressure resistance when operating at 304 r.p.m. and would be guaranteed by the manufacturer to require not more than 43 hp. when operating under these conditions. This work would give the fan a total mechanical efficiency of 80 per cent.

If the resistance of the mine were more than that estimated, say 2.28 in. of water gage for 80,000 min.-ft., or less than estimated, say 1.62 in. of water gage for 120,000 min.-ft., we could easily determine how the fan should perform against these changed conditions

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by consulting the performance curve. According to the graph the fan should require but 40.5 hp. when operating against the higher resistance, 80,000 min.-ft. at 2.28 in. water gage, and 45 hp. when operating against the lesser pressure, 120,000 min.-ft. at 1.62 in. water gage.

In the first instance its total mechanical efficiency should be 74 per cent and in the second case 80 per cent. If the purchaser of a fan were given a performance curve with each fan as it is bought there would be no room for argument later as to whether the fan were meeting its guarantee. It is a simple matter for fan manufacturers to construct such a curve, and the responsible companies are glad to do it, for, as stated before, reputable manufacturers suffer more because of the lack of knowledge of the mine operator and his engineers than the operator does.

After the fan is installed and accepted by the mine operator it is advantageous for him to have and keep a performance curve. By frequent fan tests and reference to the performance curve it can be ascertained at just what point on the curve the fan is operating and whether the efficiency can be improved by decreasing or increasing the resistance. This use of the performance curve to check up on operation is more important on fans of the first three types discussed than on the full backward-curved blade fan, for the horsepower and efficiency curves of the latter are broad and flat. This characteristic indicates that there will be relatively slight change in horsepower and efficiency through a wide range in quantity of air delivered and pressure developed.

There is little doubt but that the backward-curved blade fan will be the predominating type among newly installed fans in the future, and it is likely that many progressive mining companies will see fit to replace the old inefficient fans now in use, because ventilation and the power required for it are demanding more and more attention.

Better Fans Would Pay Dividends

As most mine-ventilating units are in operation 24 hr. per day and 365 days per year the cost of power used for ventilation at 2c. per kw.-hr. is $130.80 per hp. per year. A saving of but 5 hp. would effect a saving of $654 per year. If the fan to accomplish this saving were bought for $5,000, the money saved on power would pay 6 per cent in yearly interest on the original investment and provide a sinking fund to pay for the fan in less than 10 years. Fig. 6 shows an operating curve of a backward-curved blade centrifugal fan.

With the more general use of graphic charts for analyzing operating costs there is no doubt but that the enormous quantities of power required for mine ventilation will attract the attention of mine operators to the ventilating units and demonstrate conclusively not only the desirability of having a highly efficient ventilating unit at the mine but also that mine operators can afford to replace the old-fashioned inefficient fans that are so frequently found at otherwise modern and efficient coal mines with those of newer and more satisfactory design.

A CARBON MONOXIDE recorder developed at the U. S. Bureau of Mines, Pittsburgh experiment station, and which is so sensitive that it detects as little as 1 or 2 parts of carbon monoxide in 1,000,000 parts of air, has been installed at the Liberty Tunnels in Pittsburgh.

Coal Men Discuss Loading With "Mechanicals"

At Rock Springs One Scraper Loaded 288 Tons in 12 Hr.—Four Cuts per 8-Hr. Day Made and Loaded Out in Entry

BY R. DAWSON HALL
Engineering Editor

That mechanicalization of loading is "unquestionably reducing the cost of production" of coal and that mechanical loading will be the ultimate stabilizer of the coal industry was the declaration of Eugene McAuliffe, president of the Union Pacific Coal Co. at a meeting of the American Society of Mechanical Engineers in the Auditorium of the Engineering Societies Building in New York City to discuss "Material Handling in Coal Mines," Thursday, Mar. 11. The Materials Handling Division of the society had obtained the co-operation of the National Coal Association and a large number of coal men attended, some coming from great distances.

Mr. McAuliffe presided and in his opening address invited the co-operation of their hosts, the "Mechanicals," and of the American Society of Electrical Engineers in the development of coal-mining practice. Mr. McAuliffe added that "he had visioned methods whereby development work could be carried on during the period of low market demand, the same force being put on face and room production when the demand was brisk, thereby establishing a more regular work year."

Mechanize Is to Americanize

Nixon W. Elmer, a material-handling engineer of Quincy, Mass., said that the miner had cars only 75 per cent of the time and that not by any means necessarily at the time when he needed them. He believed that a group bonus would eventually be paid to the gang working the loader or feeding the conveyor. To him it seemed that by mechanicalization loading was made not only a lighter but a more cheerful job, the men mingling together and not being localized in separate gloomy chambers. As he put it: "To mechanize is to Americanize." In his belief one device should be installed at a time and not a combination of many. The conveyor should come first, he urged. It pays for itself rapidly and does not raise a cleaning problem. The loader, he thought, should be introduced later.

In discussing the paper, Mr. McAuliffe declared that the coal industry would welcome an injection of outside constructive advice that would assist in the solution of its loading and other problems. Edwin H. Johnson read an address on "Mechanical Loading in Coal Mines" and remarked that machine loading added to the impurities in the large coal but had no effect on the quality of fine coal, because the miner had never endeavored to clean the smaller impurities from his product. Machine mining has reduced tonnage where the number of cars hoisted in the shaft was close to capacity. The machine-loaded cars having a light load caused the hoist to work under less favorable conditions. To remedy this sideboards had to be used to increase car capacity.

W. K. Kavanaugh, president, Southern Coal, Coke & Mining Co. of St. Louis, stated that two men with a machine had loaded 125 tons in one day in one of his mines and that into cars of only 1½-ton capacity. He was shooting from the solid, and he believed that with

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a careful and judicious placing of shots the percentage of fines was not much increased. With loading machines the impurities in the coal made it necessary to put more men alongside the picking belts. The fines were loaded into cars and shipped to a washer. C. E. Bockus, president, Clinchfield Coal Corporation welcomed mechanical methods to coal mines, but said that the efficiency of mining operation was not a proper subject of criticism so long as coal that had to be hauled two miles in small cars underground was delivered in the railroad car at the price of $1.50 per ton.

Col. Edward O'Toole, general superintendent, U. S. Coal & Coke Co., Gary, W. Va., gave a brief review of the difficulties with roof action. The load that comes on the pillars with a meager 100 ft. of cover where the coal is 50 per cent extracted is 16 tons per square foot. This is the load prescribed as the limit for a brick foundation. To obtain a break in the roof the span has to be three times as great as the depth of the main resisting stratum.

Span Three Times Thickness of Rock

Thus if the main stay for the roof was a body of 200 ft. of solid sandstone, the span that would cause a break would have to exceed 600 ft. Mr. O'Toole described his machine, which last month had an average output per man-hour of 2.47 tons. Under the methods prevailing where loading machines are not used the output for the same month was 1.88 tons. Thus 0.59 tons more per man-hour was produced by machine than by the old methods. The men working with the machine were paid $1 an hour and the man in charge of the machine received $1.25.

H. F. McCullough, of H. C. Frick Coke Co., admitted that the room-and-pillar was, as Mr. Elmer had said, an institution to which mining men were attached, but it was no more to be respected as an institution than the horse-drawn vehicle of thirty years ago. He believed in a wide face and in rapid extraction as a means of outstripping roof failure.

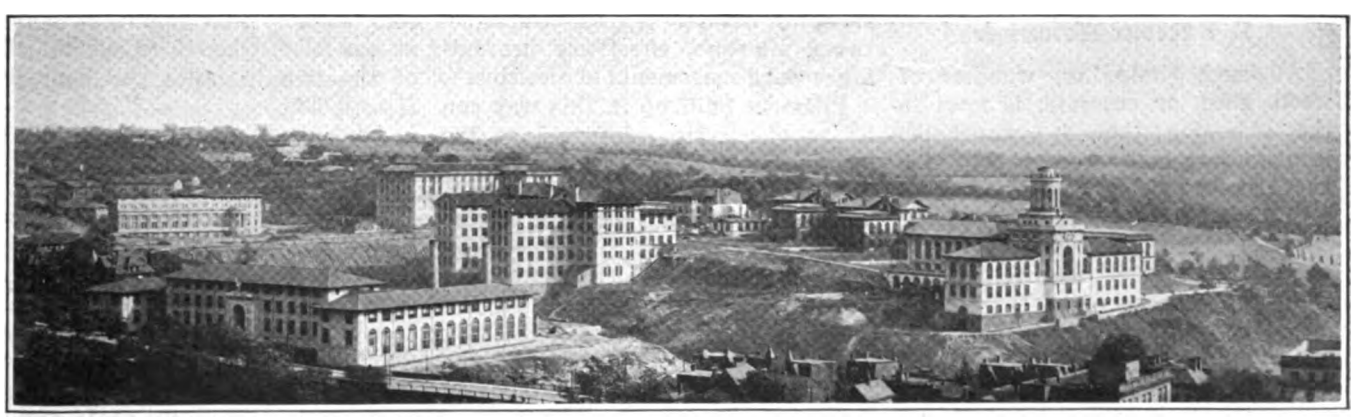
S. W. Blakeskee, division superintendent, Pennsylvania Coal & Coke Corporation, said that a dry, hard floor was desirable and a good roof. However, with too good a roof the conditions were unfavorable as the roof would not break and the crush became insupportable. S. W. Farnham described the scraper shovel of the Union Pacific Coal Co. at Rock Springs. He said his firm had increased the horsepower of the actuating motors of its scrapers from 10 hp. to 40 or 50 hp. and has enlarged its scrapers accordingly. The Rock Springs machine was a three-drum hoist with two drums for the straight face and another drum to direct the scraper at right angles to the face where that was desired. The machine had loaded 475 tons in a single 8-hr. shift into 3½-ton cars.

Mr. McAuliffe described the conditions at the Hanna mine in Wyoming where the coal is undercut, shot down to a height of 8 ft. and loaded by small loading machines. Though the model of shovel used had long been discarded by the manufacturer the results obtained are excellent. The upper coal is then shot down to a height of 36 ft. and loaded by ordinary surface shovels of the "steam-shovel" type using electric operation. The small shovels used for the 8-ft. cut have loaded an average of 147 tons a day. The tonnage has dropped heavily recently because the machines are being used for driving heading which is narrow work. There are twelve machines of the last-named type, and there are eleven out of twelve in service every day, because the repairs are well and expeditiously performed. The loading-machine men are paid $11.50 per day.

Mr. McAuliffe said that it was 90 per cent of the struggle to get the staff "sold" on the loading machine. Once the company's staff is interested in the operation of the machines the task is as good as performed. Mr. McAuliffe said that on an investment of $71,000 a saving was made last year of $54,800, all this in excess of depreciation, maintenance and 6 per cent for interest.

Rock Springs Coal Scrapers

The scraper face in the Rock Springs mine is 200 ft. wide. The coal unfortunately is 12 ft. thick. That makes the problem more difficult than if it were 6 or 8 ft. as is the general run of coal at Rock Springs. Five rows of props each with cross cap pieces 2 ft. long and of the dimensions of a railroad tie are used back of the face to maintain the drawslate. In a 12-day run the average production was 288 tons per scraper, the cost being 42c. a ton for the coal delivered to a car at the parting. Seven more scrapers, each having two drums instead of three, have been ordered. Six shaking conveyors are to be installed. In a 10-ft. entry, 7 ft. high, four cuts were made and loaded out in eight hours by three men, or about 67 tons of coal. Mr. McAuliffe advocated a wage of about $6 a day, graduated to the character of work done, with a bonus on all the coal mined. When the machine was being moved or repaired the men would be drawing a small wage and when the machine was actually loading coal they would be getting that wage plus a bonus.



A Good Many Ideas of Benefit to the Coal Industry Originate Here

The Pittsburgh station of the Bureau of Mines is located in the building occupying the left foreground in this picture. Here much experimental work of a laboratory nature goes on continually that the technical problems involved in coal may be more easily solved. The buildings of Carnegie Institute of Technology, an important engineering college, are behind the Bureau's station.

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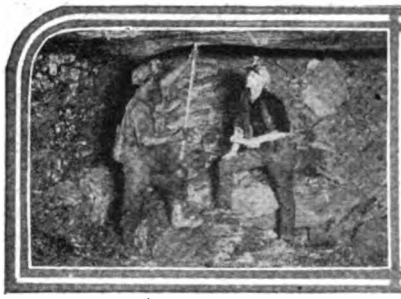
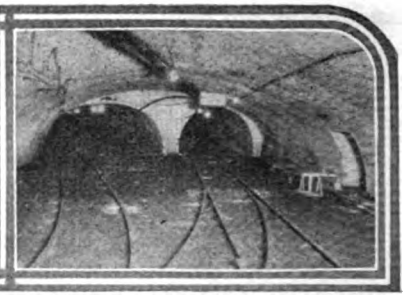


Underground Operation



Concrete Pilasters Sustain Both Sides and Roof

The combination of a friable coal and an uncertain roof is encountered fairly frequently in American coal mines. In rooms such conditions do not cause as much trouble as they do on main headings where the roof must be held up on permanent supports. The materials for this purpose commonly considered permanent are steel, masonry and concrete.

Although structural steel is frequently used for supporting the roofs of headings and haulageways, the legs of the three-piece sets normally employed for this purpose are seldom designed to withstand side pressure from the ribs which frequently develops with a friable coal or even with a solid non-weathering coal if the roof strata are full of slips, cracks, and clefts, and if the roof caves attain any great height above the coal.

Precast concrete timbers have been used to a somewhat limited extent to support the roof and sides of such passages. With reinforcement properly placed, the legs of concrete sets may be made amply strong to resist pressure from the sides. Such timbers are slightly more expensive to place than are steel sets, because of their greater weight, but when once in position they may be more durable than steel because they are immune to both oxidation and water.

To Prevent Movement

All such timbering, whether of wood, steel, or concrete, is open to the objection that it cannot be brought into direct contact with the surfaces to be supported. This is not of cardinal importance in the case of the roof, as experience has shown that it is advantageous slightly to cushion subsidence of the overlying strata upon wooden wedges or by other means. Control of the sides or ribs, however, is somewhat different, for here movement should be entirely prevented if possible.

No material will accomplish this result as well or as effectively as concrete cast in contact with the ribs. Thus a concrete archway with the aggregates rammed tightly between the forms and the roof and sides will probably sustain as great a top and side pressure as it is possible to resist. In extremely "runny ground, the outline or cross-section of such a passage might advantageously be made circular or elliptical, as these shapes better resist pressure from all sides.

Arches Even Unnecessary

It is comparatively rare, however, that such extreme measures need be taken in the mines of this country. In most instances even the arch need not be resorted to. In many cases, however, the roof strata contain slips or clefts extending in planes corresponding to the angle of compression shear, or at roughly 45 deg. to the horizontal or horizon. Here concrete pilasters, cast in place and supporting steel roof beams, afford ample support while at the same time they effectively prevent side movement of the rock strata.

Building a three-side form for these pilasters—that is, letting the rib itself form the fourth side—brings the concrete into perfect contact with the rib, and makes the pilaster from a structural standpoint practically a part of it. Slabs of rock separated from the main body of the roof by microscopic clefts, slips, or fissures act as beams between pilasters, effectively preventing inward movements of the ribs.

Pilasters built up in this way can be as effectively reinforced as the legs of three-piece sets that are precast on the surface. If the ribs against which they are cast are so friable or shelly as to require lagging, this can be placed before the concrete is poured. Such lagging should naturally be of a permanent nature. Old pipe or old rails can often here be used to advantage. In extreme cases corrugated galvanized iron might well be placed behind these "stringers."

Momentum Grades Decrease Tractive Effort

If levels are taken in the mine, and if these levels are then plotted and the tracks graded in accordance with the findings, the locomotives can haul larger trips. The track, when surfaced, should have preferably an average grade of ½ to 1 per cent in favor of the loads, according to J. L. Libby, writing in the *Employees' Magazine* of the Union Pacific Coal Co. But short slight changes in grade do not particularly interfere with the haulage, as the motor gets a run on the lighter pitches and will carry over the steeper portions, which are known as momentum grades.

Exceed Ruling Grades

Momentum grades are those which, although steeper than the ruling grades, can invariably be approached at a velocity sufficient to carry the trip over the summit with the aid afforded by the energy stored up in trip when approaching the grade. If it is assumed that the trip is moving without track resistance its energy will lift it up a certain vertical height, and if the motor is developing sufficient energy at the foot of the grade to overcome tractive resistance it will overcome the track resistance on the grade, provided it does not reach too low a velocity, hence the trip will climb the momentum height. That height, h, in feet, at sea level, when v equals velocity of the trip in miles per hour, is: $H = 0.035v^2$.

H then equals 0.1 ft. for 2 m.p.h.; 0.9 ft. for 5 m.p.h.; 1.3 ft. for 6 m.p.h.; 5.1 ft. for 12 m.p.h.; 9.0 ft. for 16 m.p.h.; 11.4 ft. for 18 m.p.h., and 14.0 ft. for 20 m.p.h.

For example, suppose that a locomotive is so loaded that its entire drawbar pull is necessary to overcome the resistance of the trip on a 1 per cent grade, but that through favorable grades it reaches the foot of a 2 per cent grade, 800 ft. long, traveling at a velocity of 16 m.p.h., will it carry over?

Eight hundred feet of 2 per cent

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grade entails a vertical height of 16 ft. Assuming, as already said, that the locomotive's full loaded capacity is equal to surmounting a 1 per cent grade without retardation and, consequently, that the capacity for 800 ft. is 8 ft.; the difference is 8 ft.; which must be overcome by momentum. The momentum height for a speed of 16 m.p.h. is 9 ft., as stated. This, minus 8 ft. necessary for the grade equals 1 ft. of reserve, or a momentum head, which corresponds to 5 m.p.h. If the locomotive were moving at a low speed at the bottom of the grade, it would become necessary to split the trip in order to pull it over.

Where Too Much Mechanism Decreased Efficiency

Over a year ago we installed a shearing machine, used it several months and, thought it was all right mechanically. We then discontinued its use. Our trouble was that we were trying to do too many things at the same time. As we were loading coal mechanically on the day and night shifts we were required to keep in operation at one and the same time our loading machines, undercutters, locomotives, drilling trucks and the shearing machine. These pieces of equipment all trying to move over track in the same area, interfered with each other and caused much confusion.

Of course, right-of-way had to be given to the loading machines. Equally important was a clear track for the movement of cars to and from the loaders. As a result the undercutters were required to move and operate as best they could without interfering with the major operations of loading. And then, with still less freedom of action, came the drills and shearing machine.

SHEARS FIFTEEN ROOMS

The shearing machine could easily shear fifteen places per shift when not held up. It actually averaged about six places because it had to wait most of the time for a right-of-way to move from one place to another. Because this machine was idle most of the day the expense of keeping the men who manned it was prohibitive. Naturally, the ideal way would be to do all the cutting, drilling and shearing at night; but such a procedure would cut down production by permitting loader operation during only one shift.

One other objection was found to the shearing machine under our conditions: It produced lumps that were too big. We wanted lump coal and we got it, but the lumps were too big to pass between the top of the loader and the roof. When a big lump hung against the roof the usual result was a damaged conveyor. The shearing machine would work all right in a seam which is thick enough, but ours is not.

DAVID INGLE,
President Ayrshire Coal Co.
Oakland City, Ind.

Sliding Door Keeps Out Surface Fires

Unwilling to overlook a single opportunity to make its mines safer, the Union Pacific Coal Co. is equipping them all with sliding doors such as the one illustrated in the accompanying photograph. The door is mounted in the slope portal of No. 7 mine at Winton, Wyo., in such a way that it can easily be closed, by anyone who notices that smoke or flame from any nearby fire on top is blowing into the mine. The air intakes



It May Save Lives Some Day

This door, recently built at the portal of the Union Pacific Coal Co.'s No. 7 mine at Winton, Wyo.,—an air intake—is to be closed in case smoke or flame from any fire near the slope mouth threatens to blow into the mine.

of Wyoming mines readily can draw in smoke and dust from considerable distances because of the heavy winds that so often blow in that country.

There is one chance in a thousand, possibly, that a conflagration of top buildings, or even a bonfire might send enough smoke into a mine to cause great excitement and possible injury to men underground. Two men were killed in a Colorado metal mine during an incident such as this. To reduce the likelihood of any such trouble at Union Pacific mines the sliding doors, made of wood and covered with sheet metal, are now being installed. Each one is counterweighted for ease of operation and is fitted with handles on the inside so that men can make their exit without difficulty even though the door might be closed.

Trucks for Fighting Fires Aid in Erecting Seals

About five years ago a fire broke out in No. 1 Shaft Mine of the Ford Collieries Co., at Curtisville, Pa., the fighting of which was greatly facilitated by two fire trucks, one a part of the equipment of the colliery and one brought from an adjoining mine. The fire had been burning for some time when it was discovered, so that the apparatus could not be utilized for entirely extinguishing the flame. But the two machines, operating alternately, one being discharged while the other was being filled, subdued the flames sufficiently to enable the workers to erect seals.

Each of the three shaft mines of the Ford Collieries Co. is equipped with a fire truck on which is mounted a closed tank of 80 gal. capacity and a reel of 500 to 800 ft. of 1¼-in. hose. These trucks are provided with unflanged wheels and are each mounted on a mine car truck, so that they can be pulled to any tracked portion of the mine by a locomotive. In the tank water is stored, and above it are receptacles for holding an acid and soda, which ingredients when mixed together with water in the tank form an aqueous solution of carbon dioxide of 80 to 100 lb. pressure per square inch. This pressure is preserved within the chamber until all of the solution has been forced from the closed chamber and through the hose. Every four months the chemicals are discharged to test the apparatus.

The fire truck is kept near the shaft bottom in a concrete-lined stall turned from a track which is always kept clear of standing rolling stock. The stall is padlocked, but the key is kept in a case with a glass front that, in the event of a telephone call for the fire equipment, can readily be broken. The apparatus is hauled to the nearest point to the fire to which mine track extends, from which point the hose is unreeled and carried to the fire, or the fire truck itself is unloaded from the mine truck and wheeled over untracked entry to any point desired.

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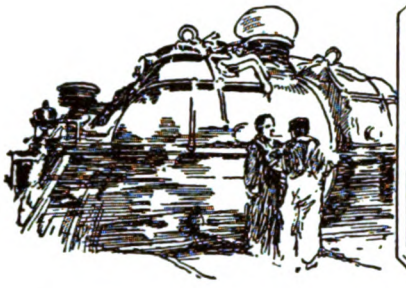
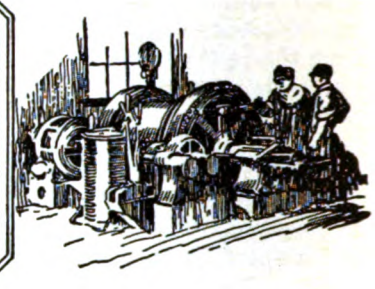


Practical Pointers For Electrical And Mechanical Men

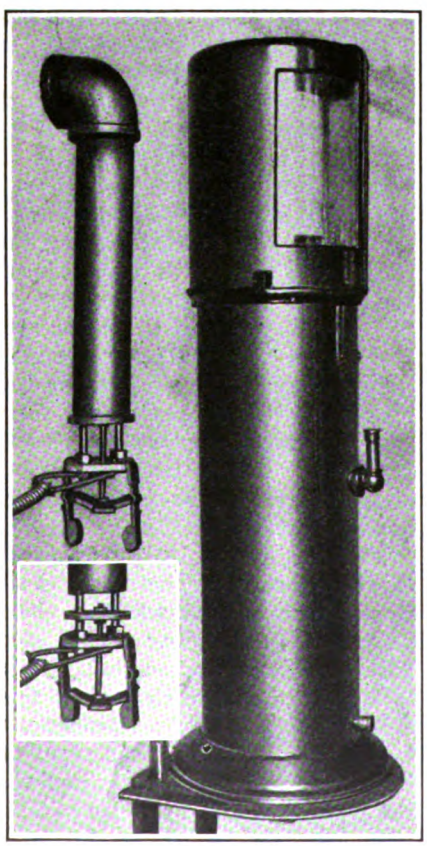


Electric Siren Blows If Fan Slows Down

By properly equipping steam-driven fans with protective and alarm devices it is practical to operate them without regular attendants provided there is always someone available who can get to the fan within a few minutes. At the Virginia mine of the Gulf States Steel Co., near Bessemer, Ala., the fan is located several hundred feet from the power plant engine room yet this engine is tended by the shift engineer of the plant.

The engine, which is belt connected to the fan, is equipped with an automatic stop. This is so arranged that the throttle valve is closed by overspeed or can be shut from push buttons located at the fan and in the power plant. If for any reason the fan should slow down appreciably, the decrease in vacuum causes electric sirens in the power plant and at the tipple to be sounded.

In the accompanying illustration, the siren contact-making device can be seen at the left of the recording gage. The copper leaf contact brush is attached to a disk made of ¼-in. asbestos board. Normally this disk is held up against the open end of the 2-in. pipe by virtue of the vacuum created by the fan. In this position the circuit is open. Weights in the form of washers, added to or taken off of the contact brush, determine the amount of reduction in fan speed required to cause the contact to drop and blow the siren.



Contact Device Beside Water Gage

The insert in the lower left-hand corner shows the disk and contact after dropping and while blowing the siren. Normally the vacuum created by the fan holds the disk up against the open end of the 2-in. pipe.

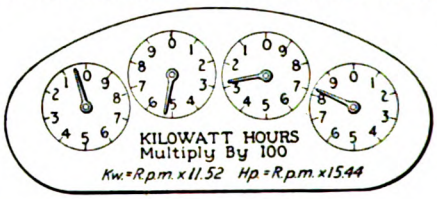
Load Found by Timing Disk of Watthour Meter

Equipping substations with watthour meters has become standard practice, and many companies now have such meters installed on all important circuits and principal motors. It is often important to know the load in kilowatts or horsepower taken by a substation or by a large alternating-current motor driving a fan, pump, conveyor or the like. Many electricians do not realize that if the motor is equipped with a watthour meter this instrument can be used to indicate with fair accuracy the average kilowatts or horsepower input during a half minute, a minute or longer interval.

To use a wattmeter in this way it is necessary to know the meter constant and to count the revolutions of the meter disk during a period such as one minute. This constant which is the number of watthours per revolution of the disk is usually marked on the face of the meter. Having counted these revolutions per minute with a certain load, and knowing the meter constant, it is then a matter of simple multiplication to calculate the kilowatts or horsepower.

The electrical engineer of a company operating mines in southern West Virginia and eastern Kentucky marked in pencil on the register of all stationary watthour meters a simple formula for use in determining the load. The accompanying sketch shows the register of one of these meters.

The nameplate of the meter carries the following data; type D-6, 3-wire, 3-phase, 80-amp., 2,200 volts, 60 cycles, current transformer ratio



Formulas Marked on Register

The figure by which the revolutions per minute of the disk must be multiplied to give the kilowatts or horsepower, is determined from the meter constant which is usually found marked on the disk.

16 to 1, potential transformer ratio 20 to 1. On the upper disk (seen by removing the cover) is the marking, "K-192." For this particular meter the simplified formula can be found by substituting 192 for "K" in the following relation:

Kilowatts = r.p.m. of disk × K × minutes per hour ÷ 1000

then, Kw. = r.p.m. × 192 × 60 ÷ 1000

or, Kw. = r.p.m. × 11.52.

From this it follows that,

Hp. = r.p.m. × 11.52 ÷ 0.746 = r.p.m. × 15.44.

With these simple formulas it is hardly necessary to use a pencil in calculating the load after the revolutions of the meter disk have been counted for a minute. With a constant load, greater accuracy can be obtained by taking a longer time interval and dividing by the number of minutes. With a fluctuating load the method gives the average during the period of time that the revolutions are counted.

Instances are known where an elec-

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trician was in the habit of going to the work and expense of connecting a portable indicating meter in the circuits of motors already equipped with stationary watthour meters. He did not realize the possibility of determining the load by timing the disk of the stationary meter.

Water Jet Protects Motors From Creek Floods

While employed by a coal company in the Birmingham district I was in charge of the power plant equipment. This was a steam plant with high-pressure turbines of the condensing type. The pumps that furnished condensing water were located on a creek about a quarter of a mile from the plant, and were controlled from the plant switchboard. They operated without attendance other than inspection by a plant mechanic once or twice a day. The pumps being of the centrifugal type were located just above the normal level of the creek so that they would not have a high lift.

Forestalling Flooding

When the creek was swollen during wet weather the water would rise on the discharge pipe from the building and flood the pump room, if the valve on this pipe had not been previously closed. When this valve was closed there was the additional danger of the pumproom being flooded by leaking or blown out packing. To prevent the possibility of this happening the mechanic had to go to the pumproom several times each day or night that the valve was closed. One rainy night the valve was not closed either through negligence on the mechanic's part or by his thinking that the rain would not be sufficient to raise the creek to flood stage. Of course, anyone familiar with the operation of centrifugal pumps realizes that there is a leakage at the packing glands all the time.

Creek Rose at Night

This leakage cools the glands and also prevents the pump from taking air. The creek rose up into the pump room, causing quite a lot of damage and killing the power for about half an hour. The actual damage of the pump motors and cables amounted to several hundred dollars, besides a costly production delay. The chief and myself decided that this must not happen again, so he suggested getting an ordinary water jet and connecting it to the discharge side of the pumps. As all the pumps did not run all the time the intake pipe of the jet was connected to the discharge of the two largest machines.

Removes Gland Leakage

This jet when tested was found to more than carry away the gland leakage. This would eliminate the necessity of the mechanic losing sleep at night on account of the pumphouse as the discharge valve was to remain closed in the winter or rainy season and the jet to be kept on continually. The small amount of water necessary to operate this device would never be missed. Each of the large pumps had a capacity of over 2,000 gallons per minute and the jet only required a ¾-in. pipe for an intake. The jet, installation and all, did not cost over $25.

Electric Power Costs in Southern Fields

Extensive data on mine power costs, principally in southern West Virginia, and Eastern Kentucky, are tabulated on a sheet made up by the West Virginia Engineering Co., of Charleston, W. Va., listing (without name of company) power and tonnage figures for 95 of their representative clients, during the year of 1924.

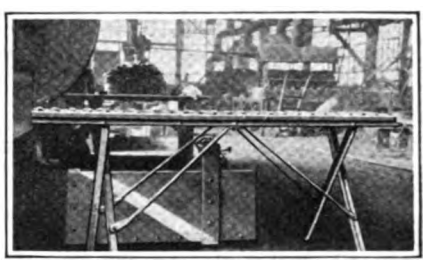
A summary of several of the columns of this sheet is shown in the accompanying table. The kilowatt-hour and cost figures include all power used inside and outside the mines. At practically all of the mines listed, the employees live in company houses and therefore power for house lighting is included.

It is interesting to note that there is an increase in kilowatt-hours per ton for operations producing above 10,000 to 20,000 tons per month. The cost per kilowatt-hour shows a regular decrease for larger tonnage, as is to be expected due to the sliding-scale rate schedules. The power cost per ton decreases but slightly as the production increases beyond 10,000 tons.

Comparing the cost per ton of purchased power against that of power generated by private steam plants, generally speaking, the operating cost alone of a steam plant is greater than the total cost of purchased power.

"Old Woman" Aids Work of Punch and Shear

In the machine or blacksmith shop, the "old woman" is a device that may take almost as many forms as the "old man." In the accompanying illustration may be seen a contrivance



"Old Woman" Beside Punch Press

Car belts or other work for the press may be supported on this old woman. The rollers on its top render it easy to slide the work along as punching or shearing progresses.

of this kind intended to serve a punch and shear in a large mine shop. It is peculiar as old women go, in that its top is provided with a whole series of rollers so that the work it supports may be readily slid along upon it.

Little need be said in explanation of the illustration. The supporting frame is built up of small angles and straps and the top made such a height as to bring it to the level of the die plate of the punch or the lower or stationary jaw of the shear. The rollers extending across the top of this device make it easy to move the work along as successive holes are punched or piece after piece is sheared from the end. Its utility in punching such parts as car belts can readily be appreciated.

Summary of Power Data of Almost 100 Mines

Number of Mining Operations	Range of Monthly Tonnage	Kw.-Hr. per Ton	Cost per Kw.-Hr. c.	Power Cost Per Ton c.	Percentage of Electrification
Purchased Power					
14	0–5000	5.13	2.81 (a)	14.42 (a)	94.5
23	5,000 to 10,000	5.36	2.34 (a)	12.56 (a)	95.3
24	10,000 to 20,000	3.62	2.22 (a)	7.93 (a)	93.7
12	20,000 to 30,000	4.04	2.04 (a)	7.82 (a)	94.3
7	Over 30,000	4.19	1.86 (a)	7.81 (a)	98.6
Private steam plants					
13	9,000 to 60,000			8.69 (b)	92.4

(a) Power bills only; (b) Operating costs only, does not include fixed charges.
Why the steam plants are put in one group only instead of being divided into four classes as are the purchased power plants is not explained. Nor are any details available as regards the equipment in the private steam plants included.

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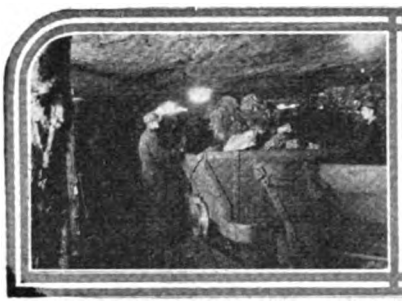
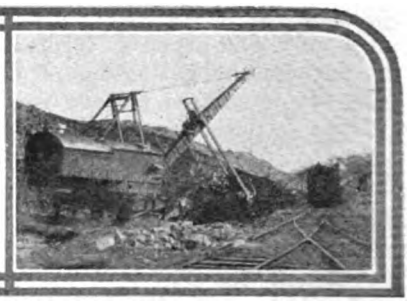


News Of the Industry



Consumers Had 45,000,000 Tons Of Soft Coal Feb. 1; Would Last 28 Days if Evenly Distributed

Stocks of bituminous coal in the hands of consumers on Feb. 1, 1926, were approximately 45,000,000 net tons, according to the U. S. Bureau of Mines. This was slightly higher than at a corresponding date a year ago while Nov. 1, 1925, stocks totaled 48,000,000 net tons. Between Nov. 1 and Jan. 1 something less than 1,000,000 tons was added to total reserves, but between Jan. 1 and Feb. 1, 1926, approximately 4,000,000 tons was removed from storage. The trends of production and consumption since Feb. 1 indicate that storage piles have been further reduced.

At the rate of consumption prevailing during January, when the industries of the country were active and when bituminous coal was being substituted for anthracite, the stocks of bituminous coal on Feb. 1 were sufficient for 28 days. If no substitution for anthracite had been necessary the supply would have been enough for 31 days. This may be compared with a supply of 37 days on March 1, 1925; with 46 days on Jan. 1, 1924, and 24 days on Feb. 1, 1923. But all of these averages, however useful for comparison, fail to take into consideration the fact that the supply is never equally distributed. Some consumers may have plentiful supplies; others none.

Big Stocks at Head of Lakes

Besides the supply of coal in consumers' hands on Feb. 1, there were 5,176,000 tons of bituminous coal piled on the docks of Lakes Superior and Michigan, approximately 185,000 tons held in storage at the mines or intermediate points by producers, and 760,000 tons loaded in cars unbilled at the mines.

Anthracite and Substitutes.—By Feb. 1 the stoppage of anthracite production had caused retail dealers' stocks of anthracite to drop to the lowest level on record, with the possible exception of September, 1923. Retail stocks of bituminous coal on Feb. 1, 1926, when measured in tons, were large, though the volume was less than on Jan. 1, 1924, and some earlier dates. Surplus stocks of coke at merchant byroduct coke plants had dropped to 87,000 tons as compared with 832,000 tons on Sept. 1, when the anthracite suspension began.

The estimates of the total quantity of soft coal in the hands of commercial consumers are based on practically complete reports from byproduct coke plants and steel plants, railroads and utilities, together with reports from a selected list of other consumers—more than 5,000 in all. The estimate of 45,000,000 tons, which is believed to be accurate within 5,000,000 tons, does not include the quantity of coal in householders' bins, for which no reasonably accurate figures are obtainable, nor the tonnage of steamship fuel. The tonnage on hand on the Lake docks also is omitted from the estimate as above given, being classed as bituminous coal in transit.

As shown in the accompanying illustration the total stock of coal on Feb. 1 was higher than on March 1 of last year, the nearest date of 1924 which may be used for comparison. It is almost the same as the level on Jan. 1, 1921, but lower than the figures in the fall and at the end of 1921, and very much less than in the period October-December, 1923, when consumers were laying in large stocks in the event that there would be another strike.

The reports from consumers, together with some supplemental information, indicate that the average rate of consumption, plus exports, during November, December and January was around 12,300,000 tons of bituminous coal per week. This unusually high rate, while indicative of the business activity of the coal-using industries, also reveals that bituminous coal was being extensively used as a substitute for anthracite.

Comparison of the days' supply of the principal classes of consumers on Feb. 1, 1926, with those on varying dates during 1919-1925, given in Table I, shows that the reserves of each group are regularly lower than they were in March a year ago. Special interest attaches to the reserves held by retailers. At the rate their customers were demanding soft coal in January, retailers' stocks on Feb. 1 would only last 17 days. At the normal rate for January, however, when soft coal is not being used to replace anthracite, the same volume of retail stocks would have lasted 28 days. In comparing the figures for the dates given, it should be remembered that they are only averages, and as such do not reveal pronounced fluctuations between the individual plants in every group or the variations between different localities.

Reserves by States Vary Widely

Reserves of soft coal on Feb. 1 in terms of days' supply differed widely, as usual, from state to state. The best indicators for this purpose are the returns from the general industrial concerns, other than byproduct coke and steel plants. They are the largest single group of coal users, both as to number and tonnage consumed, and being widely distributed throughout the country their stores of coal are a sensitive barometer of conditions in the coal market. New England on Feb. 1 was carrying considerable stocks of coal, four of the six states showing more than 70 days' supply, the average for the entire region being 65 days. The stocks in the northern peninsula of Michigan also are maintained at a high figure, the highest in terms of days' supply for any section of the country. In New York State stocks averaged 59 days, almost the same as that for Massachusetts. Lower Michigan was carrying 53 days' supply; Colorado 46 days. The remaining states show reserves varying from 4 to 43 days' supply, except Oklahoma, which shows especially heavy reserves.

Public utilities, as is customary, carried larger reserves than any of the other groups of consumers. The coal-

Table I—Days' Supply of Bituminous Coal in Hands of Various Classes of Consumers in the United States, Jan. 1, 1919, to Feb. 1, 1926 (a)

(Figures represent number of days that supply would last at rate of consumption at time of stock taking.)

	Jan. 1, 1919	Mar. 1, 1920	Jan. 1, 1921	Jan. 1, 1922	Mar. 1, 1922	Feb. 1, 1923	Jan. 1, 1924	Mar. 1, 1925	Sept. 1, 1925	Nov. 1, 1925	Jan. 1, 1926b	Feb. 1, 1926b
Byproduct coke plants...	32	15	29	42	39	20	35	25	22	26	26	23
Steel plants.....	42	9	42	48	48	26	43	30	30	32	28	26
Other industrials.....	65	27	64	51	56	36	55	40	38	44	39	37
Coal-gas plants.....	81	31	55	89	82	62	91	78	67	78	72	67
Electric utilities.....	49	21	44	51	54	35	51	51	43	46	48	47
Coal dealers (bitum.)....	39	13	30	33	23	15	34	33	27	30	20c	17c
Railroads.....	32	11	23	35	42	18	44	35	28	30	27	25
Total bituminous.....	42	18	39	41	43	24	46	37	32	35	30d	28d

(a) These figures are based on incomplete data. (b) Calculated at average rate of consumption in January, 1926. (c) At delivery rates normally prevailing in January, the tonnage of bituminous coal on hand on Jan. 1 and Feb. 1 would be sufficient for about 33 and 28 days respectively. (d) Using the normal January rate of delivery of bituminous coal by retail dealers, the total stocks on Jan. 1 would be sufficient for 34 days, and those on Feb. 1 for 31 days.

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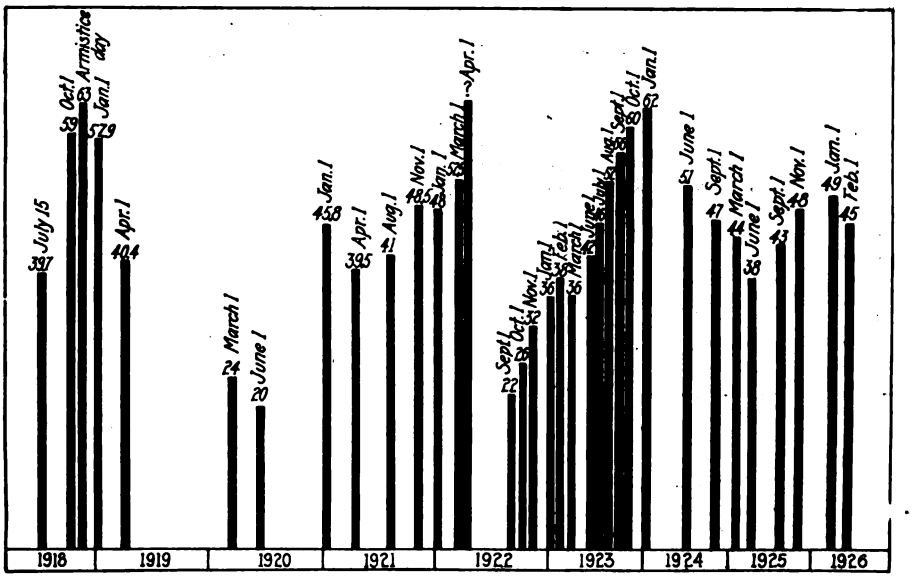

Total Commercial Stocks of Bituminous Coal, Oct. 1, 1916-Feb. 1, 1926

Figures represent million net tons and include coal in the hands of railroads, industrial consumers, public utilities and retail dealers. Coal for steam ship fuel, on lake docks, in transit and in the bins of householders is not included. Reports are to the effect that since Feb. 1 stocks have been further reduced.

gas plants on Feb. 1 had a supply sufficient to run them, on the average, for 67 days; the electric central stations had a 47-day supply.

Byproduct coke and steel plants had a smaller tonnage in reserve on Feb. 1 than on Nov. 1, 1925, the decrease being greater for the steel plants. Complete returns from these groups follow:

Stocks at Byproduct Coke Plants

	Days' Supply			
	Mar. 1, 1925	Nov. 1, 1925	Jan. 1, 1926	Feb. 1, 1926
Low volatile	23	28	28	24
High volatile	26	26	26	23
Average	25	26	26	23

Stocks at Steel Plants

	Day's Supply			
	Mar. 1, 1925	Nov. 1, 1925	Jan. 1, 1926	Feb. 1, 1926
Steam coal	36	31	37	36
Gas coal	26	33	23	21
Average	30	32	28	26

The total quantity of railroad fuel on hand Feb. 1, according to information received from the American Railway Association, was 10,235,000 tons, or approximately a 25 days' supply.

All coal brought to the surface and made ready for market, but not yet delivered to a retail dealer or a consumer may be considered "in transit." The largest element in this mobile reserve is the coal in railroad cars, which, though it has never been accurately measured, is known to run into millions of tons.

A few producers of soft coal follow the practice of storing coal at the mines. The quantity stored at present is small. From a list of 43 companies that have at some time in the past stored in quantity at the mines or at some intermediate point, the bureau has received reports of only 185,000 tons so held on Feb. 1, or 36,000 tons less than on Nov. 1, 1925, the date of the last stock report. In March, 1923, these companies had 808,000 tons.

The total quantity of unbilled coal in cars at the mines was 760,000 tons on Feb. 1, as against 452,000 tons on Jan. 1, 504,000 tons on Nov. 1, 1925, and 600,000 tons on March 1 a year ago.

Reports from all of the companies show stocks of 6,551,000 tons on the docks of Lakes Superior and Michigan on Jan. 1, and 5,176,000 on Feb. 1, compared with 3,840,000 tons on March 1, 1925; 7,806,000 tons on Jan. 1, 1924; 3,129,000 tons on Jan. 1, 1923, and 7,151,000 tons on Jan. 1, 1922.

On Feb. 1, the date covered by this report, the anthracite suspension was still in effect, and the stocks of anthracite had fallen to a low level. It was not possible to obtain reports from all retail dealers, but a selected group who have been reporting regularly for seven years are covered by table II.

Table II—Coal in Yards of a Selected List of Retail Coal Dealers

(In Net Tons)

Date	Anthracite (a)	Bituminous (a)	Total
1919			
Jan. 1	910,988	1,411,231	2,322,219
1920			
March 1	718,510	615,632	1,334,142
1921			
Jan. 1	658,112	1,158,358	1,816,470
1922			
Jan. 1	1,208,935	1,303,074	1,512,009
March 1	1,052,464	1,062,995	2,115,459
1923			
Feb. 1	326,527	970,477	1,297,004
1924			
Jan. 1	949,441	1,421,999	2,371,440
1925			
March 1	1,109,418	1,012,260	2,121,678
Sept. 1	1,395,289	1,213,370	2,608,659
Nov. 1	745,445	1,300,150	2,045,595
1926			
Jan. 1	306,607	1,418,402	1,725,009
Feb. 1	183,757	1,221,133	1,404,890

(a) The number of dealers reporting their stocks of anthracite on each date was 535, although many of these had no anthracite at all on Feb. 1, 1926. The number of dealers reporting their stocks of bituminous coal on each date was 739.

A group of 21 byproduct coke plants supplying gas for city use reported only 87,000 net tons of unsold coke on hand Feb. 1, the lowest figure of record since October, 1923. The stocks on other recent dates have been: March 1, 1922, 987,000 tons; Jan. 1, 1923, 212,000 tons; Jan. 1, 1924, 772,000 tons; March 1, 1925, 606,000 tons; Jan. 1, 1926, 246,000 tons.

Wheeler Bill Proposes Seizure of Coal Mines By U. S. in Emergency

Senator B. K. Wheeler, of Montana, on March 11 introduced a bill to authorize the creation in a national emergency of a Federal Anthracite Corporation to take over coal properties and to operate them. The directors of this corporation are to be appointed by the President, representing in a measure the consumers and workers, but primarily the public as the owner and beneficiary of the properties.

"The detailed provisions of this bill are of little importance compared with its primary purpose," said Senator Wheeler. "I present it not as a finished product nor as a detailed program which should be enacted as written but as a challenge to industrial statesmen. A law of this character would provide the means for ending an intolerable situation; a means for substituting public order for private disorder in an essential industry; a means for substituting a reasonable average cost of production for the highest cost of production as the basis of price to the consumer; a means for substituting the payment of just wages as a matter of right and as the product of genuine collective bargaining for wages determined as the spoils of victory by the winner of an industrial war.

"In offering this bill, I invite intelligent constructive criticism to aid in developing a workable program to protect the public interest, which should be enacted into law before an emergency arises in order that the public may be prepared.

"No more than a fair price should be paid the present owners of the mines, which is to be based on the prudent cost of their investment."

Offers Bill to Regulate Coal And Prevent Strikes

A bill to regulate the coal industry and prevent strikes was introduced in the House March 13 by Representative Morris Jacobstein, Democrat, of New York. In event of a strike which could not be settled by any other means, it would empower the President to take over the mines.

The bill would establish a Bureau of Coal Industry as a federal agency, which would report on conditions of production, distribution and storage of coal, including costs, prices, profits, marketing, wages and working conditions. In cases of dispute between miners and operators the President would be empowered to "induce them to submit the controversy by voluntary agreement to the decision of arbitrators."

"If this failed, the President would appoint an Emergency Coal Board to investigate the situation and report within thirty days whether there was likelihood of a settlement and whether the public was being deprived of an adequate supply of coal. Only after the failure of all means of arbitration would the President seize the mines.

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L. I. Dealers Embargoed for Refusing Soft Coal

Seven Long Island coal dealers were embargoed by the Long Island R.R. on March 15 because they refused to accept consignments of bituminous coal and coke delivered to their order after the anthracite strike was settled. More than 800 cars of soft coal and coke, it was said on March 15, were tied up on metropolitan zone tracks because the dealers to whom they were consigned would not unload them. It was said that at one time in the last fortnight there were more than 1,200 cars loaded with coal at sidings. Demurrage charges on these cars are said to total $35,000.

The dealers who refused to handle the soft coal and coke consigned to them, it is said, admitted having ordered the substitutes, but said that they were not up to specifications and gave other reasons for refusing the shipments. So long as the dealers mentioned in the embargo order refuse to receive the coal consigned to them they will be unable to receive hard coal, it was reported.

In a formal order filed with the Interstate Commerce Commission on March 1 by the Long Island R.R. the following dealers were embargoed: Rubel Coal & Ice Co., Putnam Coal & Ice Co., Commonwealth Fuel Co., Glendale Coal Co., and the Metropolitan Coal Co. On March 2 the embargo was extended to cover shipments to the Bushwick Coal Co., People's Coal Co., Shanley Coal & Ice Co. and the Home Co. The embargo was later lifted in so far as it applied to the Commonwealth and Shanley companies.

The embargo was held to be necessary by the Long Island Railroad because trackage was needed to bring hard coal into the city, and this work would be hampered so long as the tracks were clogged with the cars of soft coal.

N. Y. Retailers to Discuss Anthracite Situation

The anthracite situation, especially as concerns steam sizes, will be the chief topic of discussion at the eighth annual sectional meeting, New York group, of the New York State Coal Merchants' Association, which will be held Thursday, March 25, at the Hotel Pennsylvania, New York City. The meeting will open with a luncheon at 1 p.m., at which Richard J. Wulff, president of the Commonwealth Fuel Co., Brooklyn, will preside.

The business session will begin at 2 p.m. and the speakers and subjects so far arranged will be:

"Is Coke a Permanent Substitute?" by Walter R. Morris, Seaboard By-Products Coke Co.; "The Future of Bituminous Coal in Anthracite Territory," Charles A. Owen, president, Imperial Coal Corp.; "Merchandising Steam Sizes of Anthracite," Charles A. Connell, assistant manager, Anthracite Coal Service; "Our National Organization," Samuel B. Crowell, president, National Retail Coal Merchants' Association; "Can Domestic Sizes of Anthracite Regain Their Markets?" Arthur C. Wadley, president, Shanferoke Coal & Supply Corp.; "The Retailers' Viewpoint," Hiram B. Blauvelt, vice-president, Comfort Coal & Lumber Co., Hackensack, N. J. Dr. Louis I. Harris, Health Commissioner of New York City, also will be a speaker at the afternoon session.

The banquet will take place at 6.30 p.m., the speakers to be announced later. Charles B. Staats, of Albany, president of the New York State Coal Merchants' Association, will preside, and Thomas F. Farrell, vice-president, Burns Brothers, will be the toastmaster.

Fewer Oil Burners in Panama Canal in 1925

Fewer oil-burning vessels passed through the Panama Canal during the last year than coal burners and motor ships, according to a report submitted to the War Department at Washington last week. Although there were 119 fewer transits of commercial vessels in 1925 than in 1924, 85 more coal-burning and 94 more motor passenger and cargo ships passed through the waterway in 1925 than in the preceding year. There were, however, 300 fewer oil-burning ships using the canal. The total transits in 1925 were 4,774, as compared with 4,893 in 1924.

Smoke Ordinance Revived in New York

Dr. Louis Harris, Health Commissioner of New York City, announced on March 11 that after March 17 the city ordinance against the consumption of soft coal will be strictly enforced, particularly where a heavy smoke nuisance is created.

Dr. Harris stated that he thought the time had arrived when consumers would be able to obtain an adequate supply of anthracite, but he wanted those who have soft coal to have a chance to get rid of it by using it in combination with coke or some hard coal, so that it would not vitiate the atmosphere.

Dealers would be advised to warn buyers of these instructions.

In the case of a breach of the ordinance being committed health inspectors would issue a warning to the offender so as to give him a chance to stop the offense before any summary action is called for.

Schuylkill Exchange Dissolves

The Schuylkill Coal Exchange has gone out of business. Its chief object was the maintenance of order on mine property in the lower anthracite field in Pennsylvania belonging to the Philadelphia & Reading Coal & Iron Co., which will take care of this work itself hereafter. Robert J. Montgomery, vice-president and general sales agent of the P. & R. C. & I. Co., was president of the exchange and Joseph B. Givin, of the Charles D. Norton Coal Co., was secretary-treasurer.

19 Mines Sealed by Court To End Stream Pollution

A decree on March 11 by Judge Donald McPherson, presiding justice of the Fifty-first Pennsylvania Judicial Circuit (Fayette County), directs nineteen coal companies operating in the Indian Creek valley to seal up their mines so as permanently to prevent the pollution of Indian Creek by escaping mine water. The sealing is to be done in thirty days.

The order is by way of enforcement of a judgment of the Supreme Court rendered some time ago in favor of the Mountain Water Supply Co., Dunbar Water Supply Co., the Pennsylvania Railroad Co. and the Westmoreland Water Co., which six years ago began legal steps to maintain the purity of Indian Creek and restrain the operations of coal companies in the Indian Creek water shed.

At the hearing it developed that the Sagamore Coal Co., Melcroft Coal Co., Indian Creek Coal & Coke Co. and the Romney Coal Mining Co. are constructing a drainage tunnel through the coal seam to convey all mine water from their workings to a point below the dam of the Mountain Water Supply Co. By consent of the Pennsylvania Railroad Co., which is making a determined fight to keep its water supply pure for use in its locomotive boilers, and the associated water companies which serve the greater part of Westmoreland County consumers, these four coal companies were granted an extension of the rule until June 16, 1926.

Alabama Holds No-Accident Crusade at Mines

To wage a relentless fight against carelessness and to join intensively and without relaxing for one year beginning March 1, and from year to year thereafter, in a crusade to prevent injury to persons and property is the purpose of the Alabama Mining Institute, operating through its mine casualty committee. At a meeting formulating this campaign were present Erskine Ramsay (chairman), Milton H. Fies, W. E. Leake, A. Sicard, Eugene C. Morgan, James B. Donaldson and Priestly Toulmin. The committee has circulated a 67-point questionnaire asking for information as to safety provisions at the various mines. The committee urges membership in the Joseph A. Holmes Safety Association.

C. W. Hunt Confirmed for Trade Board

The U. S. Senate on March 10 confirmed the appointment of Charles W. Hunt, of Iowa, for another term as a member of the Federal Trade Commission by a vote of 48 to 20, after a debate lasting two hours.

The fight on Hunt revolved about the policy of the Trade Commission as it has been restricted by Commissioners Humphrey, Van Fleet and Hunt against the opposition of the Democratic members, Commissioners Thompson and Nugent. Hunt, former secretary of the Iowa Farm Bureau, was scored in speeches by Senators Walsh, King, Norris and others. Senator Cummins led in his defense.

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Government Ownership and Private Management of British Coal Mines Urged in Royal Commission Report

A compromise of the demands of the operators and miners fairly accurately sums up the recommendations in the long-awaited report of Sir Herbert L. Samuel's Coal Commission for the reorganization of the British coal industry. The report, which probes deeply into every phase of the coal crisis, was issued March 10. It is signed by the Chairman, Sir Herbert L. Samuel; Sir William Beveridge, Gen. Sir Herbert Lawrence and Kenneth Lee, who were named six months ago to work out a plan to put the industry on a sound basis and eliminate the disputes between the miners and operators that threatened industrial disaster.

State ownership of the mines, but continuance of their development by private enterprise under government supervision, is recommended, the commission declaring against nationalization as recommended by the Miners' Federation.

The report is equally emphatic in declaring that the coal subsidy—in force since last August, when Premier Baldwin, by granting it, postponed the final solution of the coal problem until next May—should stop immediately and should never be repeated. In so deciding the drafters of the report line up firmly against all those who are advocating further purely temporary remedies, and in support of those wishing to see the coal crisis brought to a head once and for all by drastic means.

Opposes Lower Wages

The depression in the industry, says the report, cannot be attributed to political unrest or restriction of output by the miners or inefficiency of management, but it disagrees with the view of the mine owners that the only practicable remedy is to reduce wages, lengthen the hours of work and decrease railway rates by lowering wages of railway men.

It says that the way to prosperity lies in three chief lines of advance, namely, greater application of science to the mining of coal, larger units for production and distribution and fuller partnership between employees and employers.

The six outstanding points in the commission's report are as follows:

(1) The error formerly made of allowing ownership of coal to fall into private hands should be retrieved and the mineral should be acquired by the state by purchase or by declaration of state ownership.

(2) Amalgamation of many present small units of production is desirable and practical. Legislation should provide for compulsory transfer of interests under existing leases in such cases.

(3) Closer connection of mining and allied industries should be promoted.

(4) Existing provision for research should be largely extended by the industry with support of the state.

(5) Comparative agencies, particularly for selling, should be formed. A governmental system for the analysis and sampling of coal should be established. Coal authorities should be empowered to engage in the retail sale of coal.

(6) The existing wage agreement of the system is sound, but amendments are needed in the method for ascertaining profits. The seven and a half-hour working day under ground should stand. Profit-sharing schemes should be introduced and holidays with pay given later.

Would Withdraw Subsidy

"We express no opinion as to whether the grant of a subsidy last July was unavoidable, but we think its continuance is indefensible," the commission reports. "The subsidy should cease at the end of its authorized term and should never be repeated."

The nationalization scheme advocated by the Miners' Federation was rejected by the commission because it contains "grave economic dangers" and because it is neither "workable nor offers a clear social gain."

In the opinion of the commission nationalization would involve the state in the business of exporting coal. The state would become a coal merchant, which would lead to international complications, the report holds. The report also estimates that nationalization would cost £350,000,000.

The commissioners warn the public that their scheme cannot be applied immediately and is not a panacea for all the troubles of the industry. "It will take months to inaugurate it," the report states, "and years to put it into full operation."

Although there is no direct recommendation that uneconomic pits should be abandoned, it is implied in the body of the report that such pits should, in the natural course, be closed.

While advising the preservation of the present wage agreement system, the report recommends the miners accepting in the immediate future a smaller minimum percentage over the standard rates of pay. The report says:

"Disaster is impending over the industry and the immediate reduction in working costs that can be affected in this way alone is essential to save it. The minimum percentage is not a minimum wage in the usual sense of the term. The wages to the lowest paid men will be safeguarded by continuance of the system of subsidence and allowance."

The commissioners found that, if the government subsidy were excluded, 73 per cent of the coal mined in Great Britain the last quarter of last year was taken out at a loss.

One of the most interesting passages of the Coal Commission's report reads:

"Heat, power and light requirements of the country should be under the constant and comprehensive survey of a body formed for this purpose. We propose for consideration the establishment of a national fuel power committee, with advisory powers, to be composed of representatives nominated by the government from among official and other bodies concerned."

So far over £15,000,000 has been paid in subsidy, the table herewith showing the claims paid up to the end of February.



Keystone View Co.

Sir Herbert L. Samuel

Chairman of Royal Commission which has just presented its report on the British coal industry after six months' study.

British Coal Subsidy Payments, August to February

	Aug. to Nov., 1925	Dec., 1925	Jan., 1926	Total
Scotland	£1,464,895	£519,554	£427,162	£2,411,611
Northumberland	597,339	228,890	199,411	1,025,640
Durham	1,436,867	542,218	515,572	2,494,757
S. Wales and Mons	2,156,440	942,281	847,549	3,946,270
E. Div. of Fed. area	1,614,754	662,542	506,330	2,783,626
Lancs., N. Staffs & Cheshire	989,667	393,154	275,712	1,658,533
N. Wales	150,529	58,503	49,946	258,978
S. Staffs and Salop	91,302	33,266	9,981	154,549
Cumberland	144,619	54,348	50,135	249,102
Bristol	10,351	4,879	4,934	20,164
Forest of Dean	56,655	22,409	21,028	100,092
Somerset	9,145	4,050	4,699	17,894
Kent	11,992	5,173	5,741	22,906
Total	8,734,555	3,471,267	2,938,300	15,144,122

Better Track Facilities to Lakes for N. Y. Central

The New York Central Lines announce a program of laying additional passing tracks between Columbus, Ohio, and the Toledo docks in order to aid in the movement of lake coal and heavy traffic in general. The passing tracks, which will cost upward of $1,000,000, will be placed along the entire T. & O. C. track between the two cities named. A large part of the work will be done north of Kenton.

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Was Horning Explosion Caused by Switch Of Cutting Machine Igniting Gas?

The substance of the verdict returned by the jury at the Coroner's inquest of the disaster of Feb. 3 in the Horning mine of the Pittsburgh Terminal Coal Corporation, at Horning, Pa., was that the twenty victims met death "through an explosion the cause of which was undetermined." This verdict however, failed to record certain facts established by the testimony, the recital of which did not leave the causes entirely shrouded in doubt. This, in short, is what the witnesses set forth: At the time of the explosion the victims were engaged in putting the finishing touches to two seals, inby of which was a fire which had originated from the ignition by a cutting machine of a feeder of gas in a clay vein. The inquest was held in Pittsburgh on March 11 by W. J. McGregor, Coroner of Allegheny County.

The fire which caused the explosion was started about 10:30 a.m. at the face of Butt 16 in Sec. 4. Prior to the fire on Feb. 3, Joseph Mott, fireboss, made two inspections of the places on his run, which included Butt 16. He read his report for that day covering these inspections. No gas was detected at the face of this entry nor at the face of the companion entry. He did detect, however, slight traces of gas being emitted from a clay vein at the face of 9-Face South, one of three entries from which Butts 15 and 16 are turned. Mr. Mott said that he had noticed a portion of a clay vein in the lower left-hand corner of the face of Butt 16. This place had remained idle for about six weeks prior to Feb. 3 while a crosscut was being put through to Butt 15 at a point a short distance behind the faces of these entries.

Test Failed to Reveal Gas

Frank Demshar and Rudolph Valentine, loaders, had been engaged as buddies in advancing these entries. Mr. Demshar testified that he entered Butt 16 at 7 a.m. on Feb. 3, intending to resume the advance of this place, the required crosscut having been completed. He remained idle until about 10 a.m., when the cutters arrived accompanied by George Denard, assistant foreman. Mr. Denard tested for gas, and finding none, instructed the machine men to proceed with the cutting.

On being questioned by Inspector John I. Pratt, technical adviser for Coroner McGregor, Mr. Demshar said that a test hole was not drilled into the clay vein prior to the cutting operation. No gas emission was noticed until the cut had been completed to a point about 8 in. from the right-hand rib. Gas being discovered at this stage, Mr. Denard told the cutters to stop the machine and ordered Mr. Demshar to get a piece of canvas. This was wrapped about the starting box (open type) of the cutting machine, after which an attempt was made to back out the machine. A burst of flame followed, which was not of sufficient intensity to burn any of the men present.

Mr. Demshar, who at one time was a cutter, was positive that ignition originated in the starting box. He stated that he advised Mr. Denard not to attempt to move the machine in the presence of gas, but was told that the machine had to be removed. As attempts to beat out the flame entirely failed, Mr. Denard set off in the open one shot of permissible explosive 10 min. after the fire started and another 10 min. after the first. No reason for his act was revealed at the inquest. It must be inferred that he expected the concussive force of these blasts to extinguish the flame. Mr. Valentine, the second loader, substantiated the evidence given by his companion.

Two types of cutting machines (shortwall and breast) were in use in this mine, according to Herman Ludwig, machine boss. The motors on the shortwalls were inclosed, but those on the breast machines were open. On some of the shortwall machines were starters which, he aptly remarked, "were closed and safe when properly adjusted." The machine used for cutting the face of Butt 16 on Feb. 3 was a shortwall equipped with an open starting box.

Joseph Trevorrow, who for 23 months ending Jan. 30 had been superintendent of the Horning mine and then had been transferred to another of the company's mines, explained that the workings of Butts 15 and 16 were ventilated by a split of 16,000 cu.ft. per minute. This air followed an inby course in Butt 16 and returned in Butt 15. The face of Butt 16 had been advanced to a point about 3,000 ft. from an airshaft and 9,000 ft. from the hoisting shaft. All workmen were equipped with electric cap lamps and the officials with flame safety lamps, some locked with keys and others magnetically.

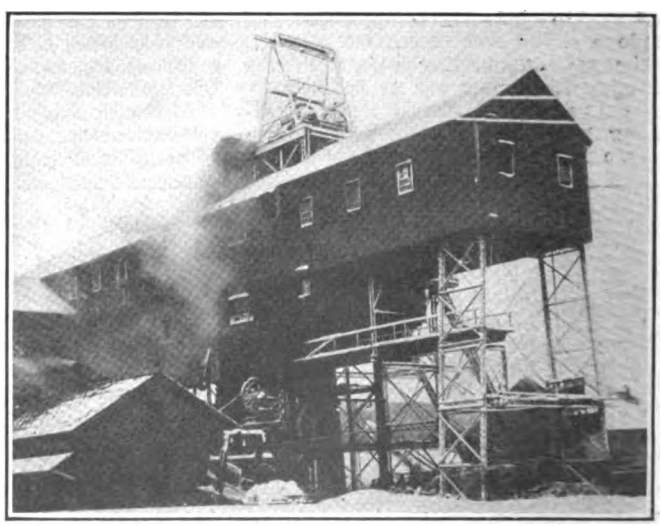
At the time of his last inspection of the Horning mine as safety engineer, during the second week in January, G. W. Owing found conditions good. Haulways had been cleared of all débris in preparation for rock dusting, which had already been started. On no split did he find less than 12,000 cu.ft. of air at the last crosscut. Prior to the explosion rock dust had been applied as far as the end of the trolley wire in the main haulway of Sec. 4 and had been extended 100 ft. into Butt 15. Inasmuch as the dusting machine is propelled by a trolley locomotive, rock dust could not be applied by this means beyond the limits of the trolley wires.

John I. Pratt, state mine inspector of the seventeenth bituminous district, inspected the Horning mine on Jan. 12, 13 and 14. At that time the fan was developing 236,000 cu.ft. of air per minute against a 35-in. water gage. He found at that time some gas in two places in Sec. 4; otherwise the mine was in good condition.

Efforts to Extinguish Fire

Details as to the attempts made prior to the explosion to put out the fire and afterward to seal it were given by George S. Osler, vice-president and general manager of the coal company. When he arrived at the seat of the fire, about 12:20 p.m., he found that a 3-ply canvas stopping had been erected in Butt 16 intake at a point between a chute and the last crosscut. In his presence a line brattice was tacked to posts and carried up close to the cutting machine by men who held these posts while others attempted to move the truck of the cutting machine and put out the fire. A water box had been hauled to the scene. Pieces of canvas were wetted with water and used in an effort to extinguish the fire, which, obviously, was of small proportions. It broke out, however, with renewed vigor when fanned by the air which was conducted to it by the brattice. During this time tests for gas were made continually but none was detected. It was decided then to seal off the fire.

A 2-ply stopping was erected at a point about 100 ft. from the face. Behind this was erected a single-course dry brick stopping with a pilaster in the middle. The canvas stopping was completed at about 2 p.m. Outby of the dry brick wall was erected a double-course brick-and-mortar stopping which had been completed before the explosion took place, at about 4 p.m. Likewise on the return side, or Butt 15, a 3-ply canvas stopping was erected followed by a brick-and-mortar stopping which must have been nearly completed when the explosion occurred. Each of



Horning Mine Tipple

Twenty men who perished in the disaster of Feb. 3 met death, according to the jury at the Coroner's inquest, "through an explosion the cause of which was undetermined."

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A Portion of the Town of Horning, Pa.

High winds and a heavy snowstorm, as shown in the picture, hampered the rescuers in reaching the scene of the explosion in No. 4 mine of the Pittsburgh Terminal Coal Corp. on Feb. 3. Twenty men were killed by the blast.

these airtight walls was provided with a pipe and valve.

The construction work was delayed by the fact that cars of supplies could not be hauled by locomotive to the location and therefore were pushed by men. Mr. Osler left the fire zone shortly before the explosion and was not aware that an explosion had taken place until told by men on the outside.

Coroner McGregor asked why so small an area was inclosed by the seals. He wondered whether a larger zone would have allowed for expansion and contraction to a greater extent and delayed the time when an explosive mixture might have been developed. Mr. Osler remarked that all present were of one opinion with regard to the most feasible location for the seals. He thought the explosion was due to a radical change of conditions after the walls were erected. He is certain that rock dust stopped the explosion from going any farther than it did.

Matches in Victims' Clothes

John B. Black, superintendent of the Allegheny County morgue, said that in a search he found matches in the clothes of a number of the victims. On two men he found cigarettes and on one tobacco and a pipe. Edward B. Laughlin, funeral director, testified that he found twenty matches in the clothes of one victim. He bore out the statement by Mr. Black to the effect that quite a few of the men had matches in their clothes.

State Mine Inspector Alexander McCanch testified as to the findings of a state investigation commission of which he was a member. The commission believes that the most likely source of ignition of the fire which afterward initiated the explosion was the starting box of the cutting machine. Coal dust must have propagated the explosion beyond the limits of the gas explosion which originated at the face of Butt 16, and the commission believes that gas may have accumulated at the face of 9-Face entry and assisted in the propagation. The commission is further of the opinion that a large open area near the seat of the explosion allowed it to expand and spend its force quickly without carrying any great distance, and that rock dust was a big factor in checking the flame.

William Young, captain of a rescue team of the Pittsburgh Coal Co., Beadling, Pa., testified that no great violence was displayed near the seat of the explosion. The bricks of the seals lay in such positions on the bottom as to lead one to decide that the walls were merely toppled over. Few of the bricks traveled any great distance and some of those near the bottom remained in the position in which they were set by the bricklayers.

Following are the commission's recommendations to Joseph Walsh, Secretary of Mines of Pennsylvania, following its investigation, which, incidentally, were not presented at the inquest:

"Because of the large number of mine officials lost in this disaster there will always be some doubt about the conditions and circumstances surrounding this explosion. The occurrence of this explosion announces in no unmistakable terms the great need of excluding from the working face, as far as consistent with mine practice, from dry and dusty mines that generate gas either regularly or intermittently all sources that give rise to ignition; that, to make rock dusting so effective as to confine flammation within narrow limits, all avenues of escape from the face of the workings must be liberally and systematically rock-dusted and that this treatment be extended and maintained close to the face concurrent with the advance of workings.

"It is equally important from the viewpoint of safety that all electrical equipment and material used in the mining of coal, which through defect or misuse may furnish a source for the ignition of gas or coal dust, be placed in the hands of competent and authorized persons and carefully supervised by the mine management."

California Mine Ships Coal

The first shipment of coal from Shasta County mines was made March 1, when five tons was dispatched from the mines on Oak Run to the Pacific Gas & Electric Co., San Francisco, to be given a working test in gas works. There is a possibility that the company eventually will substitute coal for oil as fuel in its various gas plants.

Kansas Union Men Restless; Would Close Strippings

Arrest of several of the officials of District 14, United Mine Workers, and Alexander Howat, deposed president of the district, has halted "marches" by union miners in the Pittburg (Kan.) district. The "marching," all of which was done in motor cars, was a gesture of the unionists to stop work at a number of steam-shovel mines in an effort to force the operators to sign a contract with the union under the Jacksonville agreement.

Charges of unlawful assembly were filed against seven district officials of the union and five miners. All were released under $1,000 bond each. Three miners also were charged with asault and battery.

Union district officials arrested included Matt L. Walters, president; Harry W. Burr, secretary-treasurer; Dan O'Donnell, vice-president; Charles Skidmore, William Brady and Ed McCluckie, district board members, and James Fitzgibbon, joint board member.

District President Walters declared that the union would seek to remove the cause of the controversey over wages at the non-union shovel mines by having the Kansas Legislature enact a law against removing coal from shallow veins. He declared that shovel mining is an economic waste of land.

Coronado Case Rival Results In Second Mistrial

The Pennsylvania Mining Co.'s $600,000 damage suit against the United Mine Workers resulted in a second mistrial at Fort Smith, Ark., March 13, when a jury reported itself unable to agree upon a verdict after more than fourteen hours of deliberation.

The coal company's suit was the outgrowth of the Jamestown labor troubles several years ago, and was similar in many respects to the famous Coronado case, which was tried in federal court for the third time last December. All three of the juries which heard the Coronado case failed to agree upon a verdict.

The Pennsylvania case was tried originally in 1920, the jury failing to reach a verdict.

Jail Awaits Bittner

The West Virginia Supreme Court of Appeals has dismissed the writ of error granted last June to Van A. Bittner, international representative of the United Mine Workers in northern West Virginia. The decision upholds the Monongalia County Circuit Court in sentencing Bittner to six months in jail and fining him $500 on a contempt charge for violating an injunction of Judge I. Grant Lazelle forbidding interference with non-union workers at mines on Scotts Run last spring. The court ruled that contempt charges would be reviewed by the court only to ascertain whether the lower court acted within its jurisdiction, holding that a circuit court may punish summarily, without trial by jury, a person who has disobeyed or resisted a lawful decree of that court.

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May Defer Action on Oddie Bill Awaiting Results of Coal Industry's Efforts to Solve Own Problems

By Paul Wooton
Washington Correspondent of *Coal Age*

Impressed with the progress which the coal industry is making in providing for the settlement of its own quarrels and in the matter of voluntary fact-finding, Senator Oddie, of Nevada, chairman of the Mines and Mining Committee of the Senate, apparently is willing to withhold consideration of his bill until the results of these activities can be determined. He greatly prefers that the industry do these things for itself and, despite the advanced state of his plans, is inclined to await the result of current developments. Senator Oddie expresses his views on the subject as follows:

"When the President sent his first message to Congress, urging action on the report of the Harding Coal Commission, I felt, as chairman of the Committee on Mines and Mining, to which the report of the Coal Commission had been referred, that it was incumbent upon me to take action. This led me to draft the legislation which I introduced in January, 1925, just following the receipt of the Coal Commission's report.

"In the preparation of that measure I consulted with the representatives of all the departments interested and made a thorough study of the recommendations of the war-time fuel administration and of all other bodies which had studied the subject. I took especial pains to explain the bill to representatives of the industry.

"When Congress met last December the anthracite strike was in progress. The President again in his message urged legislation along the lines of the Coal Commission's report, but as the anthracite controversy dragged on it became increasingly clear that any legislation during the pendency of the strike would make less likely the settlement of the quarrel by the participants themselves—an end to which the President was committed.

Calls Settlement Constructive

"Now that the strike is over the constructive nature of the settlement has put a new aspect on the situation. It appears that this settlement has provided a means for arbitration and that peace and production are likely to continue in the anthracite region for five years. The agreement gives promise of accomplishing many of the ends contemplated by my bill. I find that the prospects of the settlement are so promising as to have impressed the administration to the point where it is not disposed to press for legislation at this time, but is inclined rather to await results under the new contract.

"In view of the existing situation there are reasons which may influence me not to push my bill at this time. If the settlement yields the happy results hoped for, legislation may not be needed. It is very much better that industry should set up its own machinery for settling disputes rather than have the method handed down from above by the federal government.

"On the other hand, if we find at the opening of the next session of Congress that we have a coal problem still with us, I then will press my bill, because I am convinced it is the one conservative and constructive proposition which has come from Congress after all these years of agitation."

In addition to the consideration being given plans for setting up machinery to handle labor disputes, the bituminous-coal industry is making rapid progress in its statistical activities. Apparently the coal operators are bent on doing their own fact-finding. The need now is for a clearing house where statistics of national interest can be assembled. The National Coal Association promises such a summary just as soon as the statistical work of the local associations has reached the point where it will cover enough tonnage to be thoroughly representative. Many local associations are planning to gather statistics dealing with other phases of mining.

Many Arrests as Troops Leave Southeru Indiana

Arrest of William Stinson, board member of District 11, United Mine Workers, at Boonville, March 13 brought the total number of arrests in the recent rioting in the southern Indiana mine fields to 55. About 25 more arrests are expected, according to Sheriff Spradley, of Warrick County, where the attacks on non-union miners occurred. All those arrested were said to be either members of the United Mine Workers or sympathizers of the organization.

The arrests followed a grand jury investigation, in which 96 indictments charging assault and battery, rioting and assault with intent to kill were returned.

Those arrested will be arraigned March 22. Bonds in most of the cases were fixed at $1,000.

The last of the National Guardsmen dispatched to Evansville Feb. 16 in connection with distrubances in the southern Indiana mine fields were withdrawn by order of Adjutant General William Kershner, March 12.

The troops, numbering approximately 50 officers and men, were quartered in the National Guard armory at Evansville throughout their stay, no disturbances occurring to warrant their dispatch to mine properties in the district. Two airplanes made daily reconnaissance flights over the district during their stay. This marked the first time that a National Guard aerial unit has been called into service during a labor disturbance.

Mine operators of the district entered a protest with Governor Jackson two weeks ago when withdrawal of the troops was first rumored.

Two-Year Pact Accepted by Nova Scotia Miners

A settlement between the British Empire Steel Corporation and the miners of District 26, United Mine Workers (Nova Scotia), was arrived at on March 11 at Sydney, N. S., when a referendum to accept a two-year wage agreement with the corporation was voted on and carried by a majority of 201. The agreement is based on the report of the Duncan Royal Commission. The number of ballots cast was 4,853, indicating that about half the Besco employed miners voted. Included in the agreement is the union check-off, but a provision whereby miners and their families were to be guranteed medical treatment for a small sum payable each week was not included.

Ohio Companies to Expand Byproduct Coke Plants

The Central Steel Co., Massillon, Ohio, has placed an order for a by-product coke plant, including all essential byproduct and benzol equipment as well as coal- and coke-handling machinery. The plant will consist of 49 Koppers-Becker combination ovens with a carbonizing capacity of approximately 1,350 tons of coal daily. On a basis of 70 per cent yield that would mean the consumption of 492,750 tons of coal and an output of 344,925 tons of coke annually.

The Republic Iron & Steel Co., Youngstown, Ohio, will add a battery of 43 Koppers-Becker combination ovens to its plant in Youngstown. The new unit is rated as capable of carbonizing about 1,100 tons of coal daily, or 401,500 tons per year, and when completed will give the company a total of 247 ovens with an annual coal-carbonizing capacity of 1,939,800 tons and an output of 1,257,860 tons of metallurgical coke.

Lawton Gets 60 Days in Jail And $200 Fine

Tyler G. Lawton, president of District No. 11, United Mine Workers (Indiana), who was found guilty several weeks ago of contempt of court by Judge Edgar S. Durre, of Vanderburgh County Superior Court, Evansville, was fined $200 and sentenced to sixty days in jail last week. His conviction and sentence grew out of his alleged interference with the operation of the Green Mound Coal Co. mine, near Washington, Ind., a property that was being operated on a co-operative basis following a receivership that had placed it under jurisdiction of the Vanderburgh County Court.

Mine union officials have declared that the conviction and sentence will be appealed to the State Supreme Court.

To Test Anthracite Culm Piles

The Bureau of Mines and the State of Pennsylvania have undertaken to cooperate in sampling of anthracite culm piles. The work is in charge of D. C. Ashmead. The amount of recoverable coal will be determined. Tests will be made of its quality and of the grade of all marketable sizes.

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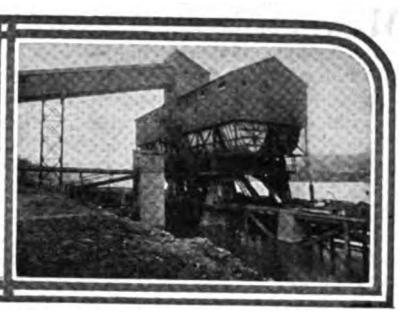
News Items From Field and Trade



ALABAMA

The Alabama Fuel Association is the latest association affiliated with the National Coal Association to inaugurate past sales reports. The system began operation on March 1.

ILLINOIS

The Paradise Mine at Duquoin, owned and operated for many years by the Paradise Coal Co., Duquoin, closed down March 12. It is the first time in several years that this mine has closed except for repairs or some similar cause. Officials stated that the mine would be closed indefinitely as the company could not operate the mine profitably under the Jacksonville agreement. Four hundred and fifty men are affected. The company owns large tracts of coal lands in the vicinity of the Paradise Mine and had planned to sink a new mine. These plans will be shelved temporarily.

Five company houses owned by the Black Star Coal Co. at Logan, near Benton, in Franklin County, were destroyed by fire recently. The fire truck from Benton made a run and prevented additional destruction.

Blue Bird Mine, belonging to the Harrisburg Coal Co., northwest of Carriers Mills, after being idle for more than a year, has resumed work. The mine employs about 150 men.

The Chicago & Eastern Illinois R.R. has placed an order for 500 coal cars with the Mt. Vernon Car Manufacturing Co.

Ten of the twelve mines owned by the Old Ben Coal Corp. in Williamson and Franklin counties have suspended operations. The latest of the company's mines to close down was the No. 20 mine, located in the Valier section, which suspended work March 13. High percentage of screenings found in the output and inability to compete with mines in the non-union Kentucky fields were given as the cause of No. 20's close. The mine normally employs 450 men. More than 8,000 men are employed by the Old Ben company when all twelve mines are running at capacity.

Possibility of the reopening of a number of mines in the Marion district is seen by coal operators there in the announcement that the Missouri Pacific R.R. will operate the Marion & Eastern R.R., serving that field.

The Lovington Coal Co., Decatur, has elected officers as follows: Oscar J. Danzelson, president; Dennis Houlihan, vice-president, and William R. Kirkpatrick, secretary-treasurer. The directors elected are Daniel Hall, W. L. Huff, R. E. Bowers, A. B. Chapman, D. A. Beggs and the above named officers. This company purchased the interests of the old bankrupt Lovington Coal Co., which include a mine at Lovington.

Divernon mine No. 6, Divernon, operated by the Madison Coal Co., will be electrically operated in the future, having been connected with the Central Illinois Public Service Co. at Kincaid.

INDIANA

The American Cannel Coal Co., Cannelton, has reduced its capital stock from $30,000 to $25,000.

KANSAS

Jackson-Walker mine No. 16, near Dunkirk, operated under lease by John Fulton for the last three months, was closed down March 5. The mine employed 150 men.

Tentative arrangements have been completed for holding the Kansas first-aid and mine-rescue meet on the athletic field of the Kansas State Teachers' College, at Pittsburgh, on May 22. Miners' and operators' organizations and the Pittsburg Chamber of Commerce will co-operate toward financing the meet. It is proposed to have the miners in Barton County, Missouri, immediately east of the Kansas line and included in District 14 of the United Mine Workers, participate in the meet. The question of whether this can be done will be passed on by W. D. Ryan of Kansas City, mine safety representative of the U. S. Bureau of Mines for the Southwest.

KENTUCKY

The Old Straight Creek Coal Corporation, composed of Charleston (W. Va.) coal tradesmen, has acquired the Hamby mine of the Straight Creek Fuel Co., near Pineville, Bell County, and will start to operate the plant soon. The mine produces 500 tons of coal daily.

PENNSYLVANIA

The tri-district executive board of the United Mine Workers, representing the anthracite union districts, 1, 7 and 9, has taken initial steps in a campaign to interest manufacturing and industrial plants in the anthracite region in burning anthracite exclusively. All of the local unions in the three districts will be asked to aid in the campaign.

A. K. Morris, vice-president and general manager of the Pennsylvania Coal Co., announced on last Friday that the collieries of his company on that day reached the peak of production since the termination of the strike. A total of 35,071 tons of hard coal was shipped in ten hours on Friday. The greatest daily tonnage ever shipped to market by the Pennsylvania was reached on Aug. 29 of last year, when 47,000 tons was shipped.

Hearings on the appeals of the large anthracite corporations for a reduction in county taxable valuations were continued last week in the Northumberland County courts. The operators are opposing a total assessment of approximately $34,000,000 for the three years beginning Jan. 1, 1925. They claim this an overestimate of $10,000,000. Three years ago the assessment was fixed at $24,000,000, or a 40 per cent increase. In a similar case in Schuylkill County the Supreme Court decided that the comparative sale value is the proper way to value coal lands for taxation purposes. This decision may result in the coal companies gaining their point in Northumberland County.

The Lehigh & Wilkes-Barre Coal Co. since the end of the suspension has had to obtain 200 laborers through New York and Philadelphia employment agencies because of inability to obtain local residents to work in this capacity at their mines. Officials of the company state that hundreds of mine workers who left this section when the suspension became effective have not returned. About sixty men a week are being brought into Wilkes-Barre and adjoining towns. The company finds boarding houses for the new employees and endeavors to place the men with others of the same nationality.

The history of anthracite is to be depicted in the historical exhibit by the State of Pennsylvania at Philadelphia during the Sesquicentennial. Arrangements have been made to take scenes associated with the early development of the great industries of the state and show them in addition to the present-day operations.

The land and plants of the Buck Ridge Colliery in Coal Township, Northumberland Country, will be sold at public auction at the court house, Sunbury, on March 22, according to an announcement by the receivers for the Puritan Coal Mining Co., Inc. One of the conditions of the sale is an upset price of $275,000 in cash to cover all claims and taxes. The plant has been operated for some time by the receivers, E. H. Suender and Benjamin K. Focht.

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W. H. Blight, of Elmira, N. Y., who has been in the coal business for 45 years, recently purchased the Pine Run Coal Co., near New Bethlehem, Clarion County, from the Bader Coal Co., of New York and Boston. His new acquisition adjoins the Eagle Mine, of which Mr. Blight is the principal owner. The two plants will have a daily capacity of 25 carloads, mined from the Freeport and Lower Kittanning seams, which will be shipped via the Shawmut and Pennsylvania railroads.

The Pittsburgh Terminal Coal Corp. and subsidiaries for the year ended Dec. 31, 1925, report net income of $314,790 after depreciation, depletion, interest, federal taxes, etc., equivalent after preferred dividends, to 69c. a share earned on $12,000,000 outstanding common stock.

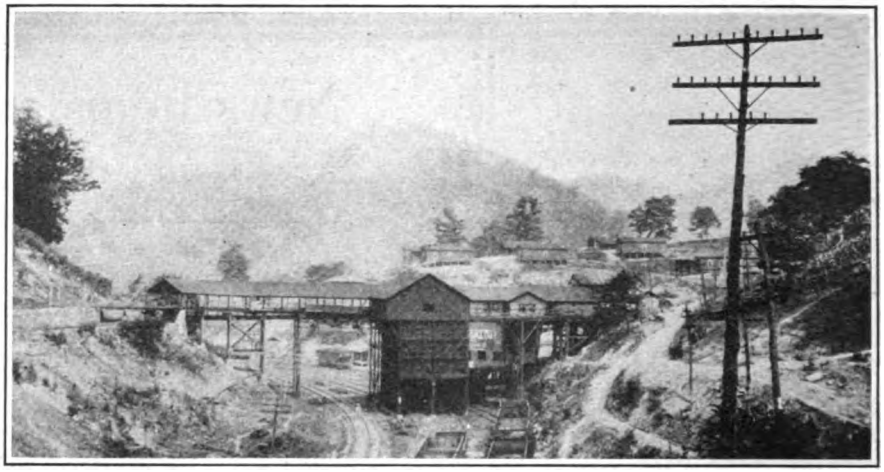
A series of lectures on the subject of "Combustion" has been instituted in Philadelphia under the auspices of the Anthracite Operators' Conference. The course, which is intended for the sales forces of the various anthracite operating companies, began March 10, and will continue for five consecutive Wednesday evenings. The first three lectures are to be given in the William Penn High School and the remaining two in the Central High School. It is understood that similar courses will be given in New York, Albany, Syracuse, Boston, Providence and Washington.

The Orient Coal & Coke Co., a subsidiary of A. M. Byers & Co., has inaugurated a co-operative group life insurance program providing $422,000 protection for its employees in Pittsburgh and Orient. With the adoption of this plan, the total coverage on workers either directly or indirectly employed by A. M. Byers & Co. has been increased to nearly $3,000,000.

The Hudson Coal Co. is reported to have plans in mind whereby all coal mined between Forest City and Archbald will be prepared for market at one new big breaker. It is said the company plans to build the new breaker close to the present Coalbrook plant and that after the new structure has been erected the present breakers at Vandling, the Powderly and Coalbrook at Carbondale, and the Archbald at Archbald, will be abandoned. When the new breaker is in operation the old structures, it is understood, will not be razed but instead will be turned into washeries, thus making use of some big culm dumps owned by the company. Official announcement of the company's plan to centralize the preparation of anthracite probably will be made before segregation of the coal and railroad interests of the company, which is expected soon.

Five hundred men formerly in the employ of the Buffalo & Susquehanna Coal & Coke Co. at its Sagamore Mine recently passed a resolution reaffirming their determination not to return to work until the company restores the Jacksonville wage agreement.

Bituminous coal transported by the Reading Co. during January, 1926, totaled 2,303,939 gross tons, compared with 1,596,158 tons in the corresponding month of last year.



Mine No. 9 of the Daniel Boone Coal Corporation

This operation, located at Lennut, Perry County, Ky., on the main line of the L. & E. division of the Louisville & Nashville R.R., is controlled by the Columbus Mining Co. The mine, which is one of the oldest and largest in the Hazard field, is equipped with shaker screens, picking tables and loading booms. The coal is taken from the Fire Clay Seam on both sides of the valley.

Fire early Thursday morning, March 4, destroyed the offices of the Rich Hill Coal Co., in Hastings, Cambria County. The United Mine Workers' hall, on the same block also was destroyed, as well as a number of stores and several dwellings. The total loss exceeds $200,000.

William J. Patton, vice-president of District No. 5, United Mine Workers, has been elected president of the Pittsburgh Central Labor Union of the American Federation of Labor. Mr. Patton was a former secretary and treasurer of District No. 5 of the United Mine Workers and served for a number of years as a member of the legislative committee at Harrisburg.

UTAH

The Interstate Commerce Commission on March 11 authorized the Utah Railway Co. to acquire control of the National Coal Railway Co. by purchase of its capital stock and by lease.

A tract of coal land in Carbon County, township 22.S., range 3 E., is to be offered for public lease in the near future on application of the Boston Acme Mines Development Co. and W. R. Hutchinson of Salt Lake City. A coal prospecting permit has been denied on the ground that it is a known coal section. A number of small coal leases have been granted to residents of Emery County for wagon haul, but the authorities have refused to allow individuals to tie up large coal deposits in this way.

The Salt Lake County Commissioners have rescinded their action regarding the refusal to accept a bid for coal because it carried 20c. a ton more than the city authorities were paying. The result is that the Kinney Coal Co. will receive $3.40 a ton for a supply of slack. The commissioners decided that they were not likely to get a lower bid, and also took into consideration that the contract under which the city was receiving its coal would expire soon.

The Denver & Rio Grande Western R.R. has been authorized by the Public Utilities Commission to construct and operate a new line in Carbon County. It will commence at a junction with its existing line near Spring Canyon, well known coal camp, and will extend in a general easterly direction for about 6.28 miles, connecting with tracks to be constructed by the Independent Coal & Coke Co. to serve its Aberdeen mine and to reach existing tracks to the Kenilworth mine of the Independent. Permission also was given the company to abandon 3.75 miles of road from Kenilworth Junction to the Kenilworth mines.

The Columbia Steel Corp., which was organized two or three years ago, more than doubled its earnings during 1925, according to the annual report. Net earnings on sales amounted to $1,895,-225. L. F. Rains, president of the Carbon Coal Co. and widely known in Utah coal-mining circles, was responsible for the organization of the company.

VIRGINIA

City coal contracts for the Danville municipal plants have been awarded, the Logan County (W. Va.) Coal Co. receiving the contract for 10,000 tons of steam coal at $1.75 per ton. The contract for 14,000 tons of gas coal was awarded to the Eastern Coal Co., also at $1.75. The price in both instances is the same as last year.

Whitney & Kemmerer have acquired two mines at Brier Ridge, in the St. Charles district, which are to be operated from this time on in connection with their other operations in the vicinity at Dorchester.

The Clinchfield Coal Corp. reports for the year ended Dec. 31, 1925, net income of $445,520 after charges, federal taxes, depreciation and depletion, equivalent after preferred dividends to $2.50 a share earned on outstanding 145,476 shares of common stock. This compares with $561,243, or $3.28 a share, earned in 1924.

The Virginia Iron, Coal & Coke Co. for the year ended Dec. 31, 1925, shows net profit of $193,297 after interest, federal taxes, etc., equivalent after dividends on 5 per cent preferred stock, to 68c. a share earned on $10,000,000

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common stock. This compares with a net loss of $53,503 in 1924.

WASHINGTON

Operation of the 50-oven coking plant of the California-Alaska Corporation near Snoqualmie, 30 miles east of Seattle, is expected to begin in April. The California-Alaska Corporation acquired about 2,000 acres of coal lands about a mile south of the town of Snoqualmie last summer and has been pushing work forward to the point of commercial production of coke.

WEST VIRGINIA

T. B. Chafflin, of Montgomery, has acquired a valuable long-term lease on Cabin Creek in the Kanawha coal field, according to reports.

During February the mines of the Pocahontas Fuel Co. loaded 382,420 cars of coal in Mingo County; plants of the United States Coal & Coke Co. produced 289,365 tons, and the Fordson Coal Co. (Henry Ford interests), 107,750 tons.

G. H. Caperton, president of the New River Coal Co., Charleston, says that the smokeless coal operators at the recent meeting in Washington, D. C., decided to continue the New England service bureau in Boston, Mass. Effort is being made to educate consumers to burn West Virginia coal.

Production in the Tug River field broke all records during the week ending Feb. 13 with 166,638 tons and since that time, despite the settlement of the anthracite strike, output has been above 160,000 tons a week. In 1925 production was 6,064,732 tons as compared with 4,939,706 in 1924.

Branch offices have been established in Webster Springs by the Guardian Coal Co., of Philadelphia, Pa., with Hoover & Hoover, attorneys for the company, in charge. Establishment of this branch is the first step in the development of 7,500 acres of coal lands lying on Lick Run and Holly River.

Fire destroyed a large frame store building of the Kelly's Creek Colliery Co. at Ward, near Charleston, on March 3, causing a loss of between $75,000 and $80,000. The origin of the fire has not been determined.

Loading 2,559 tons of coal March 5, the Dakota mine of the Bethlehem Mines Corporation set a production record which exceeds any other day's loading in the history of the mine.

A fire broke out in mine No. 5 of the Crab Orchard Improvement Co. at Eccles, W. Va., on March 10, and was not extinguished entirely until March 14, according to reports. The mine fire followed the explosion. State mine inspectors and U. S. Bureau of Mines representatives fought the fire direct with extinguishers and fire hose. Robert M. Lambie, chief of the state Department of Mines, was a patient in the Beckley hospital three days, suffering from exhaustion and inhaling fumes of carbon monoxide following the explosion. Mining men say that Chief Lambie in his zeal to reach the portion of the mine where he figured that there would be sufficient oxygen in the mine air to support life, had overworked himself, having spent practically 26 hours straight in the mine. Mr. Lambie's drive to reach the men resulted in the rescue of 10 men.

The Elkhorn-Hazard Coal Co., Bluefield, has dissolved its corporate existence, according to papers filed at the office of the Secretary of State in Charleston. C. B. Bell was appointed trustee to dispose of the holdings.

The Lynwin Coal Co., Charleston, has been purchased by the Smokeless Fuel Co., Charleston.

The Pond Coal Co., Charleston, has disposed of its holdings and has filed notice of dissolution at the office of the Secretary of State.

The Pocahontas Fuel Co., in McDowell County, produced 444,650 net tons of coal in January. The mines are located along the Norfolk & Western Ry. The plants of the United States Coal & Coke Co. in the same month loaded 297,650 net tons. These mines are located in the same field.

The Blue Creek Coal & Land Co., of Charleston, has sold the timber rights on a large tract of land in Elk district, Kanawha County, along Spangler fork of the Blue Creek to L. C. Steinbeck, of Charleston.

Preparations are being made to rebuild the tipple at the Hardesty mine, near Shinnston, destroyed by fire last week. Although the mine is working on a non-union basis, no union activity is regarded as being responsible for the fire. The tipple at this mine, however, was blown up about two years ago, during trouble near the mine.

The Daisy Coal Co., of Huntington, has surrendered its charter at the office of the Secretary of State.

WYOMING

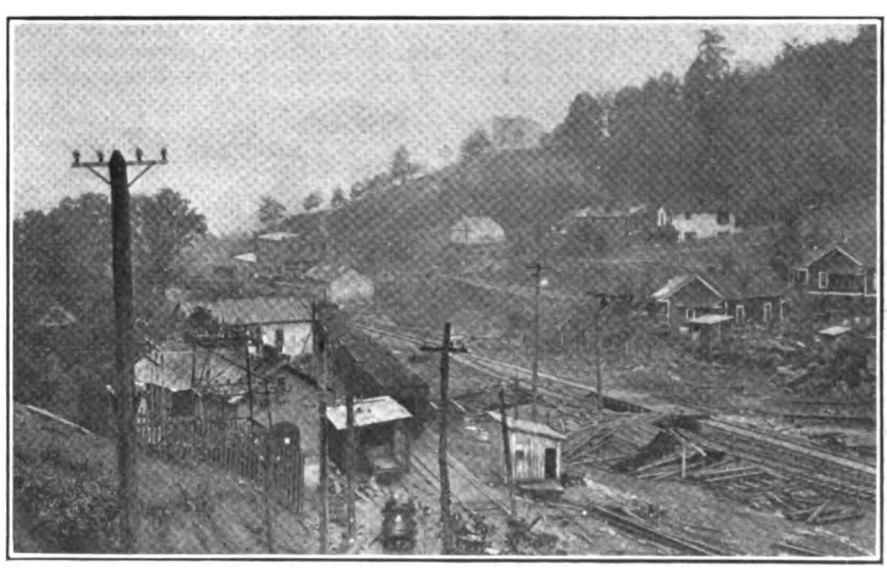
The Kemmerer Coal Co.'s plant near Frontier is reported as shut down and the Central Coal & Coke Co., of Kansas City, is closing its Tipperary Mine, at Rock Springs. The latter company will work its remaining mines in that vicinity as near capacity as possible and may work some double shifts. The Cambria Coal Co. has closed its mines at New Castle. This action left New Castle without electricity, as the town's power was furnished by the Cambria company. This deficiency was soon solved by the formation of a local power company.

Considerable interest is evinced in the southern Wyoming field in a report that the Browning-Eccles interests will soon consolidate their various holdings in the Rock Springs district under one company. According to a recent statement the properties to be merged include the Lion Coal Co., at Lionkol; the Wyoming Coal Co., at Blairtown, and the Rock-Springs-Superior and Premier companies, operating at Superior.

Wyoming mines produced 6,557,576 tons of bituminous coal during 1925, according to the annual report of the state mining inspector, Hugh McLeod, issued on March 2. This was a reduction of output from 1924 of 156,977 tons. Sixty mines operated in 12 counties, with a total of 6,364 men employed. In 1924 7,210 men were employed at the mines.

CANADA

According to a statement made March 12 at Ottawa by Charles Stewart, Minister of Mines, negotiations for hauling coal from Alberta to eastern Canada at the rate of $9 a ton have been abandoned. He stated that the Governments of Ontario and Alberta were both opposed to the $9 rate, and favored the rate of $7. Whether any coal will be hauled at the low rate will be decided by the Canadian National Railways.



In the Fading Light of Evening at Balkan, Ky.

Looking toward the commissary from the man and supply incline of the Southern Mining Co. This mine, in the Tejay seam, is producing 1,400 to 1,500 tons per day. The coal averages 53 in. in thickness. Balkan is situated in Bell County, close to the Harlan County line. F. E. Gilbert, general superintendent of the three operations of the Southern Mining Co., lives in the white house in the left center of the picture.

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Personal

General J. B. Sanborn has resigned as president of the J. B. Sanborn Co., of Chicago, publishers of the Coal Dealers' Blue Book since 1886, and announces his retirement from active business. In 1898 he accompanied his regiment to Cuba, holding the rank of major. For several years he was head of the First Regiment of the Illinois National Guard and served with distinction in France during the World War as a brigade commander. He is succeeded by William S. Hamblen, who will continue the policies of the old management.

John L. Lewis, president of the United Mine Workers, is slightly ill at his home, Indianapolis, Ind., from an attack of influenza. Although the miners' president has been incapacitated for several days, he now is convalescing, Ellis Searles, editor of the *Mine Workers' Journal*, told the Associated Press.

Samuel D. Winsor, Jr., has been elected a member of the board of directors of the Westmoreland Coal Co., to fill the vacancy caused by the death of Col. Daniel B. Wentz.

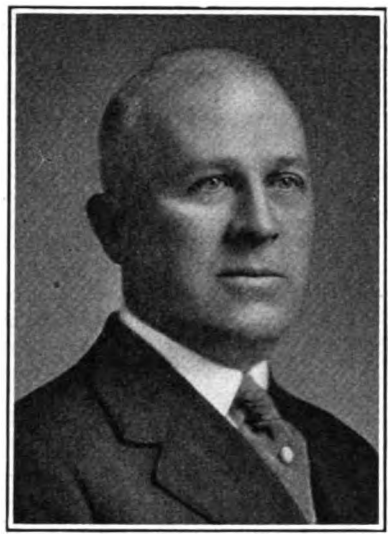
W. M. Wilshire, now receiver of the Carnegie Coal Co., Pittsburgh, Pa., has been elected president and director of the West Virginia Coal & Coke Co. He succeeds C. E. Hutchinson as president and fills a vacancy on the board. Mr. Hutchinson continues as a director. The company operates mines at Omar and other sections in the Logan field as well as in the Elkins section of northern West Virginia.

Governor Gifford Pinchot, of Pennsylvania, has announced himself a candidate for Senator. He will be opposed by Senator George Wharton Pepper and probably Representative Vare.

George Gore, formerly with the North American Coal Corporation and well known in the Cleveland trade, has become associated with the Fuel Distributors, Inc., Cleveland representatives of the Coal River Collieries.

Herbert Greener and **Richard Pease**, of the Hugh-Wood Co. of Newcastle-on-Tyne, England, one of the largest British coal producing concerns, arrived in Welch, W. Va., during the latter part of last week, accompanied by Thomas S. Downing, Jr., of Philadelphia. As the guests of Col. Edward O'Toole, general manager of the United States Coal & Coke Co., they inspected Gary mine No. 6 and other plants in the Welch section. The British mining men, it is reported, are making a careful study of mining machinery, operating and safety in American coal mines.

Lewis Stockett, general superintendent at Calgary of the coal mines branch, Department of Natural Resources, Canadian Pacific Railway, has been elected president of the Canadian Institute of Mining and Metallurgy for the coming year. Mr. Stockett, who was born in the United States, has resided in Canada since 1905. He has been a member of the Canadian Institute for the past 21 years, and has belonged to the American Institute since 1881.



W. W. Inglis

William W. Inglis, president of the Glen Alden Coal Co., is on a southern cruise, having decided to take a rest soon after the mines resumed work following the long strike. Efforts have been made to adjust certain disputes in District 7 but so far no general meeting of the conciliation board has been held. It is said that none will be called until Mr. Inglis returns to his office.

Scott Turner, on leaving Canada to go to Washington to begin his duties as Director of the U. S. Bureau of Mines, tendered his resignation as chairman of the Toronto branch of the Canadian Institute of Mining and Metallurgy. The chapter declined to accept the resignation, so Mr. Turner has consented to serve out his term.

Dr. W. T. Thom chief of the fuel section of the U. S. Geological Survey, recently delivered the first of a series of eight lectures on coal, petroleum and oil shale to the students in geology at Princeton University, the lectures constituting a part of their regular term work.

The Fork Ridge Coal and Coke Co. Inc., Fork Ridge, Tenn., announces the appointment of **William H. Smith, Jr.**, as Southern sales manager, with offices in the Candler Bldg., Atlanta, Ga.

C. A. Cabell, president of the Carbon Fuel Co., who spent the winter in Florida, returned to Charleston early this week.

Obituary

War-Time Fuel Administrator Of New England Dies

James Jackson Storrow, of Boston, senior member of the banking house of Lee, Higginson & Co., who was Federal Fuel Administrator for New England during the war, died March 13 at the Hotel Plaza, New York City, where he had been staying for several weeks. He was 62 years old.

Mr. Storrow was graduated from Harvard in 1885 and from the Harvard law school three years later. For eleven years he practiced law as a member of Fish, Richardson & Storrow, which handled the legal business for Lee, Higginson & Co. The bankers finally persuaded Mr. Storrow in 1900 to leave the bar and join them as a partner. He had many other important business affiliations.

Mr. Storrow was Good Government candidate for Mayor of Boston in 1909, but was defeated. Subsequently he was elected to the Boston City Council and served four years, being president of it for the final year.

In the World War period he was Chairman of the Massachusetts Committee on Public Safety, pioneer organization of the kind in this country. When immediate action was necessary to relieve the acute coal shortage in New England in the war stringency, he pledged his personal credit for shipments of coal and subsequently shipped and distributed at his personal risk more than a million tons of coal, a gross business exceeding $10,000,000.

John B. Devers, 52, one of the wealthiest coal operators and land owners in western Kentucky, died in a Madisonville (Ky.) hospital March 9 of injuries sustained a week earlier when an automobile in which he and three others were riding was wrecked on a steep hill near Providence, Ky. The accident claimed the life of Ernest Jones, 40, of Providence, also. Mr. Devers leaves a wife and daughter.

George S. McSweeney, former president of the Montreal Amateur Athletic Association, and well known in Montreal business circles, choked to death while eating at the Mount Royal Hotel, Montreal, at 9.40 p.m. March 4. George Spencer McSweeney was born in Halifax in 1886, his father being the late Wm. B. McSweeney. He was educated at the St. Francis Xavier University and the Antigonish University. He began his business career with the Glace Bay *Gazette* and later was news editor of the Sydney *Post*. He then joined the staff of the Dominion Steel Co. at Sydney. Later he was transferred to the Dominion Coal Co. In 1916 he organized the Century Coal Co., Ltd., in Montreal. Mr. McSweeney was a member of the Board of Trade and a life governor of the Montreal General Hospital.

Traffic

Authorized to Intervene In Lake Rate Case

The Interstate Commerce Commission has authorized intervention in the lake cargo coal-rate case by the Public Service Commission of Pennsylvania, the Attorney General of Ohio, the Tri-State Coal Shipping Association, the Board of Commerce of Butler, Pa., and the Butler-Mercer Coal Operators' Association. The Commerce Commission recently announced a reopening of the case, giving the parties concerned until March 22 to advise whether they desire to submit additional evidence.

J. E. Gorman, president of the Chicago, Rock Island & Pacific Ry., announces the promotion on March 1 of Arthur Mackenzie from assistant freight traffic manager to freight traffic manager with headquarters at Chicago, Ill.

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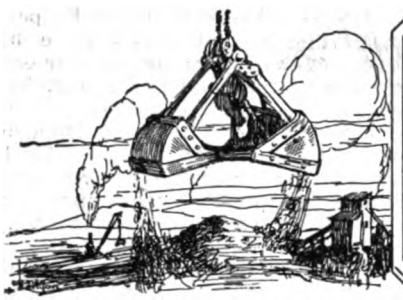
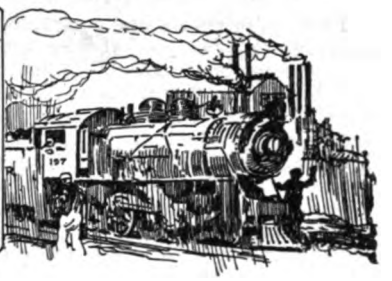


Production And the Market



Liquidation in Bituminous Output and Prices Nearing End; Technical Position Better

The liquidation in bituminous coal production and prices made necessary by the settlement of the anthracite strike is nearing completion. Notwithstanding the large number of individual price declines reported from various distributing centers last week, the technical position of the market has improved. For one thing, there is less distress tonnage to create fictitious price bases. For another, there is less coal at the mines and en route.

During the first week in March, according to the estimates of the Bureau of Mines, output totaled 10,500,000 net tons, as compared with 10,890,000 tons in the preceding week and 12,167,000 tons in the first week in February. Current output, however, is still 1,000,000 tons ahead of the figures for the first week in March, 1925. Even allowing full weight to improved industrial conditions, it would seem that there is still some shrinkage to be effected before production is strictly in line with consumption.

Coal Age Index of spot bituminous prices for March 15 was 168 and the corresponding price was $2.03. This was an increase of one point and 1c. over the figures for the preceding week. This increase was made possible by a stronger tone to screenings in nearly all producing fields and in all-rail central Pennsylvania coals in New England. Pool prices at New York and Baltimore were weaker.

Prepared Coals Suffer in Price Decline

With few exceptions, the prices on prepared coals were shaded in all markets. Naturally, seaboard quotations were the worst sufferers. Inland prices on eastern and southern high-volatiles, however, did not escape. Quotations in the Southwest and the Far West also sagged. The most conspicuous exception to the general trend was in southern Illinois, where the efforts to stabilize prices were abetted by the weather.

To the weather, too, must be given credit for pushing up anthracite output to 1,787,000 net tons the first week in March, as compared with 1,655,000 tons a year ago. The bulk of the buying, of course, is for current consumption. The average householder in the anthracite-consuming territory bought sparingly of other fuels during the suspension, so that his immediate requirements are not inconsiderable in the aggregate.

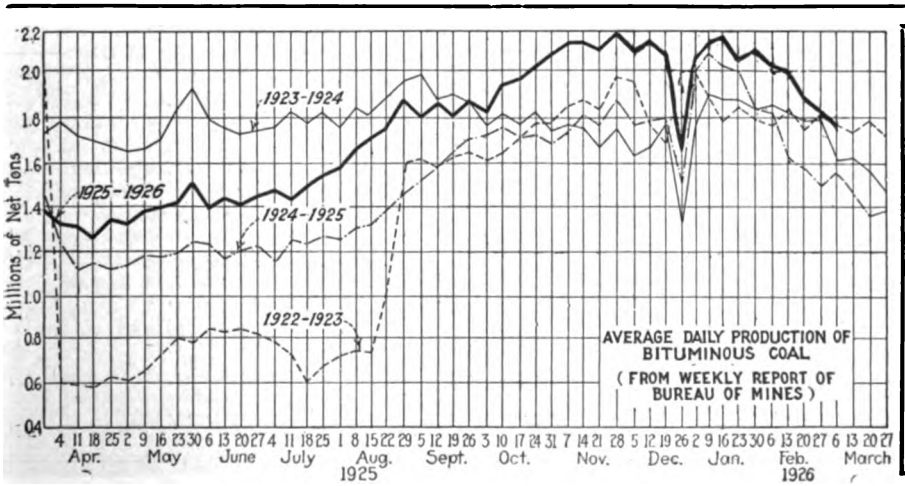
Chestnut and Pea Lead

In so far as there are pronounced indications of choice in the present buying, chestnut has the call over the lordly stove. The lowly pea size also is experiencing a period of public favor not ordinarily its lot. Demand, however, is not such that independent shippers have been able to move tonnage at the peak prices obtainable the first week production was resumed.

Spot movement of the steam sizes is back to pre-strike levels. That means that producers have little difficulty in selling rice and barley and that No. 1 buckwheat is more or less of a drug on the market.

Spot prices on metallurgical coke in the Connellsville region are close to the levels of a year ago. Furnace coke is possibly 25c. weaker and foundry 25c. stronger. Production, however, has not yet been brought within the limits of estimated demand. Output for the first week in March was only 51,290 tons under the record production four weeks earlier.

There still is yard-crushed coke waiting in vain for buyers. Ovens are laboring to make adjustments with their late eastern retail customers and to move rejected tonnage. The Alabama market, too, is easier, but no excess production is reported.



Estimates of Production

(Net Tons)

	1925	1926
BITUMINOUS		
Feb. 20	9,464,000	11,509,000
Feb. 27 (a)	8,855,000	10,890,000
Mar. 6 (b)	9,384,000	10,500,000
Daily average	1,564,000	1,750,000
Coal yr. to date....(c)	442,890,000	505,092,000
Daily av. to date	1,551,000	1,764,000
ANTHRACITE		
Feb. 20	1,838,000	408,000
Feb. 27 (a)	1,605,000	1,609,000
Mar. 6 (b)	1,655,000	1,787,000
Coal yr. to date.....(c)	80,818,000	44,520,000
BEEHIVE COKE		
Feb. 27 (a)	254,000	320,000
Mar. 6 (b)	281,000	265,000
Cal. yr. to date..... (c)	2,425,000	3,046,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

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Winter Plays Heroic Role

King Winter in his roughest mood came to the rescue of the domestic business in the Middle West last week, but his blizzard visitations caused no flurries in the steam-coal market. The increased production of large coal, however, was not great enough to create an undigested surplus of steam sizes. As a matter of fact, spot prices on screenings in southern Illinois were stronger. Producers and sales agents are canvassing the contract situation, but buyers display little interest in early renewals.

Although running time in southern Illinois exceeded expectations, operators viewed it as "a flash in the pan" and are going ahead with plans for further suspensions. In general this was true also of the central, Mt. Olive, Jackson County and Duquoin fields. In all of them there was a better inquiry for domestic coal and a fair movement of industrial and railroad tonnage, with prices unchanged. Fourth Vein Indiana lump and mine-run, on the other hand, were weaker. The Standard district in Illinois was probably the greatest laggard.

Under the weather pressure, producers of high-grade Illinois coals had little difficulty in maintaining circular figures on prepared coal. No such good fortune attended eastern shippers of high-volatile coal to the Middle West. As low as $2 was quoted on West Virginia 4-in. splint block and eastern Kentucky in the Chicago market, but the best-known coals commanded $2.25 @$2.75. Smokeless lump and egg, too, were heavy and some prices were cut to $2.75. Anthracite is beginning to dribble in at standard prices. The better grades of coke are in good demand.

St. Louis, like Chicago, saw a brisker domestic demand because of weather conditions last week. The bulk of the buying in the Missouri city was in medium grade coals. Anthracite and West Virginia smokeless were backward, but coke held its own.

Western Kentucky Optimistic

Louisville trade observers are optimistic over the outlook for western Kentucky during the coming coal year. The basis for this optimism is the fact that the Peabody Coal Co. has taken over exclusive distribution in the Middle West and the Northwest of the output of four well-known operating companies with a combined daily capacity of 10,700 tons. This is believed to presage still more active competition between non-union western Kentucky and union Illinois and Indiana.

Current demand, however, is reflecting the normal seasonal slump. Large coal is weak, but nut and screenings have benefited from curtailed production. Mine-run is sluggish and some sales have been made around $1, although the general range is $1.25@ $1.50. Screenings are 75c.@$1.10; nut, $1.40@$1.65; lump and egg, $1.50@ $1.75, and 6-in. block, $1.75@$2.

Output is falling rapidly in the eastern part of the state. Many mines are

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	Mar.16, 1925	Mar.1, 1926	Mar.8, 1926	Mar.15, 1926†
Smokeless lump	Columbus	$3.10	$4.35	$3.85	$3.75@$4.00
Smokeless mine run	Columbus	1.90	2.35	2.10	2.00@ 2.25
Smokeless screenings	Columbus	1.15	1.25	1.15	1.00@ 1.35
Smokeless lump	Chicago	3.10	4.10	3.75	*3.00@ 3.25*
Smokeless mine run	Chicago	1.75	2.10	1.95	1.75@ 2.15
Smokeless lump	Cincinnati	3.25	4.00	4.00	*3.25@ 4.00*
Smokeless mine run	Cincinnati	2.00	2.10	2.10	**2.25**
Smokeless screenings	Cincinnati	1.60	1.30	1.30	**1.25@ 1.50**
*Smokeless mine run	Boston	4.30	4.70	4.45	4.35@ 4.60
Clearfield mine run	Boston	1.95	2.05	1.95	**1.85@ 2.25**
Cambria mine run	Boston	2.30	2.40	2.30	**2.15@ 2.55**
Somerset mine run	Boston	2.10	2.15	2.05	**1.90@ 2.40**
Pool 1 (Navy Standard)	New York	2.65	2.90	2.85	*2.60@ 3.00*
Pool 1 (Navy Standard)	Philadelphia	2.65	2.90	2.80	2.65@ 3.00
Pool 1 (Navy Standard)	Baltimore	2.10	2.30	2.25	*2.10@ 2.15*
Pool 9 (Super. Low Vol.)	New York	2.05	2.35	2.30	*2.10@ 2.40*
Pool 9 (Super. Low Vol.)	Philadelphia	2.00	2.45	2.35	2.20@ 2.50
Pool 9 (Super. Low Vol.)	Baltimore	1.85	2.10	2.10	*2.00@ 2.10*
Pool 10 (H.Gr.Low Vol.)	New York	1.75	2.10	2.00	*1.80@ 2.10*
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.65	2.15	2.05	1.90@ 2.25
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.75	1.85	1.85	*1.75@ 1.85*
Pool 11 (Low Vol.)	New York	1.55	1.90	1.85	*1.60@ 1.90*
Pool 11 (Low Vol.)	Philadelphia	1.55	1.95	1.80	1.75@ 1.85
Pool 11 (Low Vol.)	Baltimore	1.50	1.75	1.75	*1.65@ 1.70*
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.50	1.60	1.60	*1.40@ 1.60*
Pool 54-64 (Gas and St.)	Philadelphia	1.45	1.60	1.45	1.35@ 1.55
Pool 54-64 (Gas and St.)	Baltimore	1.70	1.55	1.55	1.50@ 1.60
Pittsburgh scr'd gas	Pittsburgh	2.40	2.45	2.45	2.40@ 2.50
Pittsburgh gas mine run	Pittsburgh	2.00	2.10	2.10	*2.00@ 2.15*
Pittsburgh mine run (St.)	Pittsburgh	1.80	2.05	2.05	*2.00*
Pittsburgh slack (Gas)	Pittsburgh	1.30	1.20	1.25	**1.40@ 1.50**
Kanawha lump	Columbus	2.10	2.25	2.10	*1.85@ 2.30*
Kanawha mine run	Columbus	1.50	1.55	1.55	1.40@ 1.70
Kanawha screenings	Columbus	.55	.60	.70	.60@ .85
W. Va. lump	Cincinnati	2.05	2.25	2.25	*1.85@ 2.50*
W. Va. gas mine run	Cincinnati	1.35	1.50	1.50	1.40@ 1.60
W. Va. steam mine run	Cincinnati	1.30	1.30	1.35	1.25@ 1.50
W. Va. screenings	Cincinnati	1.05	.80	.85	**.90@ 1.10**
Hocking lump	Columbus	2.35	2.50	2.50	2.25@ 2.75
Hocking mine run	Columbus	1.45	1.50	1.50	1.35@ 1.70
Hocking screenings	Columbus	.85	.95	1.05	1.00@ 1.15
Pitts. No. 8 lump	Cleveland	2.30	2.30	2.40	*1.90@ 2.65*
Pitts. No. 8 mine run	Cleveland	1.80	1.85	1.85	1.85@ 1.90
Pitts. No. 8 screenings	Cleveland	1.35	1.10	1.25	**1.30@ 1.40**

Midwest	Market Quoted	Mar.16, 1925	Mar.1, 1926	Mar.8, 1926	Mar.15, 1926†
Franklin, Ill. lump	Chicago	$3.10	$3.00	$3.00	$3.00
Franklin, Ill. mine run	Chicago	2.35	2.40	2.40	2.35@ 2.50
Franklin, Ill. screenings	Chicago	2.10	1.55	1.65	**1.75@ 2.00**
Central, Ill. lump	Chicago	2.50	2.60	2.60	2.50@ 2.75
Central, Ill. mine run	Chicago	2.20	2.10	2.10	2.00@ 2.25
Central, Ill. screenings	Chicago	1.90	1.10	1.40	1.35@ 1.50
Ind. 4th Vein lump	Chicago	2.85	2.85	2.85	*2.50@ 3.00*
Ind. 4th Vein mine run	Chicago	2.35	2.30	2.30	*2.10@ 2.35*
Ind. 4th Vein screenings	Chicago	1.95	1.70	1.70	1.65@ 1.75
Ind. 5th Vein lump	Chicago	2.30	2.15	2.15	2.00@ 2.35
Ind. 5th Vein mine run	Chicago	2.10	1.95	1.95	1.85@ 2.10
Ind. 5th Vein screenings	Chicago	1.80	1.15	1.30	1.25@ 1.35
Mt. Olive lump	St. Louis	2.85	2.75	2.75	2.75
Mt. Olive mine run	St. Louis	2.35	2.15	2.15	2.15
Mt. Olive screenings	St. Louis	1.75	1.40	1.40	1.40
Standard lump	St. Louis	2.50	2.50	2.50	2.50
Standard mine run	St. Louis	1.80	1.80	1.80	1.75@ 1.85
Standard screenings	St. Louis	1.55	1.15	1.15	1.10@ 1.25
West Ky. block	Louisville	1.85	1.85	1.85	1.75@ 2.00
West Ky. mine run	Louisville	1.35	1.35	1.35	1.25@ 1.50
West Ky. screenings	Louisville	1.25	.90	.90	**.85@ 1.10**
West Ky. block	Chicago	1.85	2.05	1.75	1.65@ 1.85
West Ky. mine run	Chicago	1.25	1.50	1.50	*.80@ 1.50*
South and Southwest					
Big Seam lump	Birmingham	2.75	2.35	2.35	2.25@ 2.50
Big Seam mine run	Birmingham	1.75	1.75	1.75	1.50@ 2.00
Big Seam (washed)	Birmingham	1.85	2.10	2.10	2.00@ 2.25
S. E. Ky. block	Chicago	2.25	2.60	2.60	2.25@ 3.00
S. E. Ky. mine run	Chicago	1.35	1.85	1.65	1.50@ 1.85
S. E. Ky. block	Louisville	2.25	2.60	2.50	*2.25@ 2.50*
S. E. Ky. mine run	Louisville	1.35	1.40	1.40	**1.35@ 1.75**
S. E. Ky. screenings	Louisville	1.00	1.00	1.00	.90@ 1.10
S. E. Ky. block	Cincinnati	2.10	2.25	2.35	*2.00@ 2.50*
S. E. Ky. mine run	Cincinnati	1.35	1.50	1.50	*.90@ 1.75*
S. E. Ky. screenings	Cincinnati	1.10	.75	1.00	**.90@ 1.15**
Kansas lump	Kansas City	4.25	4.50	4.50	*4.25@ 4.50*
Kansas mine run	Kansas City	3.00	2.85	2.85	*2.50@ 3.00*
Kansas screenings	Kansas City	2.60	2.40	2.40	2.35@ 2.50

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**; declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	March, 16 1925 Independent	March, 16 1925 Company	March 8, 1926 Independent	March 8, 1926 Company	March 15, 1926† Independent	March 15, 1926† Company
Broken	New York	$2.34	.....	$8.00@$9.25	$9.00@11.50	$8.25@$9.25	.....	$8.25@$9.25
Broken	Philadelphia	2.39	.....	9.15	9.00@12.50	9.00@ 9.25	$9.00@12.50	9.00@ 9.25
Egg	New York	2.34	$8.25@$8.75	8.75@ 9.25	9.25@11.50	8.75@ 9.25	9.25@11.50	8.75@ 9.25
Egg	Philadelphia	2.39	8.65@ 9.15	8.80@ 9.25	9.25@12.50	9.15@ 9.25	9.25@12.50	9.15@ 9.25
Egg	Chicago*	5.06	8.17@ 8.40	8.08	.....	8.13	.....	8.13
Stove	New York	2.34	8.75@ 9.00	9.00@ 9.50	9.60@11.50	9.25@ 9.50	**9.60@11.75**	9.25@ 9.50
Stove	Philadelphia	2.39	8.90@ 9.65	9.15@ 9.50	9.60@12.50	9.35@ 9.50	9.60@12.50	9.35@ 9.50
Stove	Chicago*	5.06	8.80@ 9.00	8.53@ 8.65	.....	8.33@ 8.58	.....	8.33@ 8.58
Chestnut	New York	2.34	8.75@ 9.00	8.75@ 9.40	9.25@11.50	8.75@ 9.15	**9.25@11.75**	8.75@ 9.15
Chestnut	Philadelphia	2.39	8.90@ 9.65	9.25@ 9.40	9.25@12.50	9.00@ 9.15	9.25@12.50	9.00@ 9.15
Chestnut	Chicago*	5.06	8.61@ 9.00	8.40@ 8.41	.....	8.33@ 8.53	.....	8.33@ 8.53
Pea	New York	2.22	4.50@ 5.00	5.50@ 6.00	6.00@ 8.00	6.00@ 6.35	**6.00@ 8.25**	6.00@ 6.35
Pea	Philadelphia	2.14	4.75@ 5.75	6.00	6.50@ 7.50	6.00@ 6.50	6.50@ 7.50	6.00@ 6.50
Pea	Chicago*	4.79	5.36@ 5.75	5.36@ 5.95	.....	5.65@ 5.80	.....	5.65@ 5.80
Buckwheat No. 1	New York	2.22	2.00@ 2.75	3.00@ 3.15	2.50@ 3.50	3.00@ 3.50	2.50@ 3.50	3.00@ 3.50
Buckwheat No. 1	Philadelphia	2.14	2.25@ 3.00	3.00	3.00@ 3.50	3.00	3.00@ 3.50	3.00
Rice	New York	2.22	1.85@ 2.25	2.00@ 2.25	2.00@ 2.50	2.00@ 2.25	*2.00@ 2.25*	2.00@ 2.25
Rice	Philadelphia	2.14	1.70@ 2.25	2.25	2.25	2.25	2.25	2.25
Barley	New York	2.22	1.30@ 1.50	1.50	1.50@ 1.75	1.60@ 1.75	1.50@ 1.75	1.60@ 1.75
Barley	Philadelphia	2.14	1.50	1.50	1.75	1.75	1.75	1.75
Birdseye	New York	2.22	1.35@ 1.60	1.60	.....	2.00	.....	2.00

*Net tons, f.o.b. mines. †Advances over previous week shown in heavy type; declines in *italics*

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down in the Harlan field. Traffic in the Elkhorn and Hazard districts has dropped off to such an extent that it is reported that the Louisville & Nashville is laying off train crews. No improvement is expected until the lake movement gets under way. Prices, except on slack, are easy. Little block is bringing over $2.50 and some has sold at $2. Lump is $2@$2.25; egg and nut, $1.75@$2; mine-run, $1.35@$1.75, and slack, 90c.@$1.10.

Dock Trade Satisfactory

Despite weather ups and downs in demand, the volume of coal moving off the docks at the Head of the Lakes is substantial. February loadings were 19,219 cars, as compared with 23,990 cars in January and 17,666 cars in February, 1925. Stocks on hand March 1 were estimated at 3,450,000 tons and dock operators expect no troublesome carry-overs of any grade. The anthracite outlook for 1926-27 is encouraging.

The brighest spot in the present situation is the increasing demand for industrial coal. Most of the buying, however, is on a hand-to-mouth basis. Some of the docks are still scurrying around for screenings to take care of contract deliveries. Prices on all grades of coal are unchanged and there seems to be no inclination to shade quotations.

Hand-to-mouth buying characterizes the market at the Twin Cities. Accelerated demand due to weather conditions soon dies out. The all-rail trade from Illinois and Indiana is irregular and uncertain. With the movement of anthracite in heavier volume to Milwaukee territory, there has been a noticeable decline in consumer buying of coke and semi-bituminous coals. Retail prices, however, are unchanged.

Business Fades Out in Southwest

In the Southwest current business is confined to the odds and ends of the waning coal year. Production in Arkansas and Oklahoma is tapering off; few Kansas operations are doing better than two days a week. Accumulations of "no bills," approximating 300 cars, of which 250 are lump and egg, have caused Kansas prices to break 25@50c. Screenings, on the other hand, are firm at $2.35@$2.50.

Unbalanced demand has demoralized the Colorado market and cut into production. The dearth of domestic business is emphasized in April price lists, which go into effect next Monday. Under the new schedules Walsenburg and Canon City lump is $4.25; washed nut, $4; washed chestnut,$3; Trinidad coal, all sizes, $2.75; Crested Butte lump, $4.25; nut, $4; Crested Butte anthracite, $2.75@$6.75 for Elk Mountain and $4.50@$7.75 for Horace. The new bituminous prices are $1@$1.75 under March circulars.

The Salt Lake City market is in the doldrums. There is no active demand for any grade of Utah coal. Working time has been cut to one and two days a week. This has created a scarcity of slack.

The lake trade holds the center of interest in the Cincinnati market. Two orders for 100,000 tons have been shuttled back and forth without decision. One larger order has been placed on a mine-run basis of $1.50 and this has had a disturbing effect upon the situation. The opening of Chesapeake & Ohio Ry. bids within a few days is another straw in the wind many will study.

Low-volatile shippers are going through a period of readjustment. New River nut prices are down to $2.50@$2.75; egg, $3.50@$3.75, and lump, $3.25. Mine-run is up to $1.25@$1.50. Standard Pocahontas prices are pegged about 25c. higher than the New River quotations.

High-Volatile Market Unsettled

The high-volatile market has been restive and unsettled, but the curtailment policy in production is showing its effect. For the first time since Christmas, loads moving through the Cincinnati gateway dropped to 10,483 cars, a decrease of 1,291 cars when compared with the preceding week. The number of empties going to the mines also is less. This reduction in output has stiffened screenings quotations 15 @25c. per ton and has taken most of the low-priced mine-run out of the market. Egg drags and only weather spurts prevent a bad slump in lump and block.

Repeat orders have kept the retail market brisk, with little sign of any revision of prices before April 1. River operations have been impeded somewhat by heavy snows, but there has been little diminution in the volume of tonnage.

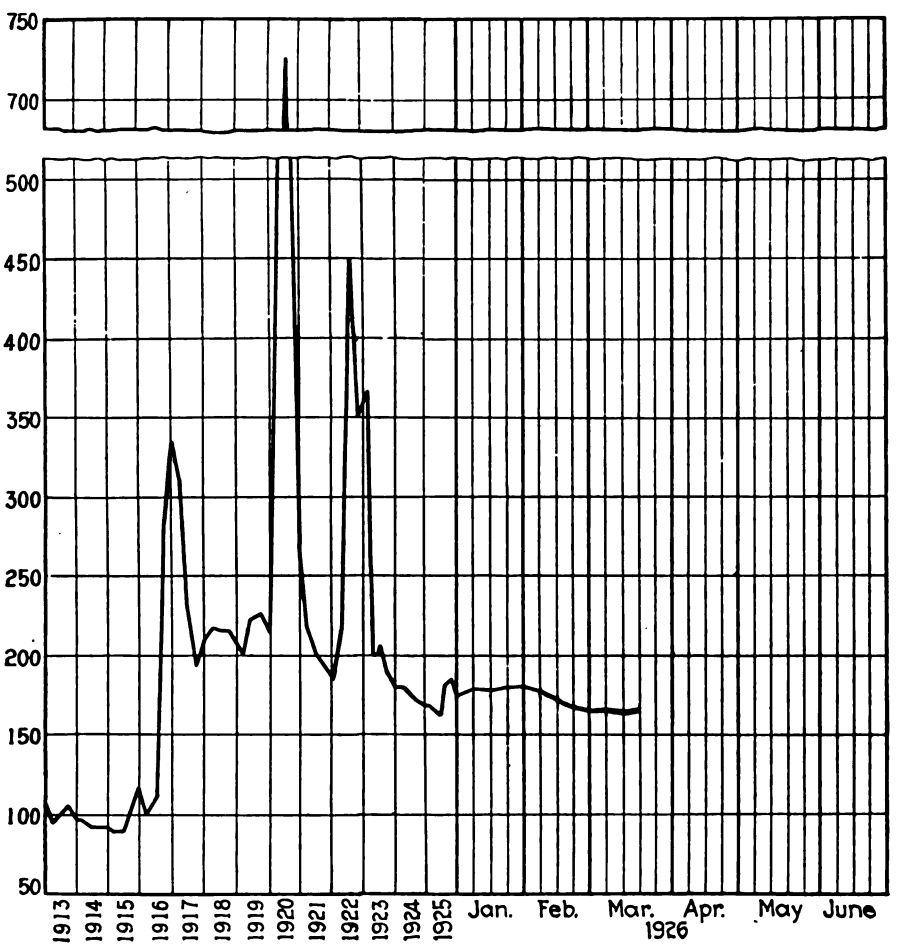
Central Ohio Looks to Future

Central Ohio coal men find speculation as to the future more interesting than consideration of the season-end dregs of trade. The outlook for domestic business is regarded as particularly favorable, although Kentucky and West Virginia will have first call on orders. A brief cold snap helped the Columbus retail dealers last week, but yard stocks were more than ample to take care of requirements. The steam trade is unchanged. Few contracts have been renewed.

Production in southern Ohio is still under 20 per cent of capacity. Until the lake trade opens up it is not likely that this percentage will be increased.

More Pittsburgh Mines Close

An increase in the number of mines closed down tells the story of the week in the Pittsburgh district. The largest operator in the field is producing about 14 per cent of its 1923 weekly average. Some individual mines are doing bet-



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926				1925	1924
	Mar. 15	Mar. 8	Mar. 1	Feb. 22	Mar. 16	Mar. 17
Index	168	167	169	170	165	179
Weighted average price	$2.03	$2.02	$2.04	$2.06	$1.99	$2.16

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average of the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.

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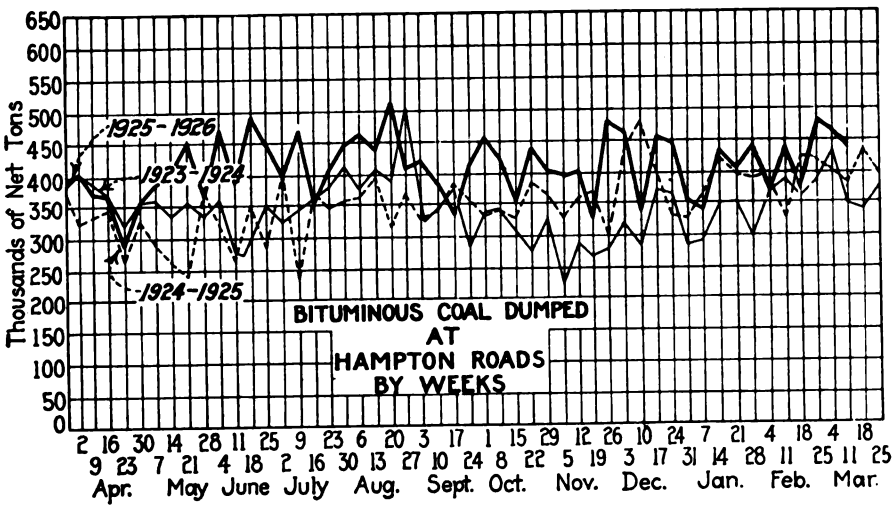


ter, but it is questionable whether they can maintain last summer's levels.

Minimum prices on mine-run and lump are unchanged, but maximum spot quotations have dropped a dime. Slack, on the other hand, has jumped another 20c., making a net advance of 40c. over the prices current when eastern demand for prepared coal created a surplus of fine stuff.

"No bills" are piling up in the central Pennsylvania district. The latest estimates place the total of unbilled loads at 1,800. Loadings the first week of March were 4,774 cars less than in the first week of the preceding month. Prices, too, are easier. Pool 1 is $2.60 @$2.75; pool 71, $2.45@$2.55; pool 9, $2.20@$2.30; pool 10, $2@$2.10; pool 11, $1.80@$1.85; pool 18, $1.75. Lump is $3.50; egg and nut, $4, and slack, $1.40.

Gloom is so thick in the Buffalo bituminous market that optimists do not look for a "real" demand for fuel before fall. Nominal quotations are unchanged, but steam slack has sold as low as $1.15. Colder weather has helped local retail trade, particularly in the sale of coke. The maximum curb price on that fuel is $12. Toronto dealers are busy taking orders for anthracite. Retail prices on Pocahontas have dropped $2 and on coke, $3. One factor plans to bring in two cargoes of Welsh and two of Scotch anthracite this spring.

Back to Pre-Strike Levels

The New England steam coal market is drifting down to the low levels of a year ago. Mines have not yet cut operating time sharply enough to bring production in line with demand. Surplus tonnage still crowds, while buying interest is at a low point. The larger consumers are well fortified with stocks and there is no call for bituminous coal as a domestic fuel.

Navy Standard coal at the southern loading piers is freely offered by all shippers at quotations which, for the time being, have established $4.35 per gross ton, f.o.b. vessels at Hampton Roads, as the minimum. For inland delivery, the same coals can be had at $6 or less on cars at Providence and Boston, with further declines in prospect.

All-rail trade shows no signs of betterment. Most of the central Pennsylvania districts are back to a part-time basis. There are relatively few cars of prepared sizes seeping in and even they are rapidly diminishing. Mine-run prices are firmer.

Distress Tonnage Disappearing

The New York bituminous trade is gradually working itself out of the mess left by the sudden termination of the anthracite strike. There is less distress tonnage to be moved, but there still is considerable foreign coal to be absorbed. During the first four days of last week 38,766 tons of anthracite, 6,000 tons of steam coal and nearly 10,000 tons of foreign coke were discharged and there are more cargoes en route.

Under such circumstances, the market for fresh-mined coal is stagnant. Contracting is slow. On new business, prices range from $1.90 to $2.75, depending upon quality and the producer's necessities. In the spot market almost any price may be heard. Some distress screened bituminous has been offered at $1.25 mines and some at the piers has been held at $4.25. Beehive coke is quoted at $5 or less, f.o.b. ovens.

The Philadelphia trade is in a Micawberesque mood. Industrial consumers, liberally stocked with coal, are unmoved by solicitation and limit their buying to bargain lots of distress tonnage. Such purchases influence regular contract customers to hold off renewals in the hope that sellers will make a downward revision in price offers. Spot movement, except in screenings, is very quiet. Coke ovens are trying their best to stay in the domestic market, but there is little interest shown in quotations of $5@$5.50 to the retail dealer.

Prices Decline at Baltimore

Keen competition for the comparatively small amount of tonnage to be sold in the Baltimore spot market has resulted in quotations 15@20c. less than prices ruling at the beginning of the month. Contracting, too, is backward as it is always difficult to convince a purchasing agent that it is good policy to commit himself to a fixed price when quotations are on the downgrade. Export trade shows some signs of renewed activity. February exports totaled 30,172 tons, against 19,866 tons the preceding month.

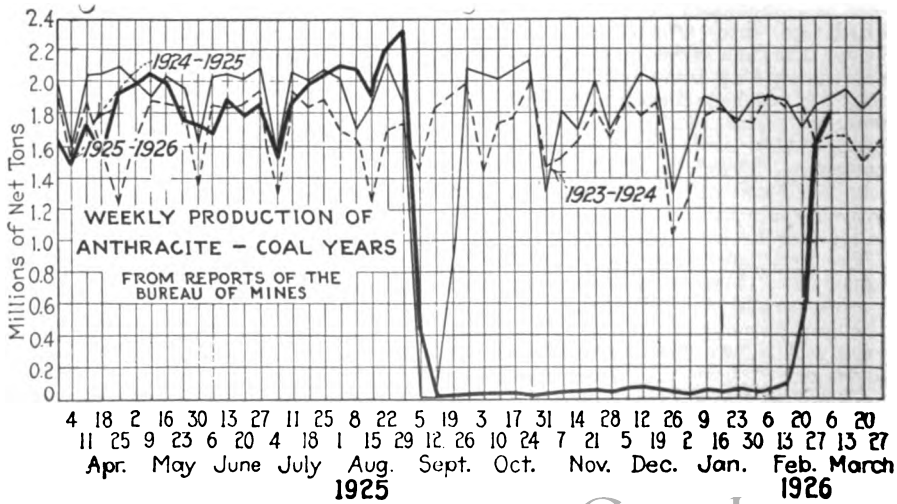
Hampton Roads is marking time. Until the contract situation has cleared, there will be little but routine business moving. Buyers are playing a waiting game to depress prices. Low-volatile coal is standing this pressure better than high-volatile. Some of the latter sold as low as $3.90 last week. Dumpings for the week ended March 11 dropped to 397,322 gross tons, as compared with 414,270 tons the preceding week.

Conditions in the Birmingham market last week were a repetition of those controlling the preceding fortnight. High and medium grades still move well, but the poorer grades are sluggish. On the whole, however, industrial demand is active. The domestic trade is soft. The coke market, too, is easier, but no surplus production is reported. Nut and egg coke are quoted at $5.25@$5.50; spot foundry and gas coke is $6.50.

Anthracite Movement Increasing

Anthracite receipts at New York are increasing daily, but shipments have not yet reached such a volume that the retailer can take care of all the orders on his books. Independent producers no longer are able to find buyers willing to pay extravagant premiums and little coal is moving at more than $1 over the maximum company circular. Most of the buying is for current delivery. Chestnut is the favored size. Pea is unusually active.

Conditions in the anthracite steam



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Car Loadings and Supply

	Cars Loaded — All Cars	Coal Cars
Week ended Feb. 27, 1926	912,658	180,434
Preceding week	931,743	169,913
Week ended Feb. 28, 1925	862,910	150,629

	Surplus Cars — All Cars	Coal Cars	Car Shortages All Cars	Coal Cars
Feb. 28, 1926	207,683	74,151	.....	.....
Feb. 23, 1926	227,511	88,629	.....	.....
Feb. 28, 1925	285,015	138,425	.....	.....

trade are rapidly approaching normal. No. 1 buckwheat, which has been a drug on the market since mining was resumed, is in no stronger position. Rice and barley, on the other hand, are in good demand and offerings are readily absorbed. Philadelphia steam consumers are displaying considerable interest in the question of contracts for next year.

Continued cold weather has made it impossible for retail distributors in Quakertown to catch up with orders and complaints are heard that the big companies have not kept up the rate of shipments with which they started. Independent producers are able to get around $12 for the larger sizes. As in New York, chestnut leads in demand, with pea a close second. Egg is the easiest of the major sizes. Retailers still are trying to clean up coke stocks on hand.

Baltimore Hard-Coal Trade Active

Retail dealers at Baltimore have been fairly active taking care of emergency demands for hard-coal. For the most part, purchases are confined to the big company shippers. Deliveries to householders are in one- and two-ton lots. Receipts have been increasing.

There is no particular clamor for anthracite at Buffalo. Producers asking $1.50@$2 over company circulars have hard sledding. It is predicted that lake trade will be slow in opening. Contrary to the reports from Duluth and Superior, Buffalo factors say that there has been little inquiry from the Head of the Lakes. But the basis for the forecast of a late lake opening is that there are many bare spots in all-rail territory which will have to be filled up before any large tonnage can be diverted to the boats.

Coke Situation Still Unsettled

The process of readjustment is the Connellsville region has not been completed. There is still considerable coke, which was produced with an eye to the domestic trade, which is without a market. Representatives of the shippers are trying to settle accounts with eastern buyers and to move rejected shipments.

The metallurgical market is steady but dull. Furnace coke seems to have hit a range of $3.25@$3.50 and foundry, $4.50@$5. Independent furnaces are delaying the negotiation of second-quarter contracts as long as possible to compel the ovens to make more favorable terms. Some may buy on a month-to-month basis.

Furnace-oven output in the week ended March 6 was 102,700 tons, according to the Connellsville *Courier*. Compared with the preceding week this was a loss of only 400 tons. Merchant-oven production dropped to 96,850 tons —a decrease of 6,050 tons. Even this total, bearing February figures in mind, seems excessive.

New York Seeks Coal Bids

Bids will be opened on March 23 by the Department of Purchase of the City of New York for 502,436 tons of coal and 600 tons of coke for use by the various city departments. It is expected that more than 25 firms will submit bids.

The tonnages asked for are: Broken, 800 tons; egg, 17,877 tons; stove, 11,910 tons; chestnut, 1,483 tons; pea, 7.546 tons; buckwheat No. 1, 244,153 tons; rice, 27,632 tons, barley, 50,100 tons; mine-run bituminous coal, 79,732 tons; George's Creek Cumberland coal, 203 tons; mixed coal, consisting of one-third soft coal and two-thirds No. 2 buckwheat, 61,600 tons, and coke, stove size, 600 tons.

Utilities More Efficient in Use of Coal in 1925

The total annual output of electricity by public-utility power plants in this country in 1925 was 65,801,000,000 kw.-hr., an increase of 11.5 per cent over the output for 1924. Of this quantity, about 34 per cent was produced by the use of water power, a slight increase over the percentage for 1924. It would have required the consumption of 23,000,000 tons of coal to generate this 34 per cent.

The amount of coal consumed in producing electricity in 1925 was only 7 per cent greater than in 1924. The amount of oil was 38 per cent less and the amount of gas was 4 per cent less than in 1924. Although the oil consumed totaled more than 10,000,000 barrels and the gas nearly 50,000,000,000 cu.ft., coal represented nearly 90 per cent of all the fuel used by electric-power plants. The coal plus the coal equivalent of the oil, gas and wood used in the generation of electricity by public-utility plants in 1925 amounted to about 45,000,000 tons, or an average of nearly 3,000 lb. a second, or 100 carloads an hour throughout the year.

Efficiency in the use of fuel continued to increase in 1925, as there was a decrease of about 0.1 lb. in the average consumption of coal per kilowatt-hour compared with the rate of 1924. This apparently small gain amounts to more than 2,000,000 tons of coal for the year.

Warns Against Hasty Buying

The Boston Chamber of Commerce issued a statement on March 11 warning the public against hastily placing large orders for independent anthracite, which it asserts is being offered at an increase over circular prices. John F. O'Connell, chairman of the Chamber's fuel committee, recommended the continued use of substitutes, declaring that the public can keep prices down by waiting a few weeks before stocking up with anthracite.

Coal Produced in Alabama and Arkansas in 1924

(Exclusive of Product of Wagon Mines.)

County	Net Tons — Loaded at Mines for Shipment	Sold to Local Trade and Used By Employees	Used at Mines for Steam and Heat	Made Into Coke at Mines	Total Quantity	Value — Total	Value — Average per Ton	Number of Employees a — Underground — Miners b	Underground — All Others	Surface	Total	Average Number of Days Worked a	Average Tons per Man per Day
Alabama													
Bibb	1,045,175	6,260	21,098	.....	1,072,533	$2,722,000	$2.54	1,205	471	353	2,029	183	2.89
Blount	123,132	1,100	1,770	.....	126,002	262,000	2.08	210	64	49	323	149	2.62
Etowah	127,447	1,543	2,225	.....	131,215	342,000	2.61	178	36	56	270	210	2.31
Jefferson	9,340,280	94,786	98,424	58,972	9,592,462	23,008,000	2.40	6,960	3,885	1,939	12,784	240	3.12
Shelby	690,032	10,141	13,414	.....	713,587	2,430,000	3.41	741	361	253	1,355	237	2.22
Tuscaloosa	989,658	6,923	19,167	112,088	1,127,836	2,360,000	2.09	906	394	280	1,580	235	3.04
Walker	5,282,465	220,175	28,122	.....	5,530,762	11,463,000	2.07	5,018	1,710	1,763	8,491	196	3.33
Winston	20,071	1,500	.	.....	21,571	57,000	2.64	35	10	12	57	166	2.27
Other countries c	776,834	6,152	31,230	.....	814,216	2,112,000	2.59	639	285	143	1,067	221	3.46
Total	18,395,094	348,580	215,450	171,060	19,130,184	44,756,000	$2.34	15,892	7,216	4,848	27,956	220	3.11
Arkansas													
Franklin	216,602	2,263	10,539	.....	229,404	706,000	3.08	167	60	276	503	126	3.62
Johnson	282,104	2,629	6,219	.....	290,952	1,412,000	4.85	404	217	307	928	103	3.04
Logan	151,318	6,082	2,119	.....	159,519	993,000	6.22	267	96	56	419	153	2.49
Sebastian	690,973	2,035	10,178	.....	703,186	2,329,000	3.31	898	324	151	1,373	143	3.58
Other counties d	61,932	2,010	4,500	.....	68,442	458,000	6.69	75	35	17	127	228	2.36
Total	1,402,929	15,019	33,555	.....	1,451,503	5,898,000	$4.06	1,811	732	807	3,350	134	3.24

a Note that figures of men employed and days worked do not include mines that operated in 1923 but were idle the entire year 1924; they do include many mines operated for a short time only in 1924. The number of active mines of commercial size in Alabama was 288 in 1923 and 238 in 1924; in Arkansas, 94 in 1923 and 86 in 1924.

b Includes also loaders and shotfirers.

c Marion and St. Clair.

d Pope and Scott.

Statistics compiled by U. S. Bureau of Mines.

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Foreign Market And Export News

Shipping Troubles Still Hamper Welsh Trading; Tyne Buying Backward

The Welsh steam coal trade has been in rather an unsettled state owing to the prolonged gales of unusual severity. Where buyers have been found for prompt shipment a few sales have taken place at reduced prices, though colliery owners are well booked up for some time to come. The lack of shipping is causing great inconvenience to some operators and stoppages are frequent.

Ships also are scarce owing to the heavy exports of coal to North and South America. In many cases these ships are being held for homeward cargoes, which are not always forthcoming. This condition of things is expected to last another week or ten days, though the advanced freight rates to South America and the Mediterranean ports no doubt will attract tonnage to South Wales.

Work at the pits, of course, is irregular, and prices for spot shipment are discounted 6d. or more per ton. Owing to these conditions there is not so much talk of restarting closed mines, and nothing has so far come of the suggestion of reopening the Cambrian pits.

The Newcastle market is dull and rather weak and is suffering from the same trouble as South Wales. Foreign buyers are holding back on this account. German and Silesian coals are ousting many British varieties in the European market. Most of the collieries are fairly well employed, though prices seem to be taking a downward tendency.

Output by British collieries during the week ended Feb. 27, according to a special cable to *Coal Age*, totaled 5,370,000 gross tons, compared with 5,420,000 tons in the preceding week.

Little Change in French Demand

Paris, France, Feb. 25.—There has been little change in the French market the past week. The tone is firm although the demand for domestic coals is not so great. Even flaming coals, which were very scarce, are coming in more plentifully, consequently the buying of British coals D.C.B. and Hastings will be reduced.

Canal transport is still very slow, owing to their obstruction by barges in some places between the Belgian frontier and the Nord and Pas-de-Calais on the one hand, and Paris, on the other.

During the first 13 days of February, France received 186,900 tons of coal, 122,600 tons of coke and 14,700 tons of lignite briquets, from the Ruhr. During the first twenty-three days of this month the O.R.C.A. received 208,600 tons of coke from the Ruhr.

The price of the indemnity coke for March has been definitely fixed at 163 fr. on truck Cierck, plus 5.1 fr. customs duties, plus 1.15 fr. for the O.R.C.A.'s expenses, or a total of 169.25 fr.

During January, France imported 1,432,409 metric tons of coal and exported—principally to Belgium, Germany and Switzerland—300,605 tons. Of the imports, 803,701 tons came from Great Britain, 164,375 tons from Belgium and Luxemburg, 4,609 tons from the United States and 384,960 tons from Germany. Coke imports for the month were 459,578 tons; exports, 55,652: patent fuel imports, 125,997 tons; exports, 18,338 tons.

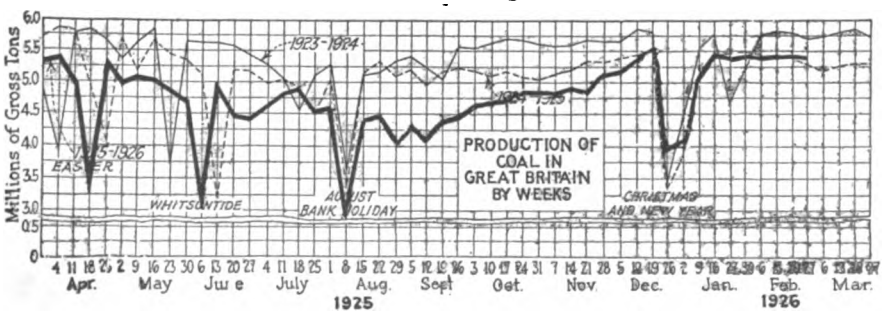
Belgian Demand Enters Decline

The seasonal falling of in demand for domestic grades of coal in the Belgian market has been intensified by a decline in the orders placed from industrial fuel, reports Brussels under date of Feb. 25. The latter decline is attributed to dissipation of fears of a general British coal strike. Screened sorts, however, are still very scarce in the Borinage and coking smalls are steady.

In general the market in coke is fairly firm. There also has been some improvement in the demand for patent fuel.

During January, Belgium produced 1,976,320 metric tons of coal, as compared with an output of 1,936,670 tons in December. Stocks on hand declined from 1,558,020 tons on Dec. 31, 1925, to 1,398,120 tons on Jan. 31, 1926. Coke production for the month was 321,220 tons—25,120 tons less than in December. Patent fuel output for January, 203,630 tons, showed an increase of 25,540 tons over the December figures.

A decree recently published by the Spanish Government restricts the use of British coal on railroads and state subsidized industries to 10 to 30 per cent. In many instances the use of foreign fuel is banned.



Buys More British Anthracite

Canada's imports of Welsh and Scotch anthracite coal from the United Kingdom increased from 275,277 net tons, valued at $2,472,737, in 1924 to 560,684 tons, valued at $5,138,342, in 1925. Figures for the latter year include, as nearly as it can be ascertained, the tonnage imported through Portland, Me., and transshipped to Canada after the close of navigation on the St. Lawrence.

Quebec received the largest shipments, totaling 487,049 tons, the remainder being assigned to New Brunswick, Ontario, Nova Scotia, Prince Edward Island and British Columbia. Retail prices increased steadily during the year, starting at $16.50 per ton in May and reaching $23 per ton in December.

Export Clearances, Week Ended March 11, 1926

FROM HAMPTON ROADS

For Brazil:	
Grk. Str. Kalypso Vergotti, for Santos	7,030
Du. Str. Admiral de Ruijter, for Rio de Janeiro	6,696
Ital. Str. Artenia, for Rio de Janeiro.	7,635
For Cuba:	
Nor. Str. Bratland, for Niguero	1,232
Du. Str. Trompenberg, for Cienfuegos	1,646
Br. Str. Pengreep, for Felton	3,992
For Peru:	
Nor. Str. Herakles, for Callao	4,813
For Argentina:	
Br. Str. Flimston, for Puerto la Plata	6,046
For Portugal:	
Br. Str. Maidenhead, for Oporto	2,712
For Italy:	
Ital. Str. Antonio Tripcovich, for Fiume	1,850
Ital. Str. Ida, for Trieste	3,055
Ital. Str. Monginevro, for Genoa	3,232
Jap. Str. India Maru, for Genoa	7,257
For British West Indies:	
Nor. Str. Thornsdal, for Castries	3,226

Hampton Roads Coal Dumpings*

(In Gross Tons)

	Mar. 4	Mar. 11
N.&W. Piers, Lamberts Pt.:		
Tons dumped for week	170,257	164,800
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	113,135	84,816
C.&O. Piers, Newport News:		
Tons dumped for week	130,878	147,706

* Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS

	March 6	March 13†
Pool 1, New York	$5.75@$6.00	*$5.65@$5.85*
Pool 9, New York	5.30@ 5.55	*5.20@ 5.40*
Pool 10, New York	5.00@ 5.25	*4.80@ 5.10*
Pool 11, New York	4.50@ 4.80	*4.50@ 4.75*
Pool 9, Philadelphia	5.10@ 5.40	5.10@ 5.40
Pool 10, Philadelphia	4.95@ 5.15	4.95@ 5.15
Pool 11, Philadelphia	4.60@ 4.80	4.60@ 4.80
Pool 1, Hamp. Roads	4.50@ 4.60	*4.50@ 4.55*
Pool 2, Hamp. Roads	4.30@ 4.35	*4.20@ 4.30*
Pools 5-6-7, Hamp. Rds.	4.00@ 4.10	*3.90@ 4.00*

BUNKERS

Pool 1, New York	$6.00@$6.25	*$5.90@$6.10*
Pool 9, New York	5.55@ 5.80	*5.45@ 5.65*
Pool 10, New York	5.25@ 5.50	*5.05@ 5.35*
Pool 11, New York	4.75@ 5.05	*4.75@ 5.00*
Pool 9, Philadelphia	5.35@ 5.65	5.35@ 5.65
Pool 10, Philadelphia	5.20@ 5.40	5.20@ 5.40
Pool 11, Philadelphia	4.85@ 5.05	4.85@ 5.05
Pool 1, Hamp. Roads	4.60	*4.55*
Pool 2, Hamp. Roads	4.35	*4.30*
Pools 5-6-7, Hamp. Rds.	4.10	*4.00*

Current Quotations, British Coal, f.o.b. Port, Gross Tons

Quotations by Cable to *Coal Age*

Cardiff:	March 6	March 13†
Admiralty, large	23s.@24s.	23s.@24s.
Steam smalls	12s.	12s.
Newcastle:		
Best steams	15s.6d.@16s.	17s.@18s.
Best gas	17s.6d.	19s.
Best bunkers	16s.3d.	*16s.6d.*

Advances over previous week shown in **heavy type**; declines in *italics*.

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Coming Meetings

New York State Coal Merchants' Association. Annual group meeting, March 25, Pennsylvania Hotel, New York City. Executive secretary, G. W. F. Woodside, 250 Arkay Bldg., Albany, N. Y.

New England Coal Dealers' Association. Annual meeting, State Armory, Worcester, Mass., April 7 and 8. Secretary, E. I. Clark, 141 Milk St., Boston, Mass.

American Welding Society. Annual convention, 29 West 39th St., New York City, April 21-23. Secretary, M. M. Kelly, 29 West 39th St., New York City.

California Retail Fuel Dealers Association. Thirteenth annual convention at Del Monte, Calif., April 22-24. Secretary, J. B. Muir, Oakland, Calif.

National Retail Coal Merchants' Association. Ninth annual convention, New Willard Hotel, Washington, D. C., May 17-19. Resident vice-president, Joseph E. O'Toole, Transportation Bldg., Washington, D. C.

Electric Power Club. Convention at The Homestead, Hot Springs, Va., May 24-27. Secretary, S. N. Clarkson, B. F. Keith Bldg., Cleveland, Ohio.

The American Mining Congress. Annual Exposition of Coal Mining Equipment, May 24-28, at Cincinnati, Ohio, in conjunction with the annual meeting of practical operating officials. Assistant secretary, E. R. Coombes, Washington, D. C.

International Geological Congress. The fourteenth congress will be held in Madrid, Spain, commencing May 24, 1926. From May 5 to 22 excursions of interest to the visiting delegates will be arranged. Information concerning the congress can be obtained from the secretary of the organizing committee, Enrique Dupuy de Lome, Plaza de los Mostenses, 2, Madrid, Spain.

Midwest Retail Coal Merchants Association. Annual meeting, May 25 and 26, at Kansas City, Mo. Secretary, James P. Andriano, St. Joseph, Mo.

Western Canada Fuel Association. Annual meeting at Winnipeg, Manitoba, Can., May 27 and 28. Secretary, W. H. Morrison, Winnipeg.

American Wholesale Coal Association. Annual meeting at Toledo, Ohio, June 7-9. Treasurer, R. B. Starek, Union Fuel Bldg., Chicago, Ill.

Association of Iron & Steel Electrical Engineers. Exposition and convention at Hotel Sherman, Chicago, Ill., June 7-10. Secretary, J. F. Kelly, 1007 Empire Bldg., Pittsburgh, Pa.

American Institute of Electrical Engineers. Annual convention, White Sulphur Springs, W. Va., June 21-25. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

American Society for Testing Materials. Convention at Haddon Hall, Atlantic City, N. J., June 21-25. Secretary, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

American Society of Mechanical Engineers. Spring convention at San Francisco, Calif., June 28-30. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

New Equipment

Soldering Iron Heats Quickly

A new soldering iron of light construction and designed to heat up quickly has been recently placed on the market by the General Electric Co., of Schenectady, N. Y. This iron is made in standard sizes ranging from ½ to 1¼ in. tip.

Power consumption ranges from 70 watts for the smaller iron for light and intermittent use, to 350 watts for the larger size on heavy duty. The irons for heavy duty are provided with radiating stands for the purpose of maintaining the iron at the correct operating temperature when temporarily not in use. The rapid rate of initial heating is brought about by unusually good heat conduction between the heating element and the copper tip. Heat from the tip is prevented from reaching the handle by means of a special mechanical construction between the two parts, this being in the form of a spiral made from a steel rod. This also provides a rigid connection between the handle and tip.

Instead of mica, usually used for an electrical insulator in the heating unit of soldering irons of this type, the heating unit has an insulating powder so highly compressed that it becomes a good heat conductor and will withstand temperatures of more than 2,000 deg. F. The iron is provided with a standard lead and connection plug. Its construction is simple, and all parts are easily replaceable.

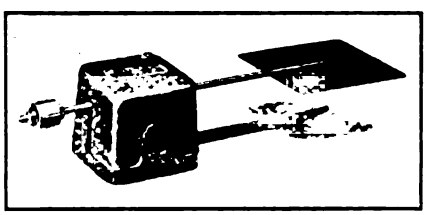
Waugh Drifting Drill for Hard Mine Usage

Two new rock drills have recently been developed and placed on the market by the Denver Rock Drill Mfg. Co. of Denver, Colo. These are models 7 and 17. In the model 7 the manufacturer claims a pneumatic hammer drill of simple symmetrical construction and high efficiency. The design is conservative yet many original features of proven value have been incorporated. The drill steel is rotated by means of a ratchet, pawl and rifle bar. The valve is of the tubular type operating axially in the machine. It is completely housed within the cylinder and is fully protected against rough usage.

Drop forgings and high-grade alloy steel subjected to scientific heat treatment have been used throughout in the construction of this machine. Provision is made for easy replacement of parts, ordinarily subjected to the heaviest wear. The ratchet ring and pawls are reversible, thus doubling their life. Lubrication is effected by an automatic air-line oiler, which obviates use of inefficient oil chambers, packings, plugs and other parts in the machine proper and contributes to higher drilling efficiency and long dependable service. Model 17 is similar in design to the No. 7, but is heavier and more powerful.

Will Act as Watchdog Over Ventilating Current

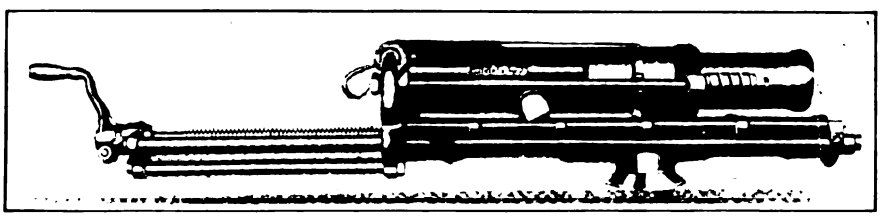
Although designed primarily for installation on air-cooled electrical apparatus such as transformers, regulators and similar equipment the air-flow relay shown in the accompanying illustration and recently placed on the market by the Albert & J. M. Anderson Mfg. Co., of Boston, Mass. may also be installed to show the existence or non-existance of an air current in the ventilation passages of a mine. This device is placed directly in the path of the air and consequently is operated by the air flow itself. As a result it performs a service which cannot be rendered by devices that indicate only the pressure of the air supplied.



Watching the Ventilating Current

The relay here shown is designed for installation in an upwardly moving current. It would be an extremely easy matter to make the vane vertical and thus adapt this instrument to a horizontal air flow. A fall in current velocity would thus be readily detected.

In the construction of this relay a counterweighted aluminum vane is pivoted on steel points and may be so adjusted that the minimum flow will allow the vane to drop, thus tilting a mercury-tube switch also suspended on the same pivot. This tube is so



Drill for Tripod Mounting with Automatic Air-Line Oiler

This drill is fitted for mounting on the ordinary tripod or bar. It is claimed by the maker to be extremely simple and rugged in construction, and highly efficient in operation. Oil chambers are made unnecessary because the air is lubricated by the automatic air-line lubricator.

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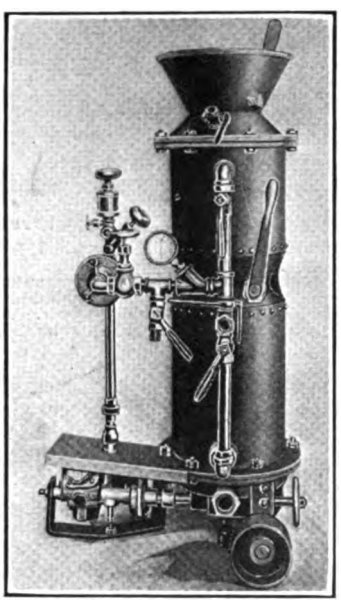
mounted that when the air current is reduced to what is considered the danger point, the vane drops, the switch tilts and opens the signal circuit. A fixed pointer attached to the base of the relay extends below the vane. This assists the observer in quickly noting the angle of the vane when seen from a distance.

Standard relays of this type are of the single-pole variety designed to control non-inductive currents of ½ amp. at 250 volts or one ampere at 125 volts direct or alternating current. A hole is tapped in the side of the case for connection of a ½-in. conduit, permits ready insertion of the lead wires. This device will doubtless be found useful in mines where it will indicate both visually and audibly any decided changes that may take place in the velocity of air flow.

Baby Cement Projector for Repair Work

A small size "Cement-Gun," known as the Type N-00, which can be operated with a one-drill compressor, has recently been developed and placed on the market by the Cement-Gun Co., Inc., of Allentown, Pa. This machine is particularly adapted to the repair and restoration of honeycombed concrete and other small patchwork as well as for small construction. It is easily



For Light Guniting of Furnace Lining and Mines.

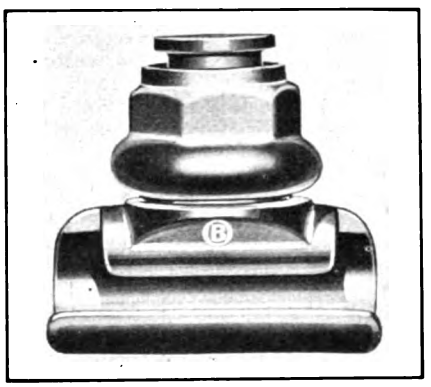
This new cement-gun weighs only 200 lb. and can be operated on 60 cu.ft. of free air per minute. Because of its ready portability it is particularly adapted to small jobs and repair work

portable, weighing only 200 lb., and requires only 60 cu.ft., actual measurement, of free air per minute for proper and efficient operation. It is thus available for use with small portable compressors such as are standard equipment in many mines. Its operation is identical with that of larger machines of the same make, and it offers all the advantages of the larger cement projectors with the exception of capacity.

This machine is well adapted to the repair and the maintenance of furnace linings. It may also be used for general repairs around mines, industrial and other plants where the supply of compressed air is limited.

An Easily Installed Feeder Clamp

A new member of the bulldog family was recently announced by the Ohio Brass Co. It is a cable clamp, which consists of a simple cable sling with clamping jaws similar to those applied to the standard bulldog clamp. The cable sling may be used first when



Clamp Holds Feed Wire

This device can be used as a support to hold the wire when being installed and later to keep it from sliding or pulling off its support.

stringing a feeder line and later as a support by turning the nut which squeezes the sling and jaw together, thus providing not only a rest for the cable, but an effective grip as well. This grip eliminates longitudinal motion and prevents tension from being carried through the cable to its end supports.

This cable clamp is tapped for attachment to the standard insulated hanger. Flecto Iron, a new malleable iron developed by the company is used throughout its construction.

Swiveled Air-Motor Hoist Pulls in Any Direction

A new size DU "Utility" air-motor hoist has been recently developed and placed on the market by the Ingersoll-Rand Co. of 11 Broadway, New York City. This size of hoist has been especially designed for use with portable compressors and is suitable for a wide variety of work. It is a general-utility machine, particularly adapted to portable use. It consist of a light compact hoist of the winch type provided with mountings by which it may be attached to the rear end of a 5½x5 or a 5x5-in. portable compressor, to the side of larger machines or to compressors mounted on motor trucks. It is always ready for use and adds but little to the overall dimensions and weight of the compressor that drives it. It is thus extremely useful for temporary service where a greater pull than its capacity is not needed.

This machine is sturdily built and is claimed to be reliable and economical in operation. It is capable of exerting a rope pull of 1,000 lb. and of coiling 350 ft. of ⅝-in. cable. A swivel bolt through the base permits the machine to be swung around into any desired position. It is provided with a clutch so that the cable may be easily paid out by hand or by a down-grade load without revolving the motor and consuming air. A hand brake is provided on the drum to check unwinding and to stop motion in any desired position. The throttle control is sturdy yet extremely sensitive so that any desired speed up to 65 ft. per minute may be attained, this, of course, under full load of 1,000 lb. and with an air pressure of 80 lb. per square inch.

Some of the principal dimensions and details of this machine are as follows: Rope speed, at 80-lb. air pressure, 61 ft. per minute; width, 15 in.; length, 25⅜ in.; height, 19½ in.; net weight, 250 lb.

This machine is said to be highly economical in air consumption. Even when lifting a 1,000-lb. weight it can be operated by a 5½x5-in. portable compressor. A winch head can, of course, be furnished in place of the rope drum normally supplied.

Publications Received

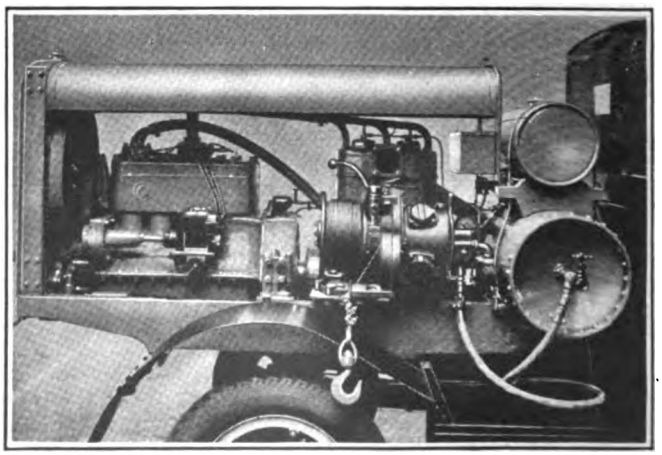
The Pennsylvania State College and Its Service. Annual report of the college officers for the year 1924-1925. Pp. 141; 6x9 in.

Seventh Annual Report, Coal Mine Inspection Department of North Dakota. Pp. 31; 6x9 in.

American Society for Testing Materials. Proceedings of the Twenty-eighth annual meeting. Vol. 25. Part I; 962 pp. Part II, 454 pp.

Air Hoist on Motor Truck

Attached to the side of a gas-engine driven compressor. The hoist may be swivelled so that the rope pull leads in any desired direction.



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ADM. ARY

Studies in Coal Preparation and Sizing on page 425

MAR 31 1926

COAL AGE

The World's Accepted Authority on Coal Mining

McGraw-Hill Publishing Company, Inc. **March 25, 1926** Price Twenty Cents per Copy

Thrust does not make a Timken Tapered Roller Bearing any less *anti-friction!*

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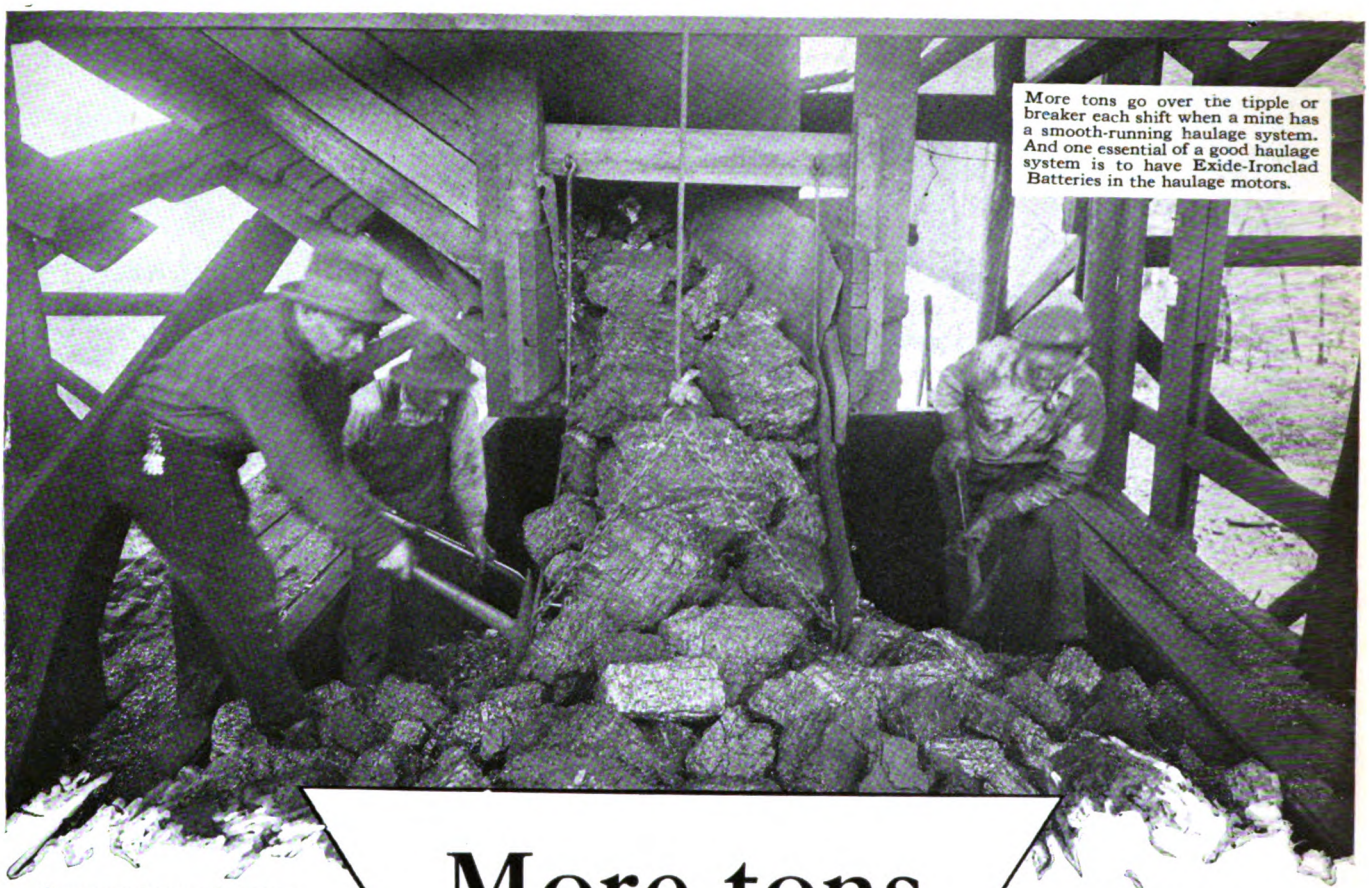


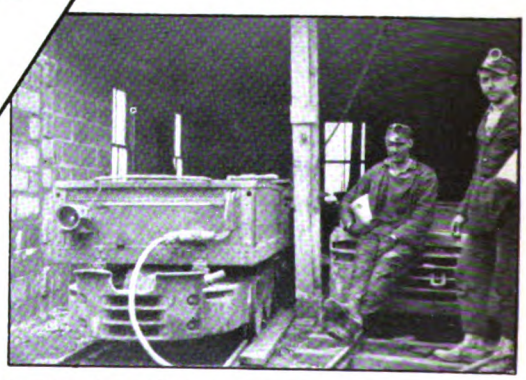
More tons go over the tipple or breaker each shift when a mine has a smooth-running haulage system. And one essential of a good haulage system is to have Exide-Ironclad Batteries in the haulage motors.

More tons over the tipple

Steep grades won't stop a motor, even with a heavy trip, when that motor is powered by an Exide-Ironclad. This battery always carries power in reserve.

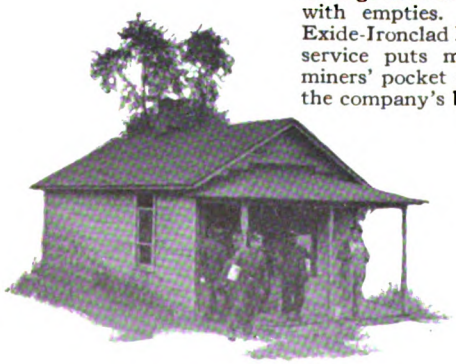
An Exide-Ironclad is remarkably efficient on charge, for it takes current in quickly, easily, and stores up an unusually high percentage of it.





These miners are collecting their pay. How much money they made depends in part on how well the haulage motors kept them supplied with empties. The speed of an Exide-Ironclad Battery in gathering service puts more money in the miners' pocket and more profits on the company's books.

Back to the charging barn after a hard day's work — but the motor has plenty of pep and speed still left, for its battery is an Exide-Ironclad This battery stays on the job month after month with no time out for repairs, for it is built rugged.



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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 29 — New York, March 25, 1926 — *Number* 12

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How Coal May Be Sized and Hand-Cleaned for the General Market 425
BY THOMAS FRASER.

Balancing the Helps and Hindrances to Success in Loading Coal by Machine 428
BY EDWARD H. JOHNSON.

Wet Haulage Slope Kept Free of Ice by Split of Air Passing Up It 431
BY THOMAS MURPHY.

British Battery Charging Is Often Wasteful 432
BY L. FOKES.

Federated Union Flops to U. M. W. as Strike for Jacksonville Scale Fizzles at Pittsburgh Coal Co. 440

Ohio Operators Ask Cut in Union Wage Scale; Lewis to Defend Policy 440

British Coal Commission's Report Favors Labor Says U. S. Economist 441

Merger of Mine Stations Meets Opposition 441
Heavy Coal Output and Outlay for Modernization, U. S. Steel Report Shows 442
Engineers and Operators to Co-operate in Research 442
Railroads Save $46,000,000 on Coal in 1925 442
Grant to Address Retailers at New England Convention 442
Comprehensive Program Arranged for American Mining Congress and Machinery Exposition at Cincinnati 443
Canadian Committee to Probe Coal Supplies 444
Canada Coke Output Mounts Slightly in January 444
Three West Virginia Firms in $2,500,000 Merger 444

Editorials 424
Underground Operation 436
Practical Pointers 438
News Items from Field and Trade 440
Traffic 448
Weekly Review and the Market 449
Foreign Market and Exports News 454
New Equipment 455

A Big British Hoist

When coal is 3,000 ft. below the surface and 300 tons must be raised per hour, it is interesting to note just how the load is handled. Next week will be described the way in which the Harworth Colliery, in Nottinghamshire, England, tries to meet this problem. Many of our engineers have gone over to Europe recently to find out how mines are operated there. In consequence *Coal Age* is publishing interesting stories now and again on this subject. We shall be glad to hear comments regarding this plant and any other here or abroad.

For Better, Not For Worse

Carter Goodrich has written a book entitled "The Miner's Freedom." Probably Nixon W. Elmer has never read it, but he effectually refutes it in his article for next week's issue. Work in groups, low lifting of coal or the handling of a machine is better than loading cars by hand—working as is the rule in ones or twos, double shoveling, raising coal to shoulder height and pitching it several feet. The miners like mechanical loading. It makes the day less long and more cheerful. To the mine worker labor-easing loading machinery is to be the great gift of this second quarter of the twentieth century. Mr. Elmer has other interesting viewpoints on the loading proposition. Don't miss his article.

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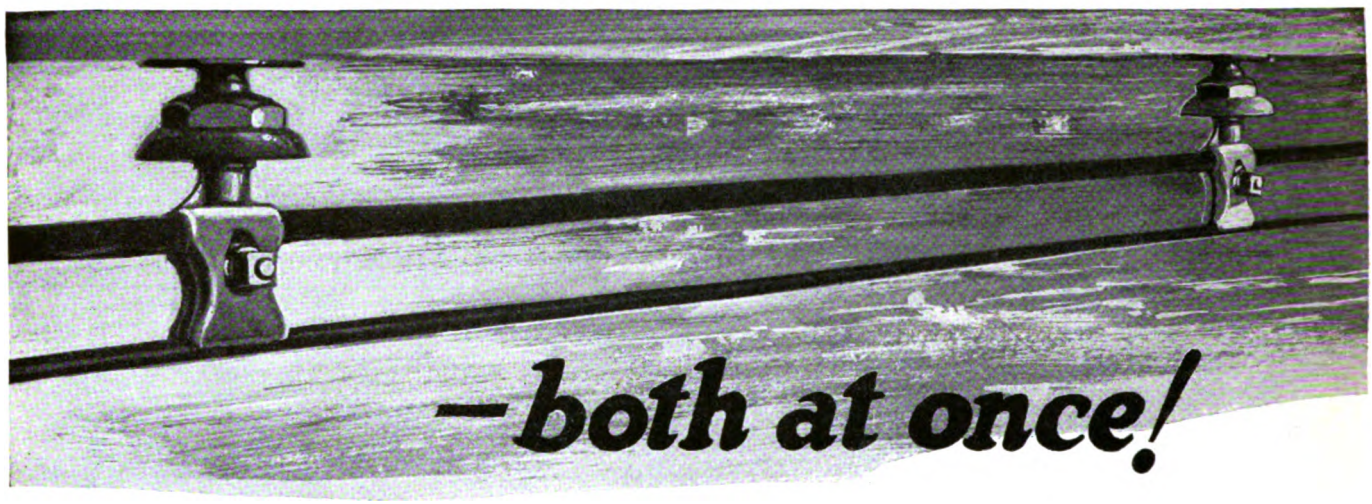

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Devoted to the Operating, Technical and Business
Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

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Evils of Substitution in Marketing Coal

TO DISTINGUISH one kind of coal from another, or "good" coal from "bad" coal, requires something more than casual inspection, and chemical analysis may be necessary. However, when a given coal is used its qualities are quickly learned, and its freedom from objectionable characteristics is soon apparent. To the ordinary consumer one coal looks like another and trade names are quite essential as a convenience in ordering and as an aid to marketing. Thus the coal trade is like marketing in other lines where trade marks are essential for the protection of an established business. Intensive selling by advertising in the coal industry requires, therefore, to be focused about a trade name, and where a coal of excellent quality has established a good market, this trade name becomes an asset and greatly assists in reducing general marketing expense.

But competition is keen and various expedients are invoked to overcome the popularity of a given coal. Some of these are above criticism, but others are decidedly unfair. Substitution of one coal for another is, unfortunately, a marketing practice that frequently characterizes a given locality. The coal dealer buys, at lower cost, a coal almost as good as an established coal and boldly sells it under the same name as the better coal, or else, if his conscience troubles him, he claims that it is just as good, which may or may not be the case. This practice is dishonest. More than this, it destroys the confidence of the consumer and he is not to be blamed if he harbors the opinion that coal dealers are generally unreliable. Wholesalers of the best type fight substitution as do coal retailers who have established their business on the basis of honest dealing with their customers.

No business can prosper that retains the disease of substitution. A producer who substitutes poor coal for the coal of better quality which he has been regularly supplying, is no better than the retailer who sells one coal under the name of another of an entirely different character. The producer should maintain his coal grades and the coal trade generally should eradicate retailers' substitution. Consumers' confidence is essential in every business, and where it exists sales resistance disappears and marketing costs are reduced to a minimum. Coal dealers' associations can render no better service to their members, than by ousting substitution through square dealing.

Underground Superintendence Needed

A SHORT time ago a chief state mine inspector was heard to remark that mine superintendents who search tirelessly for causes of and protection against typical accidents, which recur with more or less frequency at their plants, are not in the majority. Perhaps this is due to the fact that the average superintendent does not spend as much time underground as he should. Someone is required to co-ordinate the individual efforts of sub-bosses toward safety. Someone is needed to note where supervision fails. Every company should expect its superintendents to assume that responsibility, even where a safety engineer is employed.

Why is it that so many superintendents neglect the underground operations? Some are seen filling in at odd jobs at the tipple or some other point. They are to be commended for their energy but in the same breath criticized for their misconception of duty. They would do better to spend in the mine all of the time not devoted to performing their managerial duties on the outside.

Others are known to remain on the outside during the greater part of the time simply because they are not familiar with the "ins" and "outs" of mining, for which reason they let the mine foreman shoulder all responsibility for underground supervision. In such cases the companies that employ them—on the merit of business ability alone — are responsible. Two-headed authority at a mine plant does not lead to co-ordination of operations.

The superintendent should superintend. If he is to accomplish the purpose for which his company has employed him he must allocate his time to duties in proportion to their importance. Certainly underground operations are at least half of the works.

The Architect and Solid Fuels

IN PACIFIC COAST cities and towns recent residence construction is being too greatly influenced by the fuel situation, which situation is for the moment dominated by oil fuels and gas. The exigencies of cheap residence building have resulted in the elimination of chimney construction in many instances, or where chimneys are constructed, they are not infrequently of flimsy design or of use only for fireplaces. The better architects, recognizing that even in especially favored localities heating furnaces are highly desirable, provide a chimney for this purpose. In not a few instances the chimney is badly located, necessitating long connecting pipes which require frequent cleaning; chimney flues are often too small, resulting in insufficient draft and cleaning expense. Where coal is burned as a fuel under these conditions considerable inconvenience and annoyance results and salesmen for oil-burning equipment and for gas heating appliances take full advantage of the situation to the detriment of the coal business. A properly placed chimney of ample flue dimensions with a good coal-burning heating furnace is easily one of the safest and most satisfactory heating units for residence purposes. If care is taken in the design of the installation, coal can be almost as conveniently burned as oil or gas and it is invariably cheaper both in first cost and in operation. Gas fuel is probably the most convenient but it costs a great deal more for operation. Fuel oil requires special equipment and there are also

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elements of danger of several kinds in its use by inexperienced persons. Use of coal fuel requires a knowledge of a few simple rules in stoking and once these are learned the heating furnace gives very little trouble and requires only occasional attention. Necessarily care must be taken to select a suitable coal, preferably one that cokes and does not clinker. Very soft coals are not satisfactory.

Although oil fuel at present dominates upon the Pacific Coast, even a state like California uses much solid fuel and many householders prefer this to any other. Needless to say, a good coal burning heater is independent of interruptions of power or of gas supply. It avoids the noise of oil burners as well as oil leakage with its attendant fire risk. Conditions are rapidly changing in the petroleum industry and fuel oil prices may be expected to increase to a level that will again restore the advantage to coal. It is therefore the duty of architects in general to include in their residence and apartment plans adequate chimneys for burning solid fuel. Without this precaution the change from oil to coal may require reconstruction at considerable cost. No modern apartment or dwelling can be considered to be satisfactorily planned which does not provide for the contingency of changing fuels.

Larger Copper

SMALL locomotives and 500-volt power were reasons for No. 2/0 trolley wire being adopted for the early installations in coal mines. A change of sentiment favoring 250 volts and the use of larger locomotives brought the No. 4/0 wire to its present position as the size most commonly used.

Now we have indications that wire larger than 4/0 is to come into use. One large producer in Pennsylvania is installing No. 6/0 trolley on the main haulways. The section of the wire is of such shape that it can be hung by the standard 4/0 clamps. It has a 59 per cent greater area than the No. 4/0 wire.

The trend toward larger mine cars and heavier locomotives makes it appear reasonable that there are numerous places where heavier trolley wire should be used. Paralleling the trolley with a feeder cable gives the same effect but is a more expensive method. Difficulties of handling solid copper in sizes above 4/0 will no doubt be the limiting factor in future developments toward the larger wire.

Laying the Ground for Accord

PLEASING RELATIONS with the public need cultivation. We all know the individual who means well but is always arousing the animosity of people because he does not give due consideration to his manner of approach. His heart is right, but his actions so belie his purposes that explanations and excuses are continually necessary. And after all, one may as well confess it, he has faults of heart as well as faults of manner, and if he would give some consideration to these also, he would make a better sort of citizen—outwardly and inwardly better.

The coal industry needs a window dressing, and it needs certain internal reforms also. It needs to inquire just what these are and not to wait as it has been in the habit of doing till the public is in an irritable mood. Explanations at such a time do not explain, apologies even do not mollify.

Anyone who has seen two persons trying—honestly trying—to compose an ancient quarrel will recall how a trifling word or action has almost invariably ended in creating a condition more vexed and harassing than existed before, a disagreement that was slumbering and dying being suddenly revived and bursting into flame once again, making pacification more hopeless than ever.

To take a suggestion from pathology: A food that will cheer and sustain a healthy person will be poison to his system when he is sick and ailing. The disease will turn the best of viands into an intestinal irritant. Important, therefore, is it that the body be kept in health, so that it may be able to assimilate the food it needs. Important also is it that the public may have a mind so unsoured that it can judge without prejudice and be prepared to accept the operators' statements at their right value.

But to attain that end must be a long record of honorable dealing with no lapses. E. E. White, formerly of the E. E. White Coal Co., recently denounced the action of those producers who raise prices to an exorbitant level and send impure coal to market and so injure the business of other operators. This has no reference to the history of the recently concluded anthracite strike or to the action of the bituminous coal companies consequent thereon. There was not, as far as the coal producer was concerned, any profiteering, and it has not been the practice in the past of the larger companies, in times of big demand, to force prices to the top level. Repeatedly they have met together, to save the public from high prices which competition has induced.

Oil Must Be Combatted

THE abnormal development of petroleum, especially in the California oil fields, has unsettled established business in coal, particularly in the marine bunker trade on the Pacific Coast, which is now greatly restricted. In Pacific Coast ports fuel oil has displaced coal and has reduced the marine market to nominal proportions. Recently plans were advanced to convert the coastwise vessels of the Canadian government merchant marine from coal to oil burners. This would have been consummated, but for the protests of the British Columbia coal interests. Success attended their efforts and it is understood that the contracts for the change in equipment are going to be or have been cancelled.

This incident brings into prominence the need of the coal industry to protect its markets from encroachment. Declining production in the petroleum industry foreshadows increased prices and a diminishing surplus. The increase in cracking practice indicates a more profitable use for petroleum than for fuel purposes. Thus, although present prices favor fuel oil, it does not necessarily follow that this condition will be maintained for a long period, and it may be quite temporary. It is, therefore, unwise for marine or other established solid-fuel users to be too greatly influenced by low price levels that characterize flush production from new oil districts. Nevertheless, the situation is such that coal men generally should study the situation and take steps to maintain their existing markets by either raising the quality of their coal or by suitable price adjustment to meet liquid fuels.

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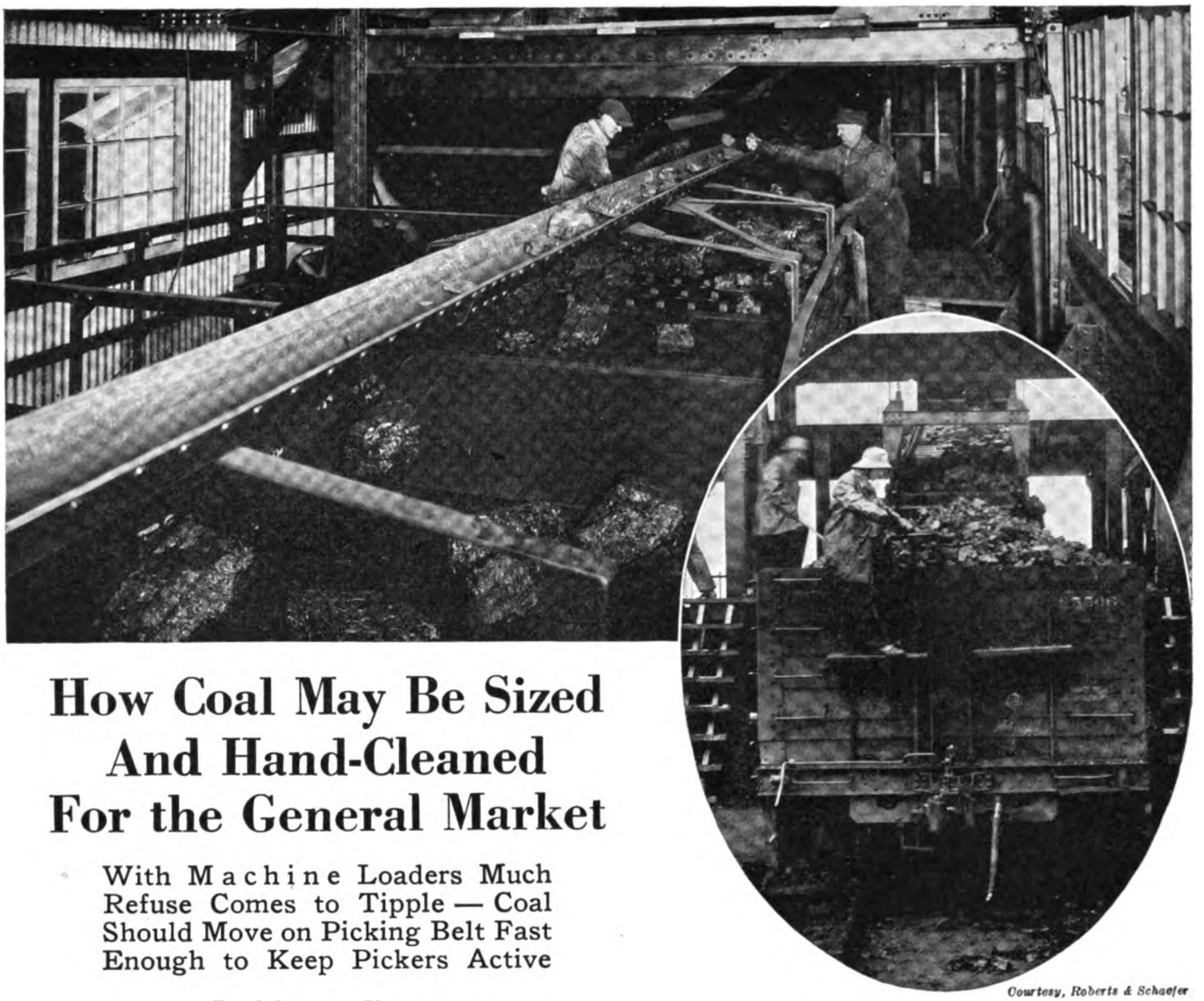

Courtesy, Roberts & Schaefer

How Coal May Be Sized And Hand-Cleaned For the General Market

With Machine Loaders Much Refuse Comes to Tipple — Coal Should Move on Picking Belt Fast Enough to Keep Pickers Active

By Thomas Fraser
Assistant Professor of Mining, University of West Virginia, Morgantown, W. Va.

CONDITIONS governing preparation of commercial coal differ materially from those which determine the treatment to be given to metallurgical fuel, defining as commercial coal the product that is to be sold on the open market as domestic or general industrial fuel. The introduction of mechanical or concentrated hand-loading systems for handling coal at the face will, in many cases, result in delivery of dirtier coal to the tipple than was previously received and hence will necessitate more careful attention in the preparation plant. If these new mining methods are widely adopted, the use of special cleaning devices will become mandatory at many commercial mines where heretofore it has been optional. Therefore, a study of preparation equipment and processes especially adapted to the preparation of coal for general market is timely.

The objects in commercial-coal preparation are (1) to size the coal to suit the requirements of the different users and (2) to free the coal of excessive extraneous impurities. The sizes to be made depend upon the destination of the coal under treatment; the domestic consumer demands well-sized coal free from slack; the railroads use mine-run coal for the greater part, but demand a clean fuel and often prescribe a limiting percentage of slack; the steam plant may use mine-run, unassorted screenings or sized coal, depending upon the type of equipment. Profitable operation of a mine with all these markets available depends, in a large measure, upon production of a maximum proportion of those grades that command the highest prices, which are normally the larger sizes suitable for domestic use. To obtain the desired result, preparation of the best grade of coal must be the major consideration from the beginning of the coal-producing process, for the operations at the face and even the general layout of the mine—direction and width of working places, rate of advance, method of roof support and general transportation system—greatly influence the size of coal ultimately produced. Therefore, with regard to sizing as well as cleaning, preparation of the coal should begin at the working face. This, however, is not an appropriate answer to every argument for the installation of preparation equipment, though it is often so interpreted. Though preparation *should* begin at the face, it usually has to be completed on the surface if a high-grade product is to be shipped.

To produce the maximum proportion of lump coal, that object must be the determining factor in selecting methods of cutting, drilling, shooting and loading the

Headpiece shows scenes at the No. 2 Crown Hill Colliery of the Clinton County Coal Co., Clinton, Ind.

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coal. For a commercial mine, one of the first requisites of a loading device should be ability to load lump coal broken down without any more violent shooting than is necessary for the best results in hand loading and, in any proposed changes in mining method, the effect on the size of coal delivered to the surface is one of the important features to be investigated.

THREE GENERAL TYPES OF TIPPLES

In regard to the kind of preparation plant required, mines may be divided into three general classes, (1) mines serving, primarily, run-of-mine coal consumers, (2) mines shipping lump coal and screenings, (3) mines supplying miscellaneous domestic, steam, and railroad markets with sized coal. The large consumers of mine-run coal are the railroads and some kinds of steam power plants. Under unusually favorable working conditions that permit the coal to be mined free of impurities, a producer of mine-run coal requires only a simple surface plant equipped with means merely for dumping the coal and loading it into the railroad cars or barges without excessive breakage. If the conditions are such that clean coal cannot be produced at the face, a surface preparation plant should be provided to clean the coal and, as coal in the run-of-mine condition cannot be sorted effectively, screening is necessary as a preliminary step, if much dirt is to be removed. In such a plant the coal is separated by bar or shaker screens into products of a sufficiently limited range of sizes to facilitate cleaning by hand. These products are hand-picked on separate picking tables or belts and reassembled and loaded for shipment as picked mine-run coal.

Mines producing only two sizes of coal, that is, lump and screenings for the general domestic and industrial market predominate in many sections in the Appalachian region; especially where the coal is strongly caking. Coal of this kind fuses into a coke mass when fired; hence, sizing is not so essential and the advantages of a closely sized fuel are not so marked as with a coal that is free-burning. At operations of this class, bar screens are commonly used, with either 1¼-in. or ¾-in. spaces producing 1¼-in. lump or ¾-in. lump for domestic and hand-fired industrial furnaces and the corresponding sizes of slack for stoker use or for coking. Methods of cleaning depend upon the quantity and kind of impurities present, and whether they are found mainly in the lump coal or in the slack. If the coal is mined in a comparatively clean condition, the lump coal is given a superficial inspection by the car trimmers, and the slack is shipped as mined. If more thorough preparation is necessitated by the condition of the coal or the demands of the market, the lump coal should be hand-picked on belts or tables before loading; the slack can be cleaned only by a washery or other mechanical treatment plant.

Cleaning by hand is greatly facilitated if the coarse coal is screened into several sizes for separate treatment. This is done at most commercial mines that produce both domestic and steam coal of the free-burning type and at many mines working coking coals. This sizing is usually done with shaker screens, but bar screens may also be used for this purpose. Shaker screens have the advantages of (1) handling the coal more gently, (2) using less headroom in the preparation plant, (3) sizing the coal more completely and (4) distributing and discharging the separate sizes more conveniently for subsequent treatment and loading. When lump coal, egg, nut, and screenings are made, the three larger sizes are well prepared for hand cleaning on picking belts. If the screenings are to receive further preparation, mechanical means are necessary as hand-picking the very small size is prohibitively costly.

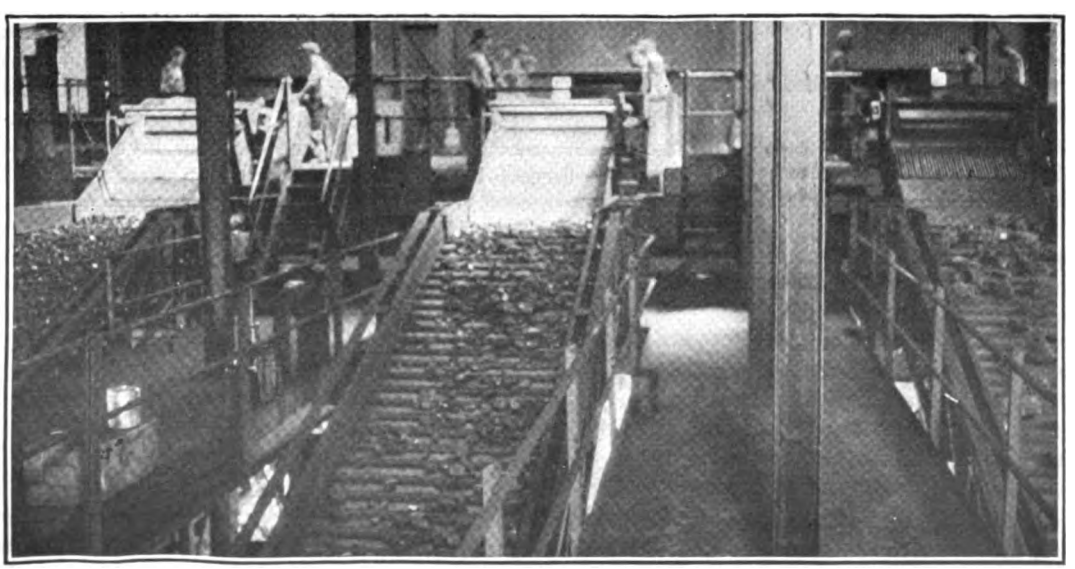
NUT IF DIRTY NEEDS MECHANICAL CLEANING

The economic limit of hand-picking depends upon (1) the cost of labor (2) the quantity of dirt in the coal and (3) the completeness of cleaning desired. The economy of preparing the nut sizes by hand is open to question and, if more than one- or two-per cent ash reduction is necessary, either 1 x 2 in. or 2 x 3-in. coal can probably be cleaned more cheaply, and certainly more effectively, by a simple mechanical cleaning plant than by hand.

No definite information is available on the effectiveness of hand-picking in terms of percentage ash reduction, or on the cost of hand-picking on the basis of dirt removed. O'Toole[1], in a paper presented at a meeting of the American Iron and Steel Institute, showed that the cost of thorough cleaning of Pocahontas coal is very high when preparation of small coal by this method is attempted. However, his figures are for practically complete removal of dirt and bone coal which is not necessary at the usual commercial preparation plant.

Normally, with well-disciplined leaders, the larger

[1]O'Toole, Edward, Dry Cleaning of Coal by Means of Tables, American Iron and Steel Institute, May 27, 1921.



Plant with Three Picking Tables

Speed of picking has to be regulated to suit the quantity of refuse to be removed. Making it slower than is necessary has a despiriting effect on the employees who are likely to be more observant when they have more occasions to exercise their vigilance.

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sizes of coal come to the tipple in such a condition that the removal of a small quantity of conspicuous free dirt is sufficient to insure shipment of attractive domestic grades of coal. Though no specific data are available on the cost of picking dirt from the various sizes of coal, the operation is not a complicated one, and the conditions in any given case should not be difficult to evaluate. It is basicly a materials-handling problem—to identify and remove, piece by piece, the extraneous material in coal. Given the most favorable conditions for identification of dirt particles, the cost depends upon the capacity of a man for handling material, which will vary mainly with the size of pieces being handled. The proper and logical unit for expressing this capacity is net tons of dirt handled rather than gross tons of coal passed under the picker's observation. Therefore, the determining factors so far as coal characteristics are concerned are, (1) ease of identification of dirt, (2) size of coal, (3) quantity of dirt to be removed. The conditions that lead to the maximum proficiency of the worker are conditions that facilitate distinction of dirt from coal and that enable material to be removed from the coal stream and disposed of with the minimum effort or fewest movements. Conditions that facilitate identification of refuse are (1) good illumination without glare, (2) uniform size of pieces, (3) thin uniform layer of coal, (4) slow and steady movement of coal, (5) proper position of workmen at the picking table.

Conditions insuring maximum rate of handling material by the workman are (1) convenient arrangement of picking table, refuse conveyor or chute and workman, (2) uniform size of pieces, (3) thin uniform layer of material, (4) uniform and sufficiently rapid travel of belt to keep picker busy. As regards travel of belt, conditions for thorough cleaning and for maximum rate of material handling are, in a measure, conflicting. The best rate of travel for picking belts may vary somewhat with ease of distinction of dirt from coal, but it may be generally assumed that the highest rate that will permit ready identification and removal of pieces of dirt will result in maximum proficiency of the worker. For example, a given tonnage of coal passed before a picker on a belt traveling at the rate of 100 ft. per minute will probably be picked more effectively than the same tonnage in a layer twice as deep passed before him at the rate of 50 ft. per minute. In addition to handling the same tonnage in a thinner and better exposed bed, the faster moving belt necessitates a more wide-awake condition and quicker movements on the part of the worker, thus tending to increase his capacity.

Picking-table products are seldom sampled as a means of controlling or evaluating hand-picking operations. Hence typical data on results of hand picking are not available. Because the coal and dirt are often not broken apart in the large sizes of coal commonly treated by this method, the refuse, as discarded, usually carries coal with it, and the average ash content of the rejected material is not as high as that of washery refuse. Picking-table refuse from lump and egg coal will usually run from 25 to 40 per cent in ash. A rough estimate of the reduction in ash obtained by picking may be made by weighing the total pickings obtained from the day's production of coal of any given size and calculating the ash reduction by the formula commonly used for figuring washery yields.



Picking Tables at Gay Mine, Near Logan, W. Va.

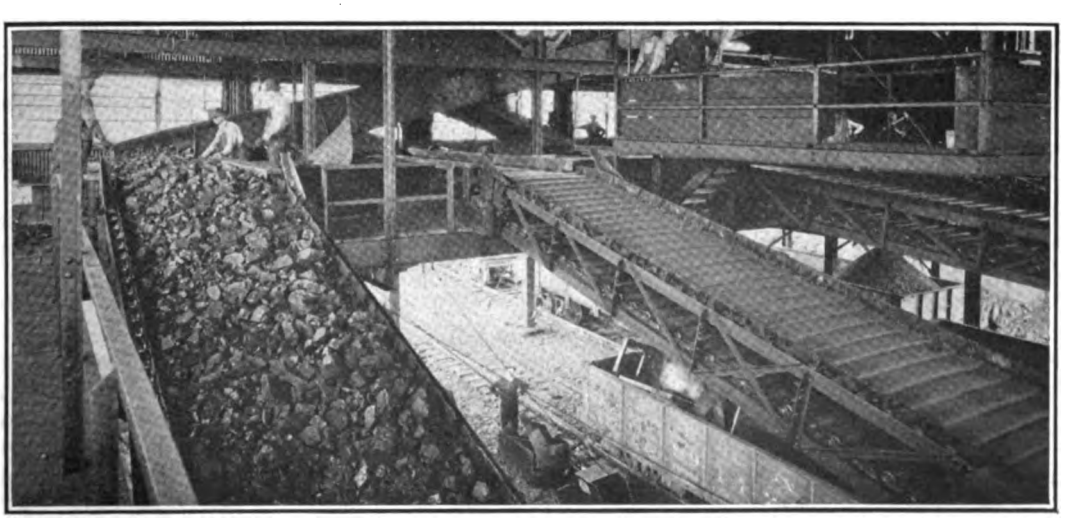
In this mine a large binder is removed by cutting the face two or three times. The coal is loaded by machine and when it arrives at the tipple receives careful inspection.

$$\frac{\text{Raw-coal ash} - \text{washed-coal ash}}{\text{Refuse ash} - \text{washed-coal ash}} = \text{Proportion of refuse (shrinkage).}$$

For example, if 1,000 tons of lump coal of 9 per cent ash content are loaded, the improvement that may be expected by picking out 30 tons (3 per cent) of refuse containing 40 per cent of ash is as follows:

$$\frac{9 - \text{cleaned-coal ash}}{40 - \text{cleaned-coal ash}} = 0.03.$$

From which, the ash content of the cleaned coal is calculated as 8 per cent.



Cleaning Strip Coal

Coal from open pits is nearly always machine-loaded, and it was early found that it needed cleaning to make it acceptable to the market. This plant of the United Electric Coal Co. at Cuba, Fulton County, Illinois, has picking tables and loading booms in a well-planned tipple.

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Balancing the Helps and Hindrances to Success in Loading Coal by Machine

For Best Results in Machine Mining, Equipment Suited to New Agency Should Be Introduced in Every Phase of Mine Operation But These Improvements Can Be Made One by One

By Edward H. Johnson
Mining Engineer, The Coloder Co., Columbus, Ohio



Edward H. Johnson

IN MOST of the coal mines of the country the addition of new machinery is a compromise. The management realizes that the new equipment cannot operate at 100 per cent efficiency, partly because of the natural conditions, but largely because of other equipment now in service that is sub-standard. A fan may be throttled by clogged aircourses, a pump by a corroded discharge line, mine locomotives by poorly ballasted mine track, mining machines by low voltage, haulage by inadequate hoisting equipment. To an even greater extent mechanical loaders must make concessions to physical restrictions and unbalanced mine machinery.

The loading-machine salesman who rates his machine at a certain tonnage is either mentioning conservative figures or is taking much for granted. Overzealous estimates and unjustified claims have greatly delayed the ultimate success of loading machines. Rare indeed are the loaders that develop a 40 per cent time efficiency, and even these may suffer further losses incident to low voltage or improper face preparation of the coal. No machines used underground today are so dependent upon the proper co-ordination of other mine equipment and upon the mental attitude of the management and the employees. I know of one installation where the loaders have failed due to the deliberate intention of the management to discredit their operation. But as the electric hoist is superior to the windlass, as electric haulage is better than hand tramming, so is machine loading better than hand loading and bound to supersede it.

Every mine manager is familiar with the problem of getting the highest possible yield with the machinery and labor available, efficient and otherwise. What he might do with other means is likely to be only of academic interest except as individual changes in equipment and personnel may be found possible. The introduction of one or more mechanical loaders may constitute one of these changes. After such a change has been made, the mine manager still has other equipment that was installed for a hand-loading operation. The haulage and face preparation faults at once appear. The question of cleaning the coal intrudes itself.

However, if this manager is resourceful and tenacious, and if the judgment of the purchasing official was good, an equilibrium is soon reached in the mining operation, and the cost of production is lowered. New opportunities will present themselves to straighten out the kinks, and as difficulties are solved cost will be further reduced.

Certain installations of loading machinery may have been successful because of unusual physical advantages in the mine, but success is more likely to be the result of a thorough study of all the problems involved. Let me list a few of these questions that have to be answered by the prospective user of machine loaders.

1. Is the loader adapted to the coal bed in which it is to work? 2. Can I supply the loader with empty cars that will enable it to load a satisfactory tonnage? 3. Are my power supply and my wiring and bonding practice adequate? 4. Can I provide sufficient auxiliary cleaning underground or at the tipple, with an added cost that I can safely absorb? 5. Can I make such changes in my system of mining as may be necessary? 6. What will be the effect upon my labor relations? 7. Can I prepare the coal so that the machines can load it readily and with a minimum degradation?

MACHINE MUST BE ADAPTED TO COAL BED

An unfavorable answer to any of these questions will make successful mechanical loading difficult until corrections can be made. Many of the mines subject to competition that cannot give favorable answers to these questions are due to be eliminated. This is an admitted fact by mine operators. I wish briefly to comment on each of the questions that I have listed.

The choice of the proper loader should not depend upon the skill of the salesman. It is a problem for engineering analysis. In general the best answer will be found through recourse to consulting engineers or firms, who should have the data at their disposal.

Even where conveyors or scrapers are used the haulage system may interpose a stumbling block because of delays in the changing of cars or because the mine cars are of small capacity. The question mentioned "satisfactory tonnage," not "maximum tonnage." This is a rather important distinction. A maximum output may result in higher unit costs of haulage or maintenance than 80 per cent of that maximum. The law of diminishing returns will be found to apply to machine loading. Though the operator may not be able

Article entitled "The Engineer's Viewpoint of Mechanical Loading" read before the "Materials Handling Division of the American Institute of Mechanical Engineers," New York City, Mar. 11. Mr. Johnson was the joint author with F. E. Cash of the bulletin on "Mechanical Loading in Coal Mines" published by The Carnegie Institute of Technology and the U. S. Bureau of Mines.

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to increase the capacity of mine cars, such a change, where possible, is of definite advantage in any sort of mechanical loading.

There is inevitably a loss in efficiency of the haulage because machines do not load mine cars as heavily as do hand loaders, except in the rare instances where the loaders are paid by the car. This has resulted in an actual loss in tonnage where the hoist has been operating at its maximum capacity. Sometimes sideboards which add to mine-car height will overcome this difficulty. A machine-loading operation will require just as many mine cars as one operated by hand loading provided the cars are of the same average capacity. That is, it is generally agreed that more mine cars of the same size are needed with a mechanical loading operation.

There is no mystery about wiring practice, track bonding and devices to maintain and protect the voltage. The best methods are also the safest and their introduction will be fully justified.

Coal cleaning is an important problem, as wet or dry launders or hand picking have to accompany most of the loader installations. One comforting fact has been established. The increase in the refuse in machine-loaded coal is in the larger sizes. The small pieces of refuse that escape the eye of the men on the picking tables have also been missed in the past by the hand loader at the face. Refuse carried out with the coal represents a slight loss in haulage efficiency and creates a further waste-disposal problem on the surface.

Changes in the system of mining are often considered to be a part of the machine-loading problem. The use of certain of the loading devices on the market depends upon minor or major changes in mining methods. The mining handbook of the American Mining Congress warns us that room and pillar mining is institutional and that radical changes are of doubtful value. Major changes in existing practice have in several cases discredited the cause of machine loading because instances have occurred where the new mining system has failed.

Any mining system that contemplates a change in the method of controlling or guiding the roof action is an experiment in itself. Its success or failure will depend upon the engineering judgment that led to its adoption, almost independent of the loading devices that are used. This statement must be qualified by the admission that the rate of advance or retreat of the working face will naturally be governed by the degree of success of the machinery used.

ROOF-CONTROL METHODS NEED TRIAL

Although I am an enthusiastic advocate of long-face experiments and roof-control devices, I see these as problems to be solved individually in every mine. Changes in panel dimensions, room centers, track layouts, crew organization, and so on, may be considered as part of the machine-loading problem.

The attitude of labor is more of an individual problem for the local management than an issue to be considered in this article. The labor question is a problem in sociology rather than in engineering.

Face preparation of coal for the machine loader is a matter in which mine operators require as much education as the shotfirers. When the mine operator can be brought to see that the opening of cracks in the face of the coal, wide enough to allow the miner to insert his pick point, is *not* the proper way to obtain lump coal, it will be easy to teach the shotfirers. There are too many mines in the country where the hand loader at a machine-cut face makes as many fines with his pick as the mining machine makes in undercutting. A new installation in Wyoming reports an increase in lump coal production with machine loading.

The mine with the best record of continuous operation in Illinois during 1925 is located in that part of the state that lies nearest to the coal fields of Kentucky, the low wages of which have kept many Illinois mines idle for the past two years. This mine is one of the few if not the only mine in that state that loads all its coal mechanically. The spread that exists between machine-loading costs and hand-loading costs, at least in high-wage districts, is a large fraction of the total cost, in some cases exceeding 50c. per ton.

The mine manager to whom this story comes, invariably says: "That is all very well, but my conditions are different." He is entirely correct. He sees the nature of his coal bed, the requirements of his market, and his equipment of men and machinery which are like none other in the land. It is possible that he is too close to his own problem to get a proper perspective of it unless he is a man of wide experience. Every mine is an individual problem, not to be solved by application of any general formulas. The mine superintendent should be consulted in making the choice of loaders, but he should not bear the whole responsibility for their success or failure.

NEED FOR MACHINES OF MANY TYPES

There is a constantly increasing variety of loaders from which to choose. Several of these machines are built to suit special conditions or to serve a particular purpose. Among these are machines that mine and load the coal, machines that load and convey the coal, and machines that work in conjunction with conveyors. Another class includes conveyors that are loaded by hand, which, although they are not loaders in fact, are generally considered in that connection. Some machines are portable and load either into mine cars or conveyors. No machine has been built to suit all conditions, so there is need for machines of several types. I believe that the industry has ceased to seek for something that will revolutionize it. We shall undoubtedly make better progress by a steady improvement of the means at hand than by waiting for the final perfected machine.

A degree of co-operation between manufacturer and operator is necessary to the success of machine loading and advantageous to both parties. By trying out ideas in machine design in the mines of friendly operators, the manufacturer has been able to discover and remedy the inherent weaknesses that are sure to develop. Thereafter it is the manufacturer's duty to maintain a standard of quality and workmanship that will permit operation with a minimum of delay and maintenance expense under the conditions for which the machine was designed. The manufacturer and his representatives should refrain from extravagant claims for his equipment. Statements should be based upon conservative estimates of competent engineers rather than enthusiastic sales propaganda. Failure to observe these principles places the operator in a defensive position.

The user of machines also has some obligations to fulfill. He should not blame the machines for failures that rightly come from defects in his own organization. Machines cannot load satisfactory tonnages if they are not properly supplied with empty cars, work-

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ing places or rated voltage. Face conveyors of nearly all types will have a brief life of service if the coal is shot down onto them. Unless they are kept at some distance from the face the cost for replacement parts is sure to be high. This may be satisfactory to the operator, but in broadcasting his experiences particulars of operation should be given. Prospective users are accustomed to ask for trial installations and to demand that the machines make good without any help. Machines never become really successful until after they are paid for, and the operator has become convinced that he must make them succeed or suffer a loss. He will then know he cannot shift his burden on the manufacturer.

Mining codes and company regulations, when well enforced, operate to reduce the hazards of mining. Beyond this, many questions have to be settled by some one using his best judgment. The human element, particularly when adequate supervision is not the rule —and this applies to most hand-loading operations— is able to defeat the safety efforts of state departments and mine operators. To whatever extent it becomes possible to increase the man-day tonnage of underground labor, the fatal accidents per million tons mined will be proportionately decreased. The added hazard which may be expected through closer grouping of men in concentrated workings should be neutralized by the direct supervision thus afforded.

SPECIALIZATION SHOULD INCREASE SAFETY

Another factor of safety is expected to result from mechanization of mine operations. Nearly every man employed underground will be a specialist in some line, educated to his job. As such he can be expected to take better care of himself.

It is the duty of engineers to insist that safe equipment be specified, and it is the obligation of mine managers to provide for its operation in a safe manner. The United States Bureau of Mines defines in its certificate of permissibility not only the limitations of design but also the conditions of operation. Gears and chains should be guarded, electric motors should be enclosed, stray currents should be traced and eliminated, ventilation must be positive, supervision must be adequate and intelligent.

The operation of a coal mine is much like playing a game of chess; rather, a simultaneous series of games. In one game, the manager is matched with the requirements of his market, in another with his labor situation, in yet another with the physical conditions of his property. In each game he is dealing with an infinite number of possibilities with a limited number of variables. Of necessity he must win each game. Mechanical loading may be a handicap in one game, but a decided advantage in another one. To accept a handicap in an easier game may be wise if that handicap is turned to an advantage in the more difficult game.

The general use of mechanical loaders will yield some results of general advantage to the industry. Large companies can dominate the field, because the coal pirate will no longer be able to raid the market. The destructive competition of low-wage fields in the natural markets of the higher-wage districts will be somewhat neutralized, as the direct labor cost will represent a smaller fraction of the total cost of production.

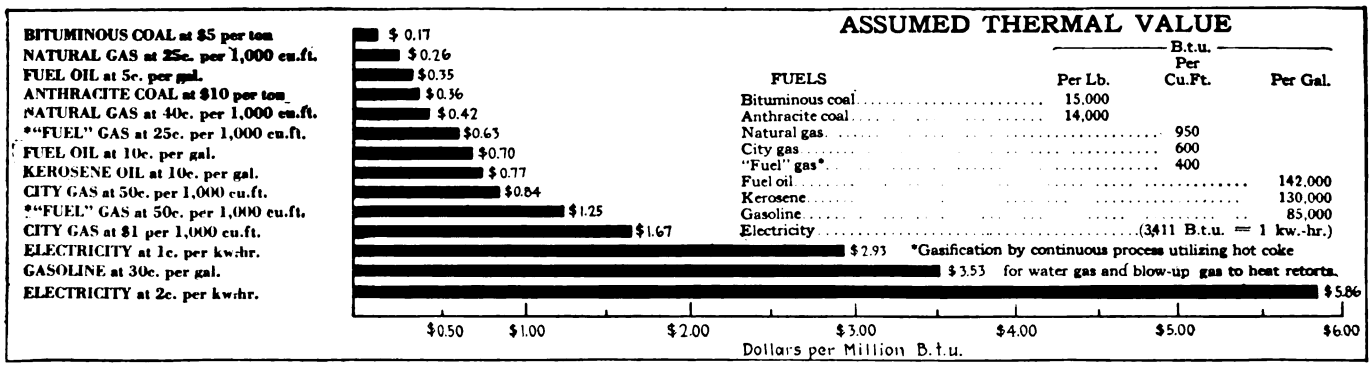
BENEFIT TO THOSE WHO ARRIVE FIRST

As there are now mechanical loaders that will operate successfully even under unfavorable conditions, the mine operators who first see the light and follow the pioneers will derive the greatest benefit in decreased costs of production and larger profits. The motto of the average man is this: "Be not the first by which the new are tried, nor yet the last to lay the old aside." Such operators will load their coal by mechanical means only when the competition of their neighbors drives them to it. The pioneering has been done. Who shall decide when we have advanced beyond the experimental stage!

The cause of mechanical loading might seem, from the foregoing discussion, to be beset with many difficulties. The importance of the pros and cons is not always to be judged by their number. The big advantage—cost reduction—is sufficiently large to be almost certain, if the engineering judgment is not at fault. There are many other savings and advantages, known as intangibles, which are not always reflected in the direct costs, but which result eventually in additions to net revenue. These may be merely mentioned. Their importance will be readily apparent.

Mechanical loading means concentration of mine workings; delivery of tonnage from one-quarter to one-half of the present developed area; rapid development and recovery in new properties, resulting in quicker, therefore greater, returns from the original investment; saving in timber through the more rapid evacuation from the territory being operated; saving in steel rails, mine ties, trolley wire and bonds for the same reason; possibility for better supervision and greater safety for men and machinery.

Coal Is Cheapest for Heat Treatment of Metals



This chart, compiled by the W. S. Rockwell Co. of New York, is intended to show that, upon a basis of cost per million B.t.u., coal is the most economical of all sources of heat for the treatment of metals. The chart covers the comparative cost at assumed unit prices and assumed B.t.u. per unit of consumption of fuel. Furnace design and many other factors enter into the heat treatment of metals but the fuel cost, taken alone, is represented here. It is heartening to see what a lead bituminous coal has over all rivals.

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Wet Haulage Slope Kept Free of Ice by Split Of Air Passing Up It

Abandoned Old Slope in Coal for a Steeper Slope in Rock That Saved Trackage to Tipple—Use Former Slope as Intake—New Road Reduces Height Coal Has to Be Hoisted

By Thomas Murphy
Master Mechanic Northwestern Improvement Co.,
Roslyn, Wash.

BY MAKING a new slope in the roof rock, the Northwestern Improvement Co. shortened its haulage underground nearly half a mile and cut down its surface haul almost three-quarters of a mile. This gave a more permanent slope and one that had a grade more nearly in accord with that of its extension within the coal bed. Moreover, it saved hoisting the coal as high as was formerly the case, the top of the new slope being 120 ft. lower than the top of the old one. But the new slope was wet and icy in the winter season, so 2½ per cent of the air delivered to the mine was allowed, in the winter months, to pass back out of the mine up the slope. This kept the roadway in good working order. The old fan was kept in place and could be run by steam-driven power equipment provided the hydro-electric power-driven fan should be closed down for lack of current.

The Northwestern Improvement Co. at present operates three mines in the Roslyn-Cle Elum field of Washington, all of which are equipped with modern hoists, fans, and screening plants, and within the last year have been thoroughly rock-dusted.

This company's No. 5 mine was opened in 1904. The original opening was a slope starting in the bed, where the coal outcropped in a shallow gulch on the mountain side, and heading straight south down the pitch which is approximately 20 deg. at this point.

The main slope has an average width of 12 ft. and there is an airway and a manway on either side of the slope. Levels were turned off the slope east and west on about 500-ft. centers and driven 1 deg. to the raise. Rooms 20 ft. wide on 50-ft. centers were driven straight up the pitch. The old slope was driven down 4,000 ft. where the Eighth West and Ninth East Levels were turned.

COAL BEYOND SLOPE PITCHES 36 DEG.

It was then found that the pitch of the bed increased to 36 deg. Diamond-drill borings disclosed the fact that this pitch continued for 2,000 ft. further south into a syncline. As all the coal had been worked out above the Seventh Level and as the 4,000-ft. haul up the old slope together with a 3,600-ft. locomotive haul from the top of the slope to the tipple was too expensive to operate, it was decided to drive a new slope on a 30-deg. 30-min. pitch through the rock to the surface from a point on the Eighth West Level 500 ft. west of the old slope.

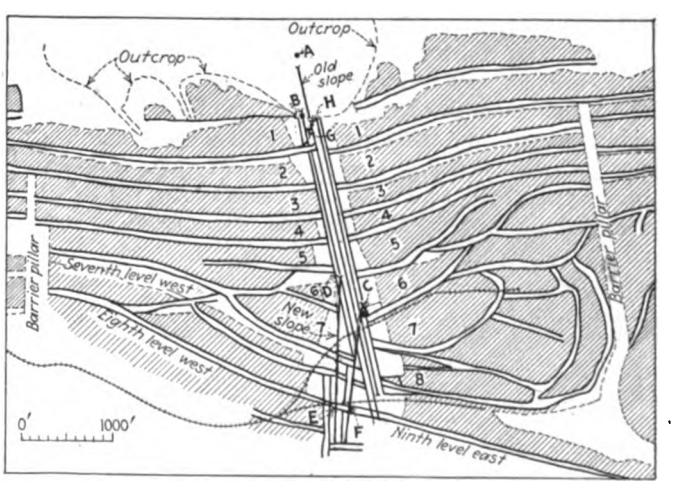
The slope was driven 7x14 ft. for a double track and is 1,500 ft. long. An 800-hp. double-drum single-reduction geared hoist connected to a 2,300-volt slip-ring motor was installed to provide transportation.

The accompanying rock airway 7x12 ft. was driven on a 45-deg. pitch. To provide ventilation a 6x7½-ft., double-inlet multi-vane fan, belted to a 75-hp. 2,300-volt induction motor, was erected.

In driving the new slope through the sandstone formation much seepage water was encountered, but no great quantity in any one place. After the slope was finished it was found that the seepage, amounting to about 25 gal. per minute, continued to come in through the roof, sides and floor. This was no serious matter in non-freezing weather—in fact it served a good purpose for it kept the slope damp.

This locality being east of the Cascade mountains there are usually two or three months of rather severe weather in the winter, and much trouble is experienced from the ice which forms on slopes when used as intake airways. As the old slope is being maintained to the Eighth West Level as a third opening to this mine, as required by the Washington state law, some air is taken in that way, the quantity varying with the outside temperature, being more in summer than in winter, as the top of the old slope is 120 ft. higher than that of the new one.

As the fan was still in place at the mouth of the old airway it was decided to force all the ventilating current down the old slope during freezing weather. This was accomplished by opening a crosscut between the old airway and the old slope near the fan, building a stopping in the airway just below the crosscut and installing a door in the mouth of the old slope. Now by operating the old fan as a blower at 100-r.p.m., 80,000 cu.ft. of air per minute is forced down the old



Slope in Roof Rock Decreases Maintenance Cost, Shortens Haul and Lowers Hoisting Lift

In the figure *A* is the old, discarded engine house; *B* is the old blowing fan; *C* is the new exhaust fan; *E. D.* is the new slope with its mouth at *D*; *FC* is the aircourse with its mouth near *C*; *C* is the new fan; *G* is the crosscut leading from the old blowing fan to the old slope and *H* is the door at the mouth of this slope.

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slope onto the Eighth West Level whence 78,000 cu.ft. is taken through the mine by the new fan acting as an exhauster, the remainder, 2,000 cu.ft., passing *up* the new slope to the outside. Having been warmed by its passage down the old slope it prevents ice from forming on the new one.

The new fan is driven by an alternating-current motor by purchased hydro-electric power, as ordinarily no power is generated at either of the mines now being operated by the Northwestern Improvement Co. in this field. However, at No. 7 mine, which is located about one mile east of No. 5 mine, there is a 300-kw. steam-engine driven generator which is kept ready for emergency service at all times, consequently the old fan at No. 5 mine has been equipped with a 550-volt direct-current motor, the idea being that in case the power from hydro-electric sources fails the old fan motor can be supplied with power from the steam-driven generator at No. 7 mine and ventilation in No. 5 mine be maintained. It having been found that with the new fan shut down and the old fan running as a blower, all the change that is necessary to maintain ventilation is to close the steel fire door at the mouth of the new slope to keep the air from escaping at that point. The air then travels through the mine in the same direction as it does with the new fan running and passes out of the mine through the new fan.

British Battery Charging Is Often Wasteful

With Celluloid Cases In Use It Is Dangerous To Draw Current From Lighting Circuits Unless Contacts Are Good and Leakage Prevented

By L. Fokes
Walton-on-Thames, England

MOST of the collieries in Great Britain have miners' lamps which, of course, have to be charged daily. The lamps are not, however, always charged in the safest and most economical way. Lamp rooms are often left in charge of more or less unskilled hands, yet the need for careful and intelligent treatment is perhaps more important than with many other forms of electrical apparatus.

Safety-lamp batteries usually are charged in batches which are connected in series. A favorite method in the British Isles is to make use of the electric lighting supply, connecting the cells in series with a number of lamps which act as a resistance. British mine managers apparently seldom realize how wasteful of electrical energy is this crude method of charging batteries and how dangerous is the practice with battery cases made, as is often the practice in Great Britain, of celluloid, which is an inflammable material.

The voltage employed for different systems of lighting varies considerably. In some instances, the pressure may be as high as 250 volts. There is a distinct danger of fire when charging cells on these higher voltages. Some manufacturers have abandoned the use of celluloid, but it is still widely employed for this purpose. Cells of this kind, of course, require the most careful treatment.

Quite mistaken ideas are prevalent as to the actual effect of introducing a resistance in series with batteries, which are to be charged from an electrical circuit the voltage of which much exceeds that of the cells connected for charging. It is often imagined that lamps or other forms of resistance reduce the voltage. They do nothing of the kind. They merely prevent the current exceeding a predetermined limit. Take for example

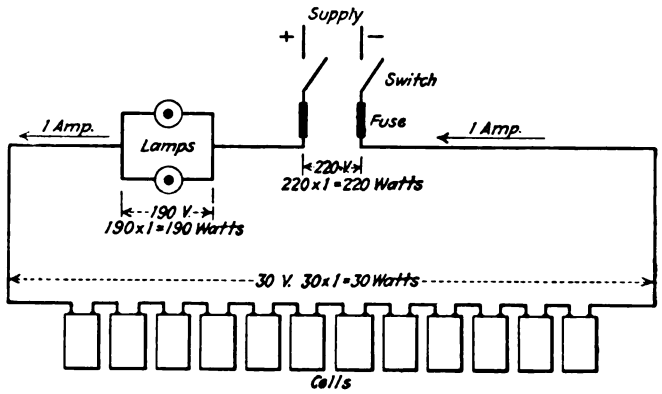

Fig. 1—Simple Charging Arrangement
Many people mistakenly think that lamps or other resistance reduce the voltage. In a case like this they merely prevent the current exceeding a predetermined limit.

a simple arrangement as shown in Fig. 1. It will be noted that the pressure of the supply is 220 volts, and twelve cells are connected for charging. The voltage of the cells in series when first connected may be between 20 and 24 volts. Obviously one or more 220-volt lamps—if more than one they will be connected in parallel—must be placed in series with the cells, the combined current of the lamps being equal to the charging current which may be assumed in this instance to be one ampere.

Now the voltage necessary to pass this current through the cells naturally must exceed that of the cells themselves, and a voltmeter connected across them when the current is passing might show 30 volts. If now the voltmeter be connected across the lamps the reading —assuming the wires have negligible resistance—will be the difference between 30 and 220, that is, 190 volts. Notwithstanding the fact that the pressure across the cells is 30 volts with current flowing, a broken connection in the batch of cells as indicated in Fig. 2 not only interrupts the current, but across the break there immediately exists the full supply voltage. It will thus be seen that a bad contact will give rise to arcing which might generate sufficient heat in the cell terminals to ignite the celluloid of one or both of the cells between which the defective contact has occurred.

Fire Destroys Celluloid Cases

Further, if there is a complete break and the cell cases and charging stand are dirty or covered with a film of acid, the full pressure of 220 volts is sufficient to cause surface leakage, and many instances are on record of the complete equipment being destroyed by fire originating from this cause.

There are circumstances, of course, in which there is no practical alternative to this method of charging. In these cases the maximum of safety from fire can be obtained only by insuring that all terminals and contacts on charging stands are cleaned and secure. The stands themselves should be free from dirt and acid. A thin layer of fish oil will give effective protection against such leakage. Still it is unwise to leave altogether unattended cells that are being thus charged.

Nor is it generally realized at British mines how ineffi-

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cient is the ordinary method of charging batteries from a lighting supply. The distribution of the power consumed in the simple charging circuit of the type described is shown in Fig. 1. Now the power in watts in a direct-current circuit is equal to the product of the voltage and the current passing. Thus in Fig. 1 we have a current of 1 amp. circulating through lamps and cells. The voltage across the whole of the cells equals, say, 30 volts as shown; therefore the actual power being absorbed in charging the battery is $30 \times 1 = 30$ watts.

Across the resistance formed by the lamps there exists $220 - 30 = 190$ volts and therefore the power absorbed in this part of the circuit is $190 \times 1 = 190$ watts. Thus we see that for every single watt consumed in charging the battery, more than six watts are wasted in the resistance.

On a similar circuit with the same number of cells the proportion of power wasted remains the same regardless of the capacity of the cells and their charging current.

It may be argued that the whole of the energy might be utilized in a 220-volt circuit by connecting in series, where a large number of lamps are employed, a sufficient number to absorb the whole voltage and dispense with anything but a small resistance for minor adjustments.

FIRE RISK WITH SHORT CIRCUITS

It would be extremely unsafe, however, for short circuits would have serious results, and fire risks would be extremely great. In general, it may be taken that no single series of cells should contain so many units as to require in excess of about 50 volts equivalent to, roughly, 18 cells. When a large number have to be charged they should be connected in parallel groups of 18 in series. For instance, in an installation where, say, 250 cells are charged for each shift these would be connected in 14 groups, and if each required a charging current of 1 amp. the total current will be 14 amp.

To charge these from 220-volt circuit under the conditions specified would give a distribution of power consumed in charging the cells and in the resistance respectively as follows: (1) In the cells 14 amp. $\times$ 50 = 700 watts. (2) In the resistance 14 amp. $\times$ 170 = 2,380 watts. In other words the actual charging would consume per hour 0.7 kw.-hr., and would waste 2.38 kw.-hr. This does not appear much on the face of it, but if this loss continues over say 4,000 hours a year the loss would be important in these days when coal-production costs have to be reduced to the minimum.

Undoubtedly the most efficient and in the long run the most economical method of charging miners' electric safety lamp cells, is that customary in the United States and in some mines of Great Britain—by the use of the motor-generator set. Thus, if the supply is 220 volts, the set would be made up of a suitable motor to run on that voltage coupled direct to a motor giving a 50-volt current. Where, say, 250 cells are to be charged at once as in the case just considered, the energy required to charge the cells was 700 watts. If the combined efficiency of dynamo and motor is placed at 70 per cent, the motor would take about a thousand watts and, therefore, the power consumed in charging for say 4,000 hours would be 4,000 kw.-hr. as against 9,520 kw.-hr. charging direct from the supply in series with a resistance, or a saving of 5,520 kw.-hr. a year.

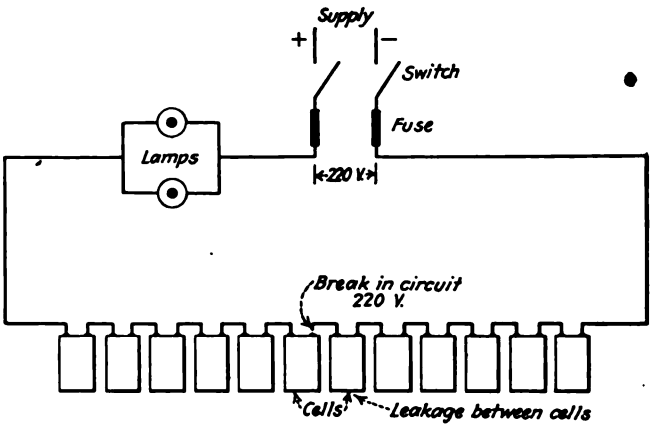
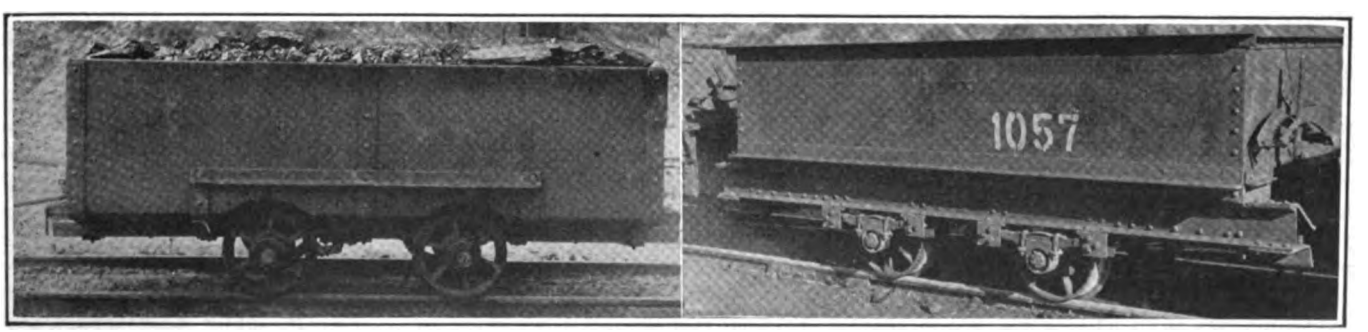


Fig. 2—Danger Develops Here

A broken connection in the batch of cells interrupts the current and across the break there exists the full supply voltage. Arcing might generate enough heat in the cell terminals to ignite the celluloid battery cases such as are often used in Great Britain.

The depreciation on a motor-generator of this kind would be small, and its cost would be saved in two or three years, depending on the cost of power. In addition the voltage would be that most suitable to the work to be performed and even with celluloid battery cases almost complete security against fire. It should be stated that with a motor-generator set similar to the one described it is necessary to connect a rheostat in the shunt field of the motor for regulating the speed and in that way the voltage generated by the motor-generator set. This is because a somewhat higher voltage is needed to maintain the full charging current when the voltage of the cells begins to build up and opposes that of the motor-generator set. This may be obtained by slightly increasing the speed of the motor generator.



Steel Cars Are Coming into Their Own in Phelps Dodge Corp. Mines

The company, which operates a group of highly modernized properties at Dawson, N. M., has put 30 of these two types of cars into service and hopes to standardize on certain styles. The one at the left has a capacity of 90.3 cu.ft. level full, and the other one of 90 cu.ft. Each type is equipped with roller bearings. That on the right is spring-mounted with spring bumpers.

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Viewpoints of Our Readers

Coal Not a Suitable Agent For Ice Removal

The editorial of March 4 on "Coal as an Ice Remover" should cause no undue excitement among city officials concerned with snow removal for it has no real possibilities of usefulness.

Melting snow and ice by the application of artificial heat with different types of devices seems to present theoretical possibilities which never have been realized in practice.

As a youngster I recall the elaborate snow melting apparatus at Cooper Union, New York City, way back in the winters when Colonel Waring was boss of the white wings. Heat did melt the snow and ice, but apparently it was cheaper and quicker to haul the material by trucks to the waterfront and dump it into the East River. Next season the Colonel with his white uniform and fiercely waxed mustachio told the engineers at New York University about the unsatisfactory results of tests on melting snow.

Many Unsuccessful Trials

Every time a big snowstorm blocks traffic and the newspapers reflect public impatience with street-cleaning methods, new devices and old friends in new dresses take pot shots at the impotent street cleaners trying to beat nature in her own sphere —not possible when the old lady is on a rampage.

Melting snow with steam, gasoline, fuel oil, electricity, hot water and salt have been tried time and again but with little success in New York. Salt is quite successfully used in Great Britain but climatic conditions are adverse in this country—our storms are more frequent and fiercer, temperatures before and after the storm are lower. Heat in various forms of application is a favorite panacea for "removing the snow as fast as it falls."

In reference books snow is quoted as weighing 5 to 12 lb. per cubic foot, but actually it weighs much more, so it is not safe to base any computations for heat treatment on anything less than solid ice. Again fresh snow is an excellent non-conductor, of the air-cell type and the specific heat as well as the latent heat of liquefaction of a mound of snow on the street may be quite different from that of a laboratory sample. Whether this is actually true or not, the theory that it is seems to agree with practical failures to remove snow expeditiously and cheaply by the application of heat.

Vaults Already Under Walk

Your suggestion about melting snow on sidewalks looks reasonable, casually considered, but apparently would require special and expensive new types of sidewalks because most large buildings in New York City already utilize the space under the sidewalk as vaults, many of which are heated. Sidewalk vault covers of steel supplied with heat from the building do not seem to melt snow and ice. There is something wrong with the theory of melting snow and ice by means of heat. It does not work in practice.

It would be interesting to design and estimate the cost of completely equipping two main thoroughfares in New York City for removing snow as fast as it fell. Better, however start with an outlying street without subways, water pipes, electric conduits, telephone ducts, pneumatic tubes, sewers, fire-alarm signals, etc., etc., and create a heat-conducting base and wearing surface for the pavement. No, I do not mean to be a joy killer—any possible improvement in speed and economy of snow removal in congested city districts is worthy of engineering thought and action but snow removal after all is more a matter of *organizing* and *managing available forces and equipment* than of creating special apparatus for emergency use—hardly ever justifiable economically or practically for snow removal.

New York City has drifted into the habit of spending five or six million dollars per snowstorm and why not? The newspapers recently quoted one of the District Attorney's staff as saying that half the six million was wasted or lost through grafting. Personally, I can hardly credit this statement, but it was published and nobody got "het up" over the situation. "What's the use?"

Having graduated from street cleaning to mining, I must say that the chances for expanding the coal or salt markets for snow removal do not seem to be bright, though queerer things have happened in this odd world of ours.

J. T. FETHERSTON,
Vice-president, Sterling Salt Co.
Cuylerville, N. Y.
Commissioner of Street Cleaning
New York City 1914-1918

Trolley Installations Also Have Upkeep Charges

I read with much interest the editorial on "The Battery Locomotive," recently published in *Coal Age* and was greatly surprised to note the statement that *many* battery-equipped gathering locomotives were being converted into cable-reel type.

In my judgment the editorial is biased and not at all fair to the builders of battery locomotives or to the manufacturers of storage batteries, or even to the mining men who would take the statement as being one of fact. One would suppose from what is said that the day of the storage-battery locomotive in coal mines would soon be past; whereas the reverse is true, some of the leading coal companies of the country are doing away with trolley and reel and cable equipment and operating so-called wireless mines. In fact, such applications of battery locomotives are on the increase.

Battery Units Increasing

When the editorial remarks that "many battery equipped gathering locomotives are being converted to the "cable-reel type," it misuses the word "many." Let it be granted that there are a few isolated cases. What of that? The new equipment by far outnumbers the equipment being converted. I know of one builder of storage-battery locomotives who last year did more business than in any year since 1920.

You state the major reason for the change is the lump sum nature of the upkeep cost. I gather that you mean battery replacements. Would it not have been better to have gone a step further and explained that, by side-stepping the issue of the battery replacements, owners had better go slow or they would be jumping from the frying pan into the fire, as there are many daily operating costs which go hand in hand with reel and cable and trolley equipment. There is the constant purchase of

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trolley-line material, bonds, the cost of installing the latter and the daily maintenance which this class of feeder demands. We then have an added expense of safeguarding the trolley wire at all passing points which, if not protected, will always prove a great hazard to the employees.

Eminent electrical engineers have made exhaustive tests and proved beyond doubt that storage-battery locomotives, from a power consumption standpoint, are the most efficient equipment ever designed for coal-mine service. By the use of trolley locomotives we have in most fields increased power bills and incurred a maximum demand charge. These costs coupled with the purchases of locomotive feeder cable, will ordinarily about equal the battery depreciation cost.

IS CLEANLINESS A NEW VIRTUE?

The editorial says that cleanliness is the secret of low cost of battery maintenance. Is not that the case with all classes of equipment? Why pick on the battery? As a matter of fact, a pail of water, a little soda and fifteen minutes' time, coupled with a reasonable degree of horse sense, applied each week will keep the batteries clean.

Give the battery locomotive sufficient capacity with which to do its work and I feel sure that in the majority of cases, it will win out over the reel and cable equipment, if all credits and charges are placed where they should be. One could go on further and bring out many operating features of an economic nature declaring the advantages of storage-battery locomotives over the reel and cable type, but to what end—they have been hashed and re-hashed in the very magazine that contains the editorial I am criticizing.

In conclusion, I would say that it has been my pleasure to operate fifty storage-battery locomotives for the past nine years and during that period this equipment has been the least of my troubles. Of course, the depreciation of the batteries is taken care of in a business-like way. Battery renewals are anticipated and the monthly depreciation costs allowed. Why use up the profits obtained by the use of such equipment for other purposes? Do the operators of reel and cable locomotives wait two or three years to pay their cable bills and maximum demand charges? No, they pay for them monthly and any wide-awake operator will also take care of the monthly battery depreciation in the same manner. I write this as an expression of my personal point of view and not as being an official of a coal company.

JOSEPH A. LONG,
Electrical Engineer
Glen Carbon Coal Co.,
Glen Carbon, Ill.

Battery Locomotives Increasing

The editorial appearing in the Feb. 11 issue of *Coal Age* entitled "The Battery Locomotive," in my opinion is liable to be misunderstood. The actual facts on the use of storage battery locomotives, according to figures which we have carefully compiled each year, have shown that there has been a consistent increase in such equipment and the number of battery locomotives in service at the end of 1925 is 13 per cent greater than the number in service at the beginning of 1923, and, furthermore there are more storage battery locomotives in use today than at any time in the past. Tests have proved that they will gather in the same time and under the same conditions more tonnage than cable reel locomotives and at a lower cost.

QUESTIONS SUBSTITUTION

During the past year there have been few instances, found by our staff, of operators changing from battery-locomotive haulage to another system. If you know of any such instance and will make a complete investigation you will no doubt find, as we have, that the change is due either to misapplication or to gross neglect and abuse of the equipment, which is certainly not a reflection on the equipment itself. There have been a number of instances reported of mining companies changing from reel motors to battery motors. For instance, the Calumet & Hecla Mining Co. recently changed five reel gathering locomotives to battery locomotives; the Valier Coal Co. of Valier, Ill., changed two reel locomotives and we are informed that they expect to change several more before the end of the year. Reports that we have received indicate that more cable-reel motors are being changed into battery motors than is the reverse.

BATTERY MANUFACTURER.
Philadelphia, Pa.

Don't Use Acetylene to Form Cap of Safety Lamp

Your Feb. 11 issue of *Coal Age* on page 233, contains a short illustrated article describing an apparatus to aid in training firebosses in testing for gas. If methane were the gas to be used, the device and the idea could be heartily approved, but the use of acetylene as the testing medium introduces an unnecessary hazardous element.

The ignition point of acetylene and air is considerably lower than that of methane and air, the temperature range being 760 to 824 deg. Fahr. for acetylene and 1,202 to 1,382 deg. Fahr. for methane. Moreover, the oxyacetylene flame from 1 unit by volume of acetylene and 1.7 units by volume of oxygen has a temperature of 6,300 deg. Fahr., thus constituting one of the hottest flames that is used in industry.

ACETYLENE FLAME PASSES GAUZE

Under certain conditions, the acetylene passing through the gauze of the safety lamp will ignite and will produce a flame hot enough to heat the gauze, which in turn will ignite the gas outside the gauze but within the glass box, and an explosion will follow.

This is exactly what happened when a professor in one of our universities was demonstrating the principle of the safety lamp in a mixture of acetylene and air. The professor was knocked down and slightly injured, and the two observers were knocked across the room. The professor's apparatus differed from that described in *Coal Age*, in that a box that had contained permissible explosives was used. A small section of glass was introduced into one side of the box for observation. The explosion occurred almost as soon as the safety lamp was placed in the box, and the claim that the heat from the lamp caused the nitroglycerin absorbed by the box to explode is not worthy of serious consideration.

There will always be the hazard that a violently explosive mixture of acetylene and air may be present in the glass chamber and the introduction of the flame safety lamp is almost certain to ignite the mixture with disastrous results to those in the immediate vicinity.

R. E. SIMPSON,
Engineer.
The Travelers Insurance Co.,
Hartford, Conn.

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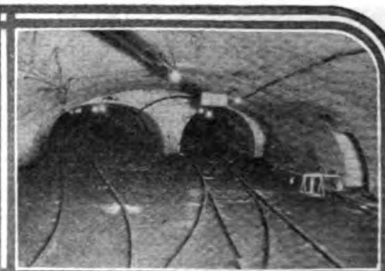
Underground Operation



When Ventilation Stops, Temperature Rises, Seams Expand and Emit Gas

Gas Gathers When Fan Is Run with One Opening in Mine Closed—Steam Pipes Cut Roof—Ribs Spall with Reduced Air

By F. C. Cornet
Brussels, Belgium

Many years ago, at the time of the firedamp investigations made in Great Britain under the direction of Henry Hall, Inspector of Mines, numerous experiments were made to ascertain the influence of barometric pressure on the emission of gas at the working face. With the idea of creating an artificial atmosphere in a certain mine, the intake shaft was closed as tightly as possible by a wooden platform covered with tamped clay. The fan, an exhaust one, was kept running at its usual speed, thus maintaining unchanged the usual water gage, which was 2.36 in.

After 7 hours, when the air current had been so reduced that the anemometer did no longer revolve it was observed that the barometric pressure in the mine was only 0.157 in. lower than when the proceedings commenced. The emission of gas, however, had increased in the proportion of 235 to 100. This increase was considerably greater than the investigators had ever had occasion to observe in the same mine when, from natural causes, the mercury had fallen to the point where it was brought artificially by the means described above.

NOT DUE TO PRESSURE FALL

It is evident that a factor, not thought of at the time, added to the decrease in barometric pressure to cause the large increase in gas emission observed by the British investigators. This factor, I am now inclined to believe, was the marked increase in temperature that must have made itself felt in the mine, especially along the working faces, due to the long interruption of the ventilating current.

That an increase of temperature at the working face may result in stimulating the emission of gas would have seemed a bold assertion a dozen years back. But at the present time, the idea is being accepted by an ever-increasing number of engineers who have had occasion to gain experience in the mining at great depths of gaseous seams of coal. The following array of proved facts may convert others to the same belief. Operators of deep mines well know how variations in temperature affect the cost of maintenance of underground openings. Despite the regulating effect of a deep intake shaft, the air reaching the bottom is always warmer in summer than in winter, causing more falls of roof, more caving of ribs, more swellings of bottoms.

HEAT DESTROYS MINE

In a deep mine I know well, in the region west of Mons, Belgium, the cost of maintaining the haulways, which are all in the intake, was reduced in the proportion of 40 to 100 when electricity was substituted for steam to drive a certain underground pump. The steam was sent from the surface through a pipe placed in the intake shaft. This heated the air going down into the mine, with disastrous effects on the maintenance of the roads. That pipe is still there, but they use it only when electricity fails them.

On every such occasion, there is a prompt and marked increase in the cost of keeping the roads in good order. In other words, there is an immediate return to the old conditions. I might cite several other similar cases. One will suffice. It must be noted here that, always, when for any reason, there is an increase in the temperature of a mine, all places affected by it bear their share of the resulting trouble: the strongly timbered roadways maintained through the gob and all the other places, timbered or not, driven in solid coal, or across the measures from seam to seam.

It would certainly be a difficult matter to explain scientifically why an increase in temperature is followed rapidly by an increase in strata pressure, but whatever the unknown cause may be, its effect has, long since, been recognized.

The rapidity with which the effect follows the cause is sometimes so great that a short interruption of ventilation may result in considerable damage. The fan must be kept running at working-day speed on Sundays and idle days when no one is occupied underground. Even in time of strike, ventilation must be maintained in full, in order to keep down the temperature of the workings.

The following test made recently for the benefit of a group of mining students is not different from similar experiments made in the course of every year for the same educational purpose. Nor does it reveal conditions worse than in the majority of the mines in the Mons region.

LESS AIR, MORE GAS

The current ventilating a 360-ft. face was reduced, by short-circuiting, from 6,300 to 840 cu.ft. a minute. When the experiment began, little gas was issuing from the coal, although the seam is one subject to blowouts. The place was quiet and silent. In less than three hours, the timbers began to crack and bend, showing a heavy increase in strata pressure. The face became fissured from end to end. Gas was emitted abundantly, making a noise like that of running water. From time to time, splinters of coal, some weighing over a pound, were violently projected into the gob back of the

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timbers. A student was painfully cut on the head by one of those flying missiles. Before the air current was short-circuited, a temperature of 68.6 deg. F. had been observed along the face. When the timbers began to crack, the thermometer showed 92.5 deg. F. Half an hour later, just before ventilation was reestablished in full, the temperature was 96.7 deg. F.

One hour and twenty minutes later, all was quiet again along the face, although gas continued to ooze in some abundance, but silently, from the cracked and partly crushed, coal.

This experiment shows clearly, I believe, the mechanics of the heated strata. The increase in temperature has no direct effect on the gas contained in the seam. It is the increased movement of the strata that causes the coal to act as it does. The expansion of the seam which, previously, was slow, perhaps unnoticeable, became accelerated by the increased heat and that acceleration of seam expansion resulted in an acceleration of gas emission. In a previous article, one on gas blowouts (*Coal Age* of March 1, 1923), I have shown what relation seam expansion and gas emission have to each other and why, the more rapid and complete expansion or crushing of a seam will be, more rapid and complete the emission of gas will also be.

Hazardous Way of Shooting Coal Bottoms

In many mines the lifting of "coal bottoms" or "machine scrappings" (the coal left under the machine cut) is assisted by the use of explosives. Where this is the practice, holes are often dug with a pick and in each of these may be placed from one to two sticks of dynamite, this charge being generally covered with slack. The firing of thirty to forty shots consecutively in a single place is not unusual.

Some permissible powders when completely detonated in a drillhole, produce 158 liters, or 5½ cu.ft., of carbon monoxide for each 1½-lb. charge. Dynamite will produce several times that quantity of gas when exploded in a hole dug by a pick and lightly covered. Such shooting is scarcely to be differentiated from what might be termed shooting in the open. It is possible that 150 to 300 cu.ft. of carbon monoxide might be produced in a single place by detonation at short intervals of the number of shots mentioned. That the concussion from dynamite shots is far greater than that produced by black powder is known to be a fact.

Therefore, to a greater degree the dust in the immediate vicinity is suspended in the air. This combines with a large volume of carbon monoxide in an explosive mixture which under the circumstances is cocked and primed for an explosion. When dynamite is fired it produces more or less flame, so that it is indeed surprising that under the conditions explosions do not occur with greater frequency, particularly seeing that so many mines follow the practices described.

ONLY IF RIGHTLY USED

In the opinion of the Bureau of Mines permissible powder is permissible or safe only when properly tamped with non-combustible material and completely detonated in a drillhole. The shooting of dynamite in dug holes which are covered with dust and slack is extremely dangerous. Where bottoms or scrappings are lifted by shooting, the explosive should be placed in holes which are properly drilled and tamped with clay.

Furthermore, men should not be permitted to break slate by dynamiting in the open. Instead short holes should be drilled in the slate and these properly charged and stemmed, which practice is better and safer than shooting without confinement. I know of two explosions which were caused by what is termed "dobing rock."

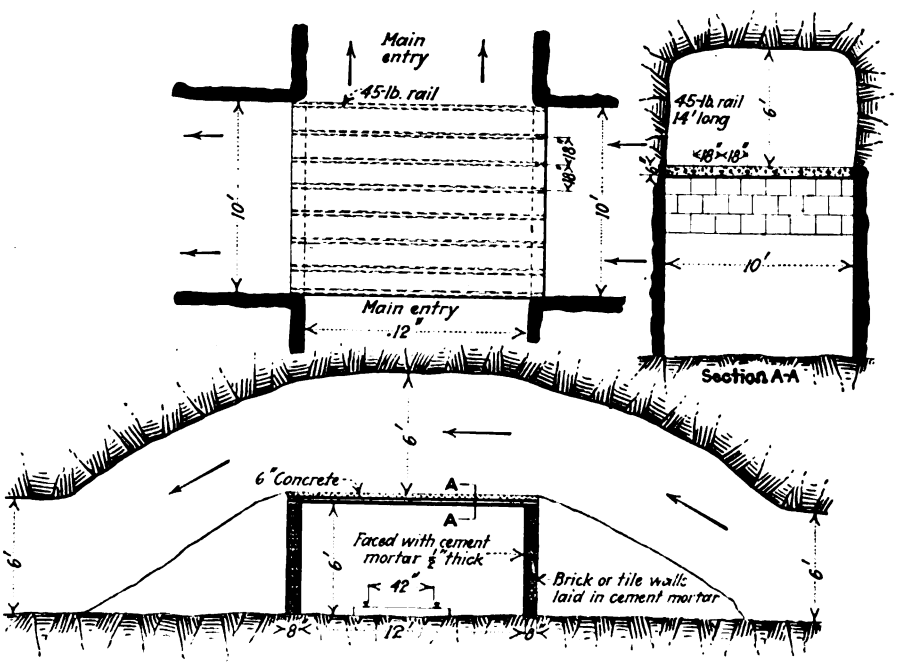
THOMAS G. HOYE.

Huntington, W. Va.

Every Mine Should Build Its Overcasts to Standard

Most mines utilize much the same kind of materials in the construction of overcasts—hollow tile or brick, mortar, concrete, steel rails and sometimes reinforcing wire mesh. But the design of overcasts varies considerably. More or less uniformity or standardization in the construction of overcasts should prevail, for the duty of these air crossovers is the same in every mine except for a difference in the volumes of air which are handled. Here are shown standard plans for the overcast construction in the mines of the Northwestern Mining & Exchange Co. near Dubois, Pa. They are so clearly detailed as to require no explanation.

The value of standards is that they prevent slovenly work by establishing a proper way to do everything by which actual accomplishment can be tested. Most overcasts need such a standard for as usually built they do much to interfere with the passage of air through the mine workings.



Standard Overcast of Northwestern Mining & Exchange Co.

Overcasts get little inspection, but they are of immense importance in mine ventilation. It is well to have a standard, so that poor work when discovered can be condemned as not according to schedule and there can be no rebuttal to the statement made. This overcast has a 6x10-ft. airway over the overcast and 6x12-ft. below. Apparently the upper airway carries only a part of the air circulating in the main roadway and does not need to be as generous in dimensions.

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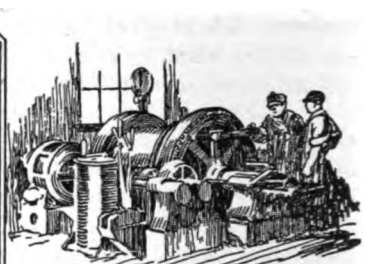
Practical Pointers For Electrical And Mechanical Men



Recording Thermometer Indicates When Load on Motor Is Safe

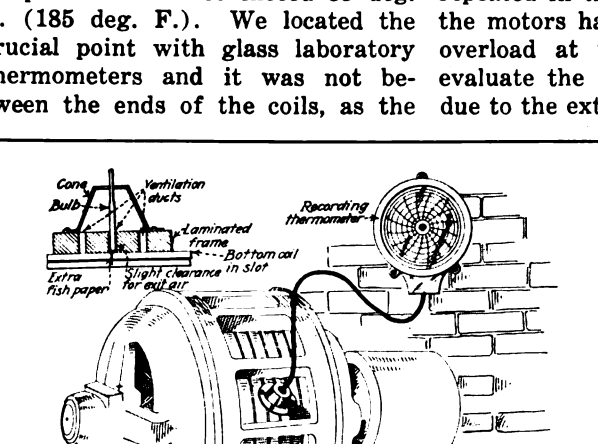
In our plant, says L. W. Cutler, in *Power*, there are two 50-hp. motors, which drive important machines, located where the room temperature is 40 deg. C. (104 deg. F.) in the summer and 21 deg. C. (70 deg. F.) in the winter. These machines are rated at 50 deg. rise above room temperature at full load and frequently are called upon to carry all the overload safely possible. In the winter we have little trouble, but in the summer it is evident that the over-all temperature is at the breaking-down point of the insulation. The usual method of limiting the current to full load rating or a conservative overload, by means of fuses or relays, could not be used, since the safe point would vary with the outside temperature.

Since the temperature of the hottest part of the winding was the governing factor, we located the specially shaped bulb of a recording thermometer there and told the operators to carry all the load they needed at any time, so long as the temperature did not exceed 85 deg. C. (185 deg. F.). We located the crucial point with glass laboratory thermometers and it was not between the ends of the coils, as the manufacturers suggested. The hottest point was in one of the exit ventilation ducts in the center. Here the thermometer bulb could be placed in contact with a bar in the bottom of a slot. The instrument makers made a special bulb which was a nice fit to the ventilation duct. As there must be a limited relation between the volume of the bulb and that of the tube, we limited the length of the tube to 3 in. so as to reduce the size of the bulb. At that, the smallest thermometer stuck out of the duct about 1 in.

Cone Retains Hot Air

A cone covering three ducts was fastened around the upper part of the thermometer. Thus, the protruding portion of the thermometer was bathed in the hot air coming from all three ducts.

Unfortunately, one of the motors was burned out before the thermometer was installed and the total cost of the repair must have been $350. The accident has not been repeated in three years, and I know the motors have carried 40 per cent overload at times. It is hard to evaluate the increase in production, due to the extra power available.



Recording Equipment

The hottest point was found to be in a ventilation duct. A special thermometer was built to fit it and a cone made to protect the protruding end of the instrument. Temperature is not allowed to exceed 185 deg. F.

Spare Parts for Oil Immersed Switches and Starters

After finding one plant of large size without any oil circuit breaker or starter parts worth considering, and a much smaller one with a stock of repair parts large enough for the larger plant and realizing that this condition probably arises from a lack of proper information more than from any other reason, I will here try to give some plans for checking up on spare parts and the number required.

Some men do not realize the importance of keeping spare parts on hand for even the little oil switches and starters. Many a time a delay of several hours may be prevented by having available small oil switch parts that only cost a dollar or so, each when the delay might cost hundreds of dollars, or at the rate of hundreds of dollars per day.

Power plant breakers are not opened often but they are opened under extremely severe conditions, usually on overload, and nearly always with at least full load. As they are not operated frequently no large supply of fingers and contacts need be kept on hand. The number of switches in a plant that have the same amperage capacity should be set down and each switch that is not interchangeable with the others should also be tabulated. Each individual switch for 3-pole service, which is the type most used, should have at least one spare wood connecting rod and from one to three movable contacts, this number depending on the size of the breaker and the service to which it is put. Some companies make switches that have the movable contacts cast solid. In this case it is well to supply a full set of these contacts, so that the burned ones can be removed and be built up by the welding process, after which they may be ground down to template. They may then be kept for repair parts. Of course, breakers of this type are intended for severe service such as is encountered in

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rolling mills. All the stationary contacts generally burn or pit about the same time and consequently need renewal almost simultaneously. The contact fingers are fitted with springs that deteriorate and these, of course, must not be heated by welding. The number of fingers required for individual switches generally amount to a full set. It is a good idea to keep a few contact screws and bolts on hand in case any should be broken. From one to three porcelain bushings may also be kept on hand but these are seldom needed except in lightning cases. Lightning bursts bushings quite frequently especially those used in connection with large transformers.

Where a number of switches are of the same amperage capacity the number of repair parts carried per switch may be materially reduced. One complete set of contacts and two or three wood connecting rods will suffice for several switches. Of course such switches should be examined at least every three months.

INSPECT SWITCHES MONTHLY

Power plant switches should be inspected about once a month and contacts that are burned should be filed down while any that are badly damaged should be replaced, or removed and smoothed up with a mill file. The condition of the oil in the breakers has a great deal to do with the burning of contacts. Dirty oil increases arcing materially. Oil in low-voltage breakers can be strained through a clean muslin cloth and used over again, but that employed in high voltage breakers (above 600 volts) should be filtered if used a second time. Some companies put in new oil every once in awhile and use the old for lubricating slow speed line shafts and small mill bearings. However, this oil has only small lubricating value.

Oil-immersed auto-starters generally have more contacts than the average switch. The starting contacts as a rule pit and burn oftener than do the running contacts. In one manufacturer's equipment the movable contacts are usually of the segment type. These segments are fastened by small tapered-head screws, a supply of which should be kept on hand, because they have to carry the current and burn so badly that they are hard to loosen or tighten when replacing contacts. A full set of movable contacts also should be kept on hand as well as several fingers.

The Westinghouse company is developing a starter that has the least contact trouble of any that I have seen. This is the type "A 2 starter." With a pushing, rolling effect, the contacts on this device give little trouble. A few spare contacts will suffice for this starter, and the bolts that hold the contacts never burn.

Each new part as it arrives should be tagged with the nameplate reading of the breaker to which it is adapted as well as the number of breakers of this type operated and the circuits that they control. This facilitates repairs. It is advisable also to keep a record of parts used on switches and the dates when they were installed.

GRADY N. EMERSON.
Birmingham, Ala.

Scrap Gasoline Locomotive Used to Advantage

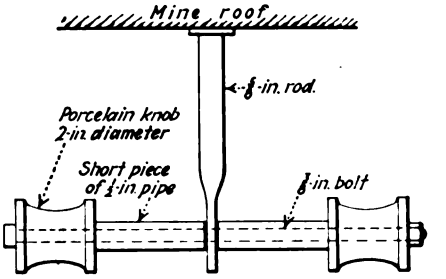
During the last three or four years much equipment has been scrapped and replaced by machines of more efficient type. This, of course, was due to the urge for lower operating cost; and the same urge has caused many companies to utilize parts which previously had been thrown into the scrapheap.

The accompanying illustration shows how the Empire mine of the De Bardeleben Coal Co., Empire, Ala., utilized an old 7-ton gasoline locomotive by installing electrical in the place of the internal combustion equipment. Two 28-hp. motors, with single-reduction gears, were mounted in the old frame.

Except for the sandbox it would hardly be suspected that the locomotive is a "half breed." This box is made from a short piece of 10-in. standard pipe. The bottom and top plates are secured in place by electric weld. The valve rod works in holes in the centers of these plates. The men at the mine are highly pleased with the performance of the locomotive and rate it as one of the best in their fleet.

Alabama Mine Uses Neat Hanger for Wires

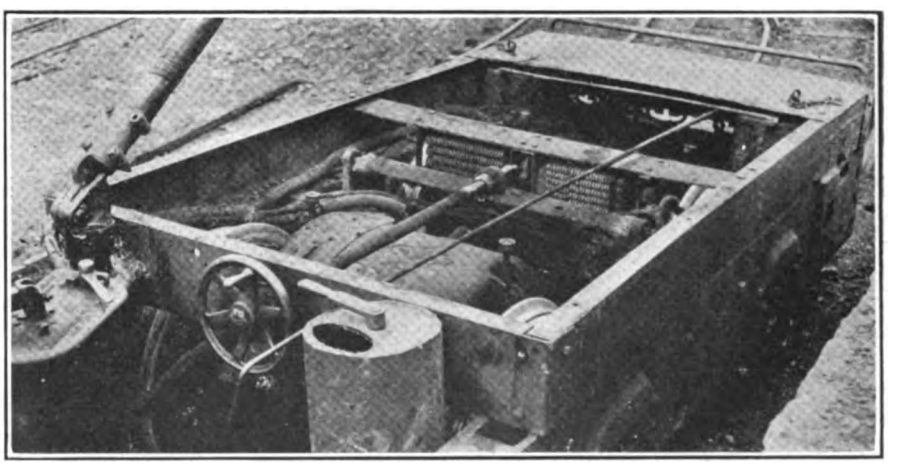
For telephone lines inside mines, bare wire seems to be used more widely than insulated. A disadvantage of using two bare wires, as compared with an insulated twisted pair, is that twice the number of insulators are required and likewise twice as many holes must be drilled unless some form of multiple hanger is adopted.



Support for Telephone Wires

This type of home-made hanger for supporting both wires from one roof bolt is used extensively in mines of the Woodward Iron Co., of Alabama.

The accompanying sketch shows the arrangement used in the Mulga mine of the Woodward Iron Co., Mulga, Ala. The hanger is fastened in the mine roof and the wires carried on grooved knobs. The ⅝-in. rod forming the center support is flattened at the lower end and a hole drilled through the flattened portion for the ⅝-in. insulator bolt. When available, scrap pipe is used to make the spacing bushings. The hanger is neat, inexpensive and serviceable.



Gasoline Equipment Replaced by Electric Motors

When an additional locomotive was needed at the Empire (Ala.) mine of the DeBardeleben Coal Corp., a scrapped 7-ton gasoline locomotive was rebuilt by installing two 28-hp. 250-volt motors. When the photograph was made the locomotive covers were removed to show the inside arrangement. Single-reduction gearing is used.

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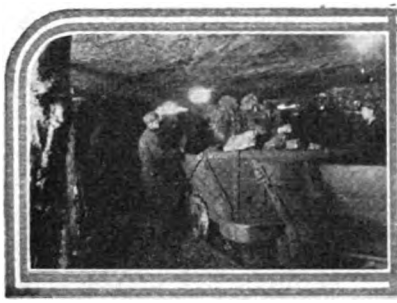
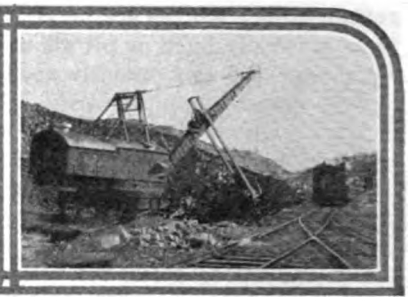


News Of the Industry



Federated Union Flops to U. M. W. As Strike for Jacksonville Scale Fizzles at Pittsburgh Coal Co.

The Federated Miners' Union of Western Pennsylvania, which was formed among employees of the Pittsburgh Coal Co. in western Pennsylvania, where the company is operating on the 1917 scale, voted to disband on March 18 and affiliate its membership with the United Mine Workers after calling a strike of its members. This action followed the alleged refusal of the Pittsburgh Coal Co. to accede to the demands of the Federated for the restoration of the Jacksonville wage scale.

Last Thursday night, officials of the Pittsburgh Coal Co. announced that the strike call would have no effect on its working forces, and this was borne out Friday morning, when a total of 1,855 men reported for work in the eight mines working, which was 10 more men than had worked the day before, when the strike was called.

The Federated Miners' Union was formed at a meeting in Pittsburgh on Dec. 22, 1925. A disavowal of allegiance to the United Mine Workers was the high spot of the organization. W. T. Harris, of Whitsett, Pa., was elected president, and John L. Hoffman of Van Meter, Pa., secretary.

P. T. Fagan, president of District No. 5, United Mine Workers, has welcomed the members of the dissolved organization into his union with open arms.

In a statement, the Pittsburgh Coal Co. said:

"The majority of our miners had refused to join the Federated Miners' Union. Any influence which Mr. Harris may have had with these men will be lost when they learn that he has delivered the organization which he formed to the United Mine Workers.

"The action of Mr. Harris in causing to be absorbed in the United Mine Workers the organization which he had formed in mines which were strictly understood to be operating independent of the United Mine Workers speaks for itself.

"The men who passed the resolutions were in no way representative of the miners working for the Pittsburgh Coal Co.

"The Pittsburgh Coal Co. permitted the official of the Federated Miners' Union to attempt to organize that union in their mines in the belief that Mr. Harris was sincere and that the miners desired an independent union. Events have proved that they do not want another union nor to pay dues to such a union.

"There can be no better proof of the utter failure of the Federated Miners' Union and its entire lack of influence among the miners than in the answer to this alleged strike call."

Secretary Hoffman, of the Federated Union, in a statement said, among other things: "The company has refused permission to the officers of the union to take up grievances in behalf of employed members and to pay the rates for extra work provided in the 1917 wage scale."

On Saturday, March 20, the company announced there were 89 more men in the mines than on previous Saturdays. On the other hand, P. T. Fagan, president of District No. 5, United Mine Workers, said that at least 500 miners in the eight mines of the company had laid down their tools and joined the union.

Ohio Operators Ask Cut In Union Wage Scale; Lewis to Defend Policy

A meeting of representatives of 200 coal operating companies in the Hocking Valley was held at Nelsonville, Ohio, on March 17 to devise ways and means of bringing about a reduction in the union wage scale in order that operations can be resumed at many of the mines in this section. Operators feel that unless a reduction is granted by the miners' union, the coming summer will see still further curtailment in production in the field. A committee consisting of Walter Wolf, Nelsonville; C. C. Sharp, Nelsonville; P. C. Morris, New York Coal Co.; N. D. Monserrat, Monserrat Bros., Columbus; O. C. Newton, Sunday Creek Coal Co., Columbus; G. S. Jones, Ohio Collieries Co., Toledo, and Dr. T. R. Biddle, Poston Consolidated Coal Co., Athens, was named to confer with John L. Lewis, president of the United Mine Workers, and other national officers in order, if possible, to obtain concessions in the scale.

Co-operation of the southeastern Ohio operators with those of the central and northern fields was recommended by W. H. Haskins, Coshocton, who reported an unsuccessful effort made by operators in the Coshocton field to get wage concessions.

The operators of the central and northern fields suggested to Mr. Lewis a return to the $5 per day wage for daymen and the selection of a central committee of miners and operators to sit in Indianapolis and telegraph prices of coal back to the mines until non-union competition of West Virginia and Kentucky was met. James R. Pritchard, formerly commissioner of the Southern Ohio Coal Exchange, desired that a conference be sought with President Lewis, believing that by such action responsibility for the future could be placed at the door of union officials.

Eastern Ohio Joins Movement

Eastern Ohio operators met at Bridgeport on March 20 and formally joined the movement to persuade the union to agree to accept a cut in wages from the Jacksonville agreement in order to meet competition from the non-union fields of West Virginia and Kentucky.

The James Paisley interests, of Cleveland, are reported to have sent a telegram to John L. Lewis, stating that unless concessions were allowed at once it would be necessary to close six mines of the company—three in Belmont County, Ohio, and the others in the union region near Morgantown, W. Va.

John L. Lewis is making a personal effort to stem the tide of dissension and rebellion against his stand-pat policy in the Pittsburgh district, advices from that field state. Philip Murray, international vice-president, recently conferred with representatives of the operators in the Ohio No. 8 field, at which time he was told of the serious plight of the Ohio operators who are bound by the Jacksonville scale. He was asked that the union do something to relieve the situation. It was at Mr. Murray's request that Mr. Lewis is taking an active personal part in the situation.

This is exactly the procedure followed a year ago, when a committee of Pittsburgh and Ohio operators requested a modification of the Jacksonville scale. Mr. Lewis at that time refused to consider the matter, and it is understood that he recently told Illinois and Indiana operators that he will give no consideration to such proposals.

The largest operator in the Pittsburgh district, the Pittsburgh Coal Co., which is running its mines on the November 1917 scale on an open-shop basis, has announced its intention of going ahead on that basis irrespective of what the union may do. A few of the mines in the Pittsburgh district that were able to operate and pay the Jacksonville scale during the anthracite strike have closed down. The Pittsburgh Terminal Coal Corp. is an exception and a few other properties are working a day or two a week.

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British Coal Commission's Report Favors Labor, Says U. S. Economist; Legislation Will Be Forthcoming

By Paul Wooton
Washington Correspondent of *Coal Age*

Although the British mine workers did not get all they asked, the report of the Royal Coal Commission, if a victory for anybody, is a victory for labor. The necessary legislation to put into effect the recommendations of the Commission is sure to be forthcoming, as Premier Baldwin is said to have given assurances that he woulld put through any program on which the Commission would agree unanimously.

These are the opinions of I. Lubin, of the economic staff of the Institute of Economics at Washington. He sat through the thirty-one days of public hearings before the Commission and kept in close contact with the leaders on both sides of the controversy. A report from an eyewitness is of particular interest in this country, as the recommendations in regard to royalties are likely to be reflected in demands on this side of the ocean.

There is no thought that the British are out of the woods as a result of this report. In fact, Mr. Lubin believes they are only entering the woods. Meanwhile there seems no escape from the continuance of the subsidy for an indefinite period. Prospects favor a continuance of indirect subsidy in the form of guaranteed loans to the operators.

General Strike Now Unlikely

The only recommendation really displeasing to labor was that proposing to reduce the wages of some of the better paid workers. That some way will be found to prevent that recommendation from becoming effective is expected, although the mine workers no longer have the full sympathy of labor in other trades. They recently have lost ground materially in that direction. All danger of a general strike is believed past, although an effort to enforce the wage cuts probably would cause a walkout with the prospect of support from the railroad and dock workers.

Valuation proceedings under the report necessarily will move very slowly. Existing leases will have to expire. For these reasons none of the benefits of the recommendations, except the wage reduction, will produce any immediate economies. In the long run, however, Mr. Lubin believes large efficiencies will be effected. In fixing the terms for new leases the government should be in a position to require the use of machines to any extent it desires. The high-cost operations might even be abandoned to a large extent and where they are essential the profitable seams might be made to pay the deficit.

All of the economies of consolidation can be effected. Large savings will be made through the use of common shafts and by systematic drainage plans. In one case, for instance, three seams, one above the other, are being worked through three separate shafts. Under the proposed plan the government will have the whip hand over such inefficient operations. It will be able to put a stop to the extortions of land owners who collect large sums for running under their land, even when no coal is involved. Great savings will be effected in dictating the terms of the new leases.

The royalty owners will fight the proposed plan to the last ditch, but their opposition is certain to be overridden. The Church of England and the Duke of Northumberland are the two largest interests that will be affected and neither has the backing of public sentiment in wanting its speculative profits protected. There is no thought that royalty owners will not receive a fair price for the present valuation of their holdings.

Another heavy expense that will be saved under the new plan will be in the elimination of the so-called pioneer lease. New seams usually are opened by prospecting companies, which then lease them to regular operators. The plan contemplates breaking up the practice of railroad-car ownership by individual mines. Decided economies in transportation can be effected by drawing all wagons from a common pool.

Heretofore it has been thought the operators were not greatly concerned with what happened to the royalty owners, but the negotiations just concluded have revealed just what is in the hearts of the operators. Under the new plan their liberty of action will be greatly curtailed. The low-cost producers naturally opposed bitterly any plan of contributing to the support of the weak sisters. The operators, without success, tried to establish before the commission that machines are being used to the extent that they are profitable. They tried to belittle the economies of amalgamation and gave the impression throughout the hearing that they have no plan of their own other than lowering labor costs which would begin to meet the situation. Their objective apparently was to maintain as nearly as possible the existing status.

Railway Fuel Men to Discuss Conservation Problems

The eighteenth annual convention of the International Railway Fuel Association will be held at the Hotel Sherman, Chicago, beginning May 8. The meeting will last three days, divided into seven sessions, at which a number of important papers and interesting committee reports will be presented.

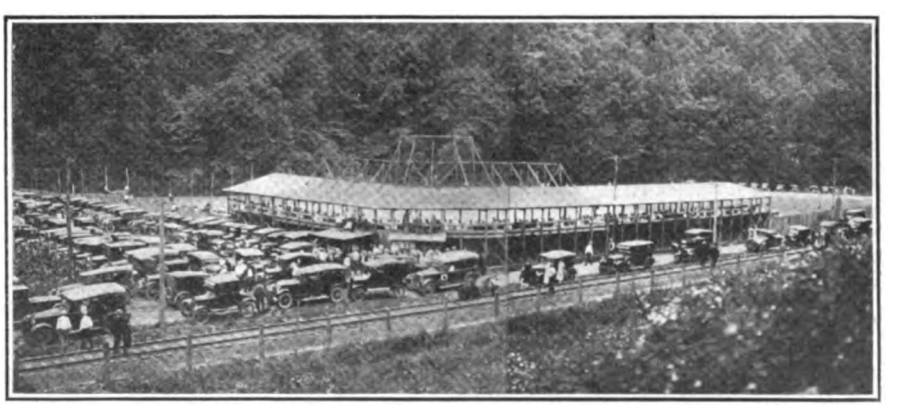
Among the addresses on the program are the following: "Operating Factors in Fuel Conservation," by W. R. Scott, president, Southern Pacific Lines; "Engineering Factors in Fuel Conservation," H. R. Safford, vice-president, Missouri Pacific R. R.; "Mechanical Factors in Fuel Economy," C. E. Brooks, chief of motive power, Canadian National Rys. Other speakers will be President J. W. Dodge, superintendent of fuel conservation, Illinois Central R.R.; C. H. Markham, president, Illinois Central R. R.; M. L. Gould, president, National Coal Association, and Eugene McAuliffe, president, Union Pacific Coal Co., who will present the committee report on cooperation with the American Railway Association.

Committee reports will be made also on "Storage of Fuel and Oil," by Glenn Warner; "Inspection, Preparation and Analysis of Fuel," Malcolm Macfarlane, and "New Locomotive Economy Devices, Coal and Oil," E. E. Chapman.

Merger of Mine Stations Meets Opposition

The proposal to consolidate experiment stations of the Bureau of Mines has produced a decided reaction throughout the West. A large number of letters are being received by the Bureau, some supporting this recommendation of the advisory committee and others in opposition to it. These letters are being analyzed carefully, and no action on the recommendation is likely before midsummer.

Secretary Hoover probably will confer again with the advisory committee before taking final action on that portion of the committee's report. The committee probably will not be called together until the return to this country of Chairman Reynders. He probably will not be back from the Caucasus before July 1.



Baseball in the Mountains of West Virginia

This park is on the property of the Consolidation Coal Co., near Coalwood, McDowell County. The scene indicates that the life of a coal miner is not "all work and no play." Finding a level spot sufficiently large for a ball park often is very difficult in the mountain towns.

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Heavy Coal Output and Outlay for Modernization, U. S. Steel Report Shows

Coal produced by the United States Steel Corporation during 1925 totaled 31,475,568 tons as compared with 27,738,007 tons in the preceding year, in increase of 3,737,561 tons, says the pamphlet report of the Corporation made public March 22. Of this tonnage 23,692,607 tons was used in the manufacture of coke and 7,782,961 tons was used for steam, gas and all other purposes. In 1924 21,041,573 tons was used in the manufacture of coke and 6,696,434 tons for steam, gas and all other purposes.

The Corporation manufactured 3,289,905 tons of beehive coke and 13,011,319 tons of byproduct coke, a total of 16,301,224 tons, as compared with 14,408,041 tons in the preceding year.

Expenditures on the Corporation's Pennsylvania coal properties for electrification aggregated $1,008,263. Additional outlays covering a wide range of improvements were made in this field and in the Pocahontas, Kentucky and Illinois fields for modernizing and economizing the cost of operations, says the report. Purchases of sundry additional coal and timber areas were made in the Pennsylvania, Illinois and Alabama fields, at a total expenditure during the year of $881,460.

The employees on the coal and coke properties of the Corporation numbered 25.920 during 1925 as compared with 26,054 in 1924, a decrease of 134.

The value of coal, coke and other fuel as inventoried on Dec. 25, 1925, was $11,546,885 as compared with $12,153,798 on Dec. 31, 1924.

The Corporation owns 438,354 acres (bed area) of coking coal, 320,495 acres (bed area) of steam and gas coal; 16,427 beehive coking ovens, of which 13,305 are active and the balance inactive, and 3,284 byproduct ovens.

Engineers and Operators To Co-operate in Research

Co-operation of the mechanical and the mining engineers of the country, through their national organizations, with bituminous coal operators in research work designed to bring substantial benefits to coal producers and consumers is planned through a committee appointed last week consisting of Dr. H. Foster Bain, secretary, American Institute of Mining and Metallurgical Engineers; Harry L. Gandy, executive secretary, National Coal Association, and Calvin W. Rice, secretary, American Society of Mechanical Engineers. Walter Barnum, president of the Pacific Coast Coal Co., Seattle, Washington, was authorized to name this committee at a meeting in New York of officials of the two engineering societies and the National Coal Association.

The research program to be outlined by this committee will embrace the outstanding problems of the coal industry and will deal with the development of the mechanization of coal mines, which is a significant movement in the industry on the score of economic and social considerations, as well as from engineering and operating viewpoints.

Hoover Cites Importance Of Foreign Trade

"The immediate purpose of those engaged in foreign trade is remunerative adventure for the trader," said Herbert Hoover, Secretary of Commerce, in an address at New York City, March 16. "But it has a far wider national importance than this and the men engaged in it are engaged in a far more significant mission.

"Foreign trade has become a vital part of the whole modern economic system. The war brought into high relief the utter dependence of the life of nations upon it. The major strategy of war is to crush the enemy by depriving him of it. In peace time our exports and imports are the margins upon which our wellbeing depends. The export of our surplus enables us to use in full our resources and energy. The creation of a wider range of customers to each production unit gives to that unit greater stability in production and greater security to the workers.

"And we may quite well view our exports from the other side of the trade balance sheet. They enable us to purchase and import those goods and raw materials which we cannot produce ourselves. We could probably get along as a nation if we had to suppress the 7 to 10 per cent of our production which goes to export but our standard of living and much of the joy of living is absolutely dependent upon certain import commodities."

Railroads Save $46,000,000 On Coal in 1925

The average cost, including freight charges, of coal used by class 1 railroads of the United States in locomotives in transportation train service during December was the same as during the preceding month, according to a statement prepared by the Bureau of Coal Economics of the National Coal Association from monthly reports furnished by the railroads to the Interstate Commerce Commission. The average cost by districts was as follows: Eastern district, $2.66; Southern district, $2.20; Western district, $2.93; entire United States, $2.63. In comparison with similar averages for December, 1924, there was a decrease of 20c. per ton in the Eastern district, 17c. per ton in the Southern district, 16c. in the Western district, and 19c. in the country as a whole.

The average cost per ton of locomotive coal, which represents the invoice price at the mine, plus freight charges, during the year 1925 was $2.72 per net ton, a reduction of 31c. from the year 1924. As the railroads in the United States during the year 1925 consumed at least 150,000,000 tons of bituminous coal, it is apparent that the bituminous coal industry contributed the round sum of $46,500,000 to the prosperity of the railroads during the past year.

Grant to Address Retailers At New England Convention

Richard F. Grant, president of the Susquehanna Collieries Co. and the man who succeeded in bringing operators and striking miners together when all other efforts to end the anthracite strike had failed, will be the featured speaker at the annual convention of the New England Coal Dealers' Association to be held at Worcester, Mass., April 7-8. Mr. Grant will talk on "Clear Thinking."

Harry L. Gandy, executive secretary, National Coal Association, will make his début before the New England retailers at the same convention. Another speaker will be C. Willing Hare, vice-president of the Anthracite Coal Service, who will match Mr. Gandy's bituminous address with a talk on what the anthracite industry is doing. "Loss and Damage Claims" will engage the attention of Col. A. N. Payne, of the Boston & Maine R.R. Harry E. Davis, national councilor of the New England association, will discuss the work of the Chamber of Commerce of the United States.

The headquarters of the association during the convention will be at the Hotel Bancroft, where the annual banquet, presided over by William A. Clark, president of the organization, will take place. The business sessions will be held at the State Armory.

Research Study at Illinois

Applications for appointment to research graduate assistantships maintained by the Engineering Experiment Station of the University of Illinois will be received until April 1. Appointees receive an annual stipend of $600 and freedom from all fees except matriculation and diploma fees, graduates of approved universities and technical schools who are prepared to undertake graduate study in engineering, physics or applied chemistry being eligible.

Research graduate assistants devote one-half time to engineering research and the remainder of their time to graduate study. The training they receive gives excellent preparation for engineering teaching, engineering research and the profession of engineering. Additional information may be obtained by addressing M. S. Ketchum, director, Engineering Experiment Station, University of Illinois, Urbana, Ill.

Merritt to Address Retailers

The speakers at the banquet to be held in connection with the eighth annual sectional meeting of the New York State Coal Merchants Association, New York group, this evening (March 25) at the Hotel Pennsylvania, New York City, will be Walter Gordon Merritt, general counsel for the Anthracite Operators Conference, and Captain Irving O'Hay, U. S. A., retired. The meeting will open with a luncheon at 1 p.m. at which the speaker will be Martin King, of Alabama. The program for the business session to follow was printed in *Coal Age* of March 18 (p. 406).

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Comprehensive Program Arranged For American Mining Congress and Machinery Exposition at Cincinnati

All sails are set and the course plotted for the Cincinnati meeting of the American Mining Congress, May 24 to 29. As in former years the National Exposition of Coal Mining Equipment and Machinery—at which will be exhibited new and improved mine equipment of all kinds—will be staged in conjunction with the meeting. Operating officials and bosses representing every live coal company in the country, who will make the trip to Cincinnati this year for the big event, will find available a greater wealth of information than ever on developments in equipment and operating practices.

The meetings will be devoted to practical discussions of conveyors, loading machines, mine layouts, roof control, transportation with reference to track and mine-car design; cutting and shooting, drainage and safety problems, including rock-dusting and the sealing of mine fires.

The problems which will be discussed have been chosen by the operators themselves. The entire country was canvassed for suggestions as to topics and speakers, under the direction of Newell G. Alford, of Pittsburgh, who is secretary of the program committee. This committee is composed of operating officials from each of the major coal-mining states, headed by George B. Harrington, president of the Chicago, Wilmington & Franklin Coal Co., as chairman. A meeting of representatives of this committee was held in Pittsburgh on March 20, at which the returns of the canvass were reviewed. From them were chosen those topics which were thought to have the greatest appeal to the majority of those who will go to Cincinnati. In the absence of Mr. Harrington the meeting was presided over by Ezra Van Horn, general manager of the Clarkson Coal Mining Co., of Cleveland, Ohio.

Will Discuss Drainage

The exposition will open on Monday, May 24, and the meeting on Tuesday, both continuing until Friday, May 29. The first session on Tuesday will deal with mine drainage, at which the following topics will be discussed: "Relation of Mine Drainage to Stream Pollution"; "Costs of Correcting and Rendering Harmless Drainage from Coal Mines"; "Economic and Legal Aspects of Stream Pollution"; "Restrictions of Stream Pollution." The chairman of this session will be Samuel A. Taylor, president of the American Institute of Mining & Metallurgical Engineers.

The Tuesday afternoon session will be devoted to the following topics on the cutting and blasting of coal: "Recent Experiences in Shearing and Blasting;" "Blasting Coal for Mechanical Loading—Cutting and Shooting Practices Designed to Facilitate Machine-Loading through Elimination of Refuse in Shot-Down Coal"; "Shooting with a Gas Cartridge"; "Results from Cushion Blasting." W. L. Affelder, assistant to the president of the Hillman Coal & Coke Co., will preside at this session.

All day Wednesday will be assigned to mechanical loaders and their application. Under the chairmanship of Eugene McAuliffe, president of the Union Pacific Coal Co., the following topics will be discussed in the morning: "Progress in Mechanization of Coal Mines"; "Mechanical Loaders That Have Operated Successfully at the Face and Their Operating Costs"; "Typical Machine-Loading Failures and Reasons Therefor"; "Methods of Adapting Present Standard Mining Systems for Best Results with Mechanical Loading"; "Getting Mine Cars to and from Mechanical Loaders."

To Study Machine Loaders

James Elwood Jones, general manager of the Pocahontas Fuel Co., has been chosen as chairman of the Wednesday afternoon session, at which these topics will be discussed: "Suggested Procedure for the Small Mine Investigating Possibilities of Machine Loading"; "Methods for Mining Thin, Flat Seams with Mechanical Equipment"; "Mechanical Loading in Rooms and Entries," including discussions of (a) "Driving Narrow Places in Thick Seams with Loading Machines" and (b) Recent Developments in Machine Loading Equipment and Applications"; "A Symposium on Mechanical Brushing of Top and Bottom Rock in Entries."

The Thursday morning session, under Dr. L. E. Young, general manager of the Union Collieries Co., will cover the following problems of underground conveying: "Inside Mine Conveyors"; "Mechanical Conveying of Coal from the Face Which Has Reduced Mining Costs"; "Underground Conveyors in Use with Mechanical Loaders"; "Mining Plans for Different Types of Conveyors"; "Conveyors in Longwall Work —Adaptation of European Underground Conveyor Practice to American Mines."

Safety of mines will be the general theme of the Thursday afternoon session, with J. J. Rutledge, chief of the Maryland Department of Mines, as chairman. Rock-dusting and the sealing of mine fires will be covered by the following topics: "Proven Advantages of Rock-Dusting"; including discussions of (a) "Successful Application of Rock-Dusting" and (b) "Recent Manifestations of Rock Dust in Checking Coal Dust Explosions"; "Sealing Fires in Gaseous Mines." This general topic will be broken down into three parts: (a) "Current Practices," (b) When the Fire Is Small" and (c) "Territory Required."

Howard N. Eavenson, consulting engineer, will preside over a session on Friday morning, at which the following topics on roof control and mining methods will be discussed: "Elements of Roof Control"; "Roof Control on Long Faces"; "Long Face Mining with Jacks"; "Control of Roof in the Eagle Seam" (this seam, in West Virginia, is overlaid by a very rotten shale, than which few roofs are worse); "Recent Developments in Roof Control."

The last session, on Friday afternoon, will cover underground transportation. A. R. Beisel, general manager of the Island Creek Coal Co., will be asked to serve as chairman of this session, which will include the following topics: "Planning Track Layouts —Importance of Good Track"; "Track Work Details and Maintenance"; "Selecting a Mine Car Design"; "Control of Long Hauls—Electric Gathering and Haulage in General"; "Comparative Costs of Mule, Storage-Battery and Cable-Reel Gathering."

All Will Hear Easily

Incidental arrangements are being made to alleviate some of the disadvantages of the ordinary convention. Speakers will be asked to deliver their talks from notes. Microphones will be installed to carry every word clearly to all corners of the convention hall. A film on rock-dusting which was taken by the Chicago, Wilmington & Franklin Coal Co. in its Orient No. 2 mine will be shown for the first time in public and a new film on mine safety, prepared by the Peabody Coal Co., also will be presented. An informal dinner will be held on Thursday evening, at which a prominent speaker will cover some important phase of the industry.

Fuel-Oil Tax Disallowed In British Columbia

The coal mining industry of Vancouver Island in particular, and of British Columbia, as a whole, received a sharp setback on March 10 when Justice Morrison in the Supreme Court of British Columbia, pronounced the fuel-oil tax to be *ultra vires* (beyond power) of the provincial Legislature. In 1923 the provincial Legislature enacted a bill providing for the imposition of a tax of one-half cent per gallon on all fuel oil purchased in British Columbia, and the tax went into effect at the beginning of 1925. Though the tax ostensibly was enacted as a revenue measure, there is a belief in some quarters that it was brought forward at the behest of the mine operators and miners of Vancouver Island, who had been feeling keenly the competition of foreign fuel oil. The Canadian Pacific Ry. and the Union Steamship Co. of British Columbia, the two largest users of feul oil in the Province, resisted the tax on the ground that it was illegal, whereupon the Attorney General brought action in the Supreme Court against the two companies to enforce payment.

Since the imposition of the tax the government has collected $206,000 from it, but had the defendants in this case paid the tax it is said that more than $400,000 would have been collected.

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Canadian Committee to Probe Coal Supplies

A special committee of the Dominion House of Commons will investigate Canadian supplies of anthracite and bituminous coal. A resolution by J. E. Armstrong, Conservative, of East Lambton, to this effect was adopted after a heated discussion March 17. There was reference to the coal movement from Alberta. Charles Stewart, Minister of the Interior, spoke of the recent conference on the freight rate on Alberta coal, remarking that the provinces seemed to be unable to agree on the matter.

T. L. Church, of Northwest Toronto, charged that Sir Henry Thornton, president of the Canadian National Rys., was one of those responsible for failure to get Canadian coal into the central Canadian markets. Mr. Church declared that the proposal to raise the rate for bringing Alberta coal to Ontario from $7 to $9 a ton was nothing but one more victory for "The American coal baron." Mr. Church urged an embargo on imported coal.

W. F. Maclean (Conservative, South York), advised Nova Scotia to nationalize her coal mines, cut the profiteering out of production and apply it to the reduction in the price of coal. He thought that Ontario and Quebec would be willing to make a contract for Nova Scotia if this suggestion was followed.

Charles Stewart, Minister of the Interior and Mines, said the government would welcome such an investigation because it would clear up many misapprehensions about the fuel situation. He was not sure that he could agree that the time had come to nationalize Canada's coal mines. It would be a solution for many problems if central Canada could be supplied with coal from eastern and western Canada. He pointed out that the development of water power in central Canada and also the growing tendency to use oil were cutting into the demand for coal.

New Chicago Coal & Dock Co. Ready for Business

The South Chicago Coal & Dock Co., having offices at 39 South LaSalle St., Chicago, which was incorporated with a capital of $750,000 a few weeks ago, will soon be in active operation. The company has purchased from the Hedstrom-Schenck Coal Co. its dock property at 95th St. and the Calumet River, having an area of 470,000 sq.ft., and will install modern coal-handling machinery. Avery Brundage is chairman of the board; D. S. Harding, president, and T. F. McCarthy, manager of sales.

The Great Lakes Transportation Co., Valley Camp Coal Co. and the George Hall Coal & Transportation Co. are allied with the new concern, guaranteeing it not only dependable sources of coal but also its transportation by water to Chicago. Subscribers, according to a statement by the company, include James Playfair, president of the Great Lakes Transportation Co. and the George Hall Coal & Transportation Co. and vice-president of the Valley Camp Coal Co.; James Paisley, president of the Valley Camp Coal Co., and C. W. Kraft, president of the Kraft Shipbuilding Co. and the Kraft Coal & Fueling Co.

Trust Problem Looms as Tendency to Merge Grows

An increasing tendency on the part of American business to combine and consolidate gives evidence that this country is on the verge of a trust problem, and vastly adds to the labors of the Department of Justice, Assistant Attorney General E. F. Myers, told the House Appropriations Committee Feb. 26 in the course of hearings on the Department supply bill before the House Appropriations Committee.

"You can not pick up a paper without reading of some merger in business," he said. "And, as you know, unless it appear that the merger would result in restraint of trade within the decision in the steel case, or unless it is brought about by stock acquisition which results in elimination of competition between two companies within the meaning of Sec. 7 of the Clayton act, there is not now any legislation covering the situation.

"Whether the people of the country want Congress to provide against that sort of merger is something outside our province. I know that we have been criticized, but, with the arms at our command, I think we are doing everything the law enables us to do."

Canada Coke Output Mounts Slightly in January

Output of coke in Canada advanced to 155,700 short tons in January, 1926, as compared with 152,173 tons in December, and 101,132 tons during January, 1925, according to a report to the Department of Commerce from Assistant Trade Commissioner Walter J. Donnelly, Montreal. Ovens in the Providence of Ontario led with a total production of 74,655 tons followed by those of eastern Canada, which reported an output of 60,510 tons.

Imports of coke into Canada during January last totaled 114,724 tons as against 131,276 tons in December. Exports aggregated 3,237 tons, the apparent consumption in Canada during January being 267,187 tons, a decrease of about 4 per cent from the previous month, when 279,048 tons was used.

Of the 239,750 tons of bituminous coal used for coke making in January, 150,520 tons was imported, against the use of 89,230 tons of Canadian bituminous coal.

Navy Seeks Coal Bids

Proposals for the supply of 2,000 net tons of run-of-mine bituminous coal for the naval air station at Pensacola, Fla., will be opened at noon April 1 by the Bureau of Supplies and Accounts, Navy Department, Washington, D. C.

Three West Virginia Firms in $2,500,000 Merger

Three West Virginia coal firms, the Blue Ridge Coal Co., of Brush Creek, Boone County; the Swiss-By-Product Coal Co., of Swiss, Nicholas County, and the Export Coal Co., of Quinnimont, Fayette County, have been consolidated, according to an announcement made in Charleston on March 19. The new company will operate under the name of the Superior Fuels Co., and the capital stock will be $2,500,000,

The combined production will aggregate 4,000 tons a day. The coal produced at the Blue Rridge plant will be disposed of to malleable iron and clay product plants; the output of the Swiss company mine will be consumed by yard interests in the northwest and the Export mine will ship its coal to consumers in New England. Those in charge of the consolidation say the entire output is already provided for.

T. S. Jones of Steubenville, Ohio, is president and J. Jay Ross, of Huntington, is the operating manager. A. D. Williams, former state highway commissioner of West Virginia, will be consulting engineer for the company, with offices in New York City. He conferred with the company officials in Charleston on March 19.

The addition of several Pennsylvania mines is said to be contemplated.

Still No Illinois Machine Scale

A meeting of the joint committee of Illinois coal operators and representatives of the United Mine Workers was held at the Great Northern Hotel, Chicago, on March 17, for the purpose of working out an agreement on wages to be paid operators and helpers on loading machines. The meeting was of brief duration and no announcement was made at its conclusion except that another conference would be held at an early date.

Eccles Inquest Postponed

The inquest on the explosion of March 8 at Mines Nos. 5 and 6 of the Crab Orchard Improvement Co., near Eccles, W. Va., has been postponed from March 24 to April 7 because of delay in cleaning up the mine. Sixty-five feet of concrete partition between intake and return airways was shattered by the explosion and ventilation has not been restored to more than a quarter of the mine, which probably will be in operation again in a month.

The Anthracite Operators' Conference on March 18 elected the following officers and committees for the coming year: Chairman, Samuel D. Warriner; Vice-Chairman, Danel T. Pierce; Committee on Economics, W. H. Williams, Allan C. Dodson, Thomas Dickson, G. N. Wilson, C. S. Goldsborough; Committee on Labor, W. J. Richards, C. F. Huber, W. W. Inglis, E. H. Suender, A. M. Fine; Committee on Publicity and Education, Percy C. Madeira, W. J. Richards, Eliot Farley, J. M. Humphrey, J. L. Cooney; Committee on Public Relations, W. S. Jenney, C. F. Huber, Otis Mouser, A. B. Jessup, S. B. Thorne.

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News Items From Field and Trade



ALABAMA

The Chickasaw Shipbuilding & Car Co., a subsidiary of the Tennessee Coal, Iron & Railroad Co., is reported to have been awarded a contract for 1,000 hopper coal cars as its proportion of the recent heavy equipment contract let by the Southern Ry. The Birmingham plant of the Virginia Bridge Co. will build a large number of steel underframes also.

The Alabama By-Products Corporation is installing electric lights and water connections throughout its camp at Flat Creek, in the western part of Jefferson County. It is reported that the company will build a number of new dwellings for its employees at this operation.

Frank H. Crockard, president of the Woodward Iron Co.; Howard J. Thomas, general superintendent of the Sloss-Sheffield Steel & Iron Co., and Frank G. Morris, general superintendent of coal mines of the Republic Iron & Steel Co., compose the program committee for Alabama in the assignment of papers to be read before the Cincinnati meeting of the American Mining Congress, May 24 to 28. A large delegation of mining officials, mining and mechanical engineers and others interested in the mining industry from the Birmingham district will attend.

Two Joseph A. Holmes safety chapters were organized at Flat Top convict mine of the Sloss-Sheffield Steel & Iron Co. on March 14 by representatives of the U. S. Bureau of Mines, Alabama Mining Institute and State Mining Department at the request of the State Convict Board. The white chapter, which was named the Jones G. Moore Chapter, has 92 members, and the negro chapter, named the C. R. Davis Chapter, has 422 members.

ARKANSAS

Owners of the Ohio mine, on Hall mountain, have installed pumping machinery and are pumping the water out of the mine in preparation for resumption of mining this spring.

The engine and boiler rooms of Western Coal & Mining Co. mine No. 6, at Denning, were blown up by dynamite early the morning of March 16. The mine had been operated since Aug. 4, 1925, under lease by C. L. Melton, with non-union labor. Ten sticks of dynamite, unexploded, were found beneath the cylinder of the shaft engine.

Fire, believed to have been of incendiary origin, destroyed the coal tipple, warehouse and several cars of coal of the Bernice Anthracite Coal Co., at Russellville, last week with a loss of $100,000.

ILLINOIS

Mine No. 1 of the Chicago, Wilmington & Franklin Coal Co., known best as "Old Orient," and Mine No. 1 of the Bell & Zoller Coal Co., two of the largest in the southern Illinois field, have resumed operations after having been shut down for several weeks. Old Orient is located at West Frankfort and had been closed down for four weeks while undergoing repairs. It employs 1,000 men. The Bell & Zoller mine closed down apparently for the season several weeks ago. It will employ its 1,100 workers on a 40-per cent basis for the time being.

One of the largest operations in the Madison County district, the Lumaghi Coal Co. mine No. 2, at Collinsville, which employs about 1,200 men, is working only one day a week at present.

The shaft at the No. 1 mine of the Mt. Olive & Staunton Coal Co. caved in early this month, and as a result the hoisting tower is a wreck.

The Marion & Eastern R.R., a coal road from Marion to Paulton, a distance of 12.5 miles, is to be sold to the Missouri Pacific and operated as a part of that system. A contract for the sale has been entered into by the Missouri Pacific and H. E. Barber, principal owner of the Marion & Eastern. The Interstate Commerce Commission and the Illinois Commerce Commission will be asked to approve the transaction. The Marion & Eastern is about fifteen years old and had been operated profitably until recent months when the excessive cost of shipping coal over two roads forced several of the mines served by the road to cease operations. With direct rail facilities into the St. Louis market, however, it is expected that these mines will resume.

The Radium Coal Mining Co., Belleville, which is supposed to be a subsidiary of the Aluminum Ore Co., is expected to suspend operations April 1, unless the miners will permit the loading machines in the mine to operate the same as in other mines in that district, because the company can buy coal cheaper from the non-union West Kentucky fields than it can produce it.

The Lumaghi Coal Co., of St. Louis, is reported to have announced that it will give preference to the sale of non-union west Kentucky coal over that of its own union mines in Illinois.

INDIANA

One hundred and eighty-six employees of the Old Knox Coal Mining Co., of Bicknell, now in the hands of a receiver, have filed suit in Circuit Court at Vincennes to foreclose workmen's compensation liens on the mine property to recover their wages for the last two weeks worked. The total indebtedness of the company to its employees is more than $16,000.

KANSAS

May 22 was selected as the date for the annual Kansas first-aid and mine-rescue meet at a meeting of operators, miners and state mine officials in Pittsburg, March 10. The meet will be held on the athletic field at the Kansas State Teachers' College, Pittsburg. Teams already are being organized.

Central Coal & Coke Co.'s mine No. 51, in the southeastern Kansas field, was closed March 12 as a result of the weak demand. The mine employed more than 300 men. The Central company now has only one shaft—No. 45—operating in Kansas.

KENTUCKY

The Kentucky Legislature of 1926, which adjourned on March 17, treated the coal industry quite well. Bills to place a tonnage tax on coal, a washhouse act for mines, and other adverse legislation were killed in committees as a rule, or didn't get very far. One bill killed a few days ago provided for the creation of a boiler commission to inspect boilers, with a fee system to inspectors, which would have been costly to boiler owners, especially those who have insurance and obtain inspection as a part of the insurance service.

Through suit filed in the federal court at Hazard Judge Cochran on March 16 named John P. Gorman as receiver for the Kentucky River Coal Mining Co., operating at Heiner.

Politicians have been making a hard fight in the U. S. Coal & Coke Co.'s privately owned town of Lynch, in Harlan County, a bill having been introduced in the Legislature to force incorporation of the city, on the ground that the company controls the votes of its workers, numbering several thousand.

The Elk Horn Coal Corporation had a record production of 2,082,408 tons and the highest net income since 1920 of $311,802, equal to $2.37 a share (par $50) on $6,600,000 preferred stock in 1925. Output was 774,322 tons, or

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60 per cent above 1924 and 628,182 tons, or 43 per cent above the previous record year of 1920, and net income compared with 38,445, equal to 29c. a share on preferred in 1924. With 401,271 tons mined by lessees, total tonnage produced from Elk Horn properties in 1925 was 2,483,679 tons, compared with 301,524 tons mined by lessees and aggregate tonnage of 1,618,-612 tons in 1924.

In western Kentucky the Monro Warrior interests have plans for a big new power house, and additional equipment at both strip and underground mines for getting out larger production at smaller cost.

It is reported from eastern Kentucky that the Elkhorn, Jr., Coal Co., at Millstone, is completing a modern new tipple and installing other equipment for larger production.

J. L. McCormick, of the Mineral Development Co., of Philadlephia, recently was in eastern Kentucky, inspecting company properties in Letcher County, but no announcement was made regarding any development plans.

The Dawson Daylight Coal Co., of Louisville and Dawson Springs, organized three or four years ago and running coal from strip mines for more than a year, has rebuilt a burned tipple, and also is developing some underground mines to reach coal in the deeper veins and not practical to mine by stripping.

MISSOURI

Howard & Sons, of Prairie Hill, are to open up a mine near Salisbury soon. A 4-ft. seam of coal, within a mile and a half of Salisbury on the Wabash Glasgow branch, is to be mined. Workmen are busy sinking a 154-ft. shaft. Howard & Sons subleased the property from R. E. Davis, of Salisbury.

St. Louis coal men are working on plans for a Coal Research Bureau in an educational campaign to present to the public facts about coal as a fuel and to develop other measures that will give to the coal user information as to proper sizes and consuming conditions.

OHIO

M. S. Connors, general manager of the Hocking Valley Railway Co., announces that 2,700 loaded cars of coal are at Walbridge, adjacent to the Toledo docks on his road waiting for the resumption of loading for lake traffic. Ample bottoms to take care of this tonnage have been tied up at the Toledo docks during the winter and these will be loaded ready to move when navigation is opened. It was feared that the recent cold spell might cause the formation of additional ice in the upper passages, but reports show that conditions are good and it is belived that lake traffic can be opened to the head of the lakes by April 15, which is the tentative date set for the opening.

The North Hill Coal Co. has closed its mine near Chauncey, which gave employment to about 150 miners. The mine will remain closed until market conditions warrant its reopening.



Homes of Employees of the Kingston Pocahontas Coal Co., W. Va.
This inviting location affords the employees of the Kingston Pocahontas company's Exeter Collieries a delightful environment for their homes. The buildings are of brick construction and modern in every respect.

PENNSYLVANIA

At the Pennsylvania Coal Mining Institute meeting in Johnstown on March 19, Edward H. Johnson, mining engineer, of Columbus, Ohio, delivered an address on mechanical mining and loading. His lecture was illustrated with lantern slides. The annual banquet will be held on May 20. Archie Miller, Loyalhanna Coal Co. superintendent at Cairnbrook, was elected president, succeeding Charles Enzian, of the Berwind-White company, of Windber. William Flemming, of Riverside was re-elected secretary and F. J. McKernan was retained as his assistant. The vice-presidents are D. J. Boyle, Penn Public Service Corp., Johnstown; B. C. Leonard, South Fork; Nicholas Evans, Johnstown; A. C. Cook, Windber. Vincent Stanton of Johnstown is treasurer.

The Westmoreland Coal Co. for the year ended Dec. 31, 1925, reports surplus of $745,728 after charges, taxes, depreciation and depletion, equal to $3.73 a share earned on $10,000,000 capital stock (par $50). This compares with $38,520, or 19c. a share, in 1924.

Joseph J. Walsh, Secretary of the Department of Mines, has announced a special examination for candidates for appointment as anthracite mine inspectors to be held at Wilkes-Barre on March 30, 31 and April 1. The special examinations are to be held because none of those who took examinations recently qualified for inspector. At the present time there are seven inspectorships in the anthracite region vacant.

James M. Black, Ellsworth, has been appointed a mine inspector in the State Workmen's Insurance Fund board, Richard H. Lansburgh, Secretary of the Department of Labor and Industry, has announced. The work has to do with the insurance plan. The appointee is not an anthracite or a bituminous mine inspector.

In the will of the late Mrs. Eckley B. Coxe, known as the "angel of the coal fields," further provision was made for the future of the Freeland Mining and Mechanical Institute. This institute was founded by Mr. Coxe with the idea of giving miners' sons a chance to rise in the world. When it first opened there were only four students enrolled. Now there are 170. Prof. W. R. Bray, formerly of Lehigh University, is in charge of the Freeland institute.

George J. Cochran, of Johnstown, a stockholder in the Conemaugh Coal Mining Corp., on March 6 petitioned the court at Ebensburg for the appointment of a receiver for the company. The court named the Johnstown Trust Co., the Title Trust and Guarantee Co. and Attorney John H. Stephens. In his bill Mr. Cochran sets forth that in an effort to finance the company certain indebtedness is about due; that if payment of this indebtedness is pressed at this time it will necessitate the closing of the mines, with great loss to the stockholders. He believes receivers will be able to put the company on a firm financial basis.

The Pittsburgh Coal Co. reports a new peak in weekly output from the eight mines in western Pennsylvania working on the 1917 scale. In the week ended March 13 a total of 36,246 tons was produced. A maximum daily production of 6,668 tons was attained during the week.

The report on Pittsburgh river transportation for February by United States Engineers shows that 1,469,004 tons of coal was moved on the Monongahela River in addition to 33,465 tons of coke; on the Ohio River in this district, 152,994 tons of coal and on the Allegheny River, 13,900 tons of coal.

Injunction proceedings were instituted March 18 at Washington, Pa., against the Pittsburgh Terminal Coal Corp., of Pittsburgh in which it was charged that the company permitted dangerous practices at a mine near Avella, known as Meadowlands No. 1. The action was brought in the name of the state through Attorney General George W. Woodruff and Mine Inspectors P. J. Callaghan, John J. McDonald and John F. Bell. Hauling of coal by locomotive operated by an electrical

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trolley in portions of the mine known to be gaseous, specified as Butts Nos. 27, 28 and 29, and promiscuous firing of shots without observance of the requirements of the state mining laws are specifically charged. The mine employs about 400.

The Hazle Brook Coal Co. has announced that a new breaker will be erected on the company's properties at Tremont. It is expected the breaker will have a capacity of 1,000 tons of coal daily.

Wilkes-Barre school officials are making a survey of local conditions to determine whether a sufficient number of mine workers are interested in the establishment of a mining school there. If the survey indicates enough students will enroll the school board intends to organize classes immediately.

Acme No. 1 and No. 2 mines of the Bethlehem Mines Corporation, located on the M. & W. branch of the Pennsylvania R.R. between Monongahela and Bentleyville, are to reopen soon after being closed more than a year. Approximately 1,000 men will be employed. As the corporation pays the 1917 wage scale, it is expected these mines will open on the same basis.

Judge Dailey at Huntington, last week appointed Andrew S. Webb and Walter L. Haehnlen, of Philadelphia, temporary receivers for the Huntington & Broad Top Mountain Railroad & Coal Co.

The Hazelkirk and Ellsworth No. 2 mines of the Bethlehem Mines Corporation will be opened within the next 30 days, according to plans of the company.

TENNESSEE

The Marion Coal Mining Co., of Chattanooga, has leased 3,000 acres of land between Whiteside and Shellmound and will develop it.

UTAH

The Sweet Coal Co. reports that its mine in the Gordon Creek district of Carbon County, now being developed, contains coal of an excellent coking quality. The seam is reported to be 9½ ft. thick. A number of tests have been made and at present a Chicago concern is making an oven test. The company recently constructed a small beehive oven at the mine for the purpose of carrying on experiments. Utah has so far developed but two coal properties of coking quality, one at Sunnyside by the Utah Fuel Co., and the other by the Utah Steel Corp.

The Consumers' Mutual Coal Co. has awarded the Pittsburgh Boiler & Machine Co. a contract for building a tipple at its mine in Carbon County. The structure will be of steel with a capacity of 4,000 tons in eight hours. It will be equipped to handle all grades of coal. The contract must be completed in five months, a bond having been given guaranteeing this.

The Spring Canyon Coal Co., with offices in Salt Lake City, has started an action for an accounting of funds in connection with its workmen's compensation insurance with the State Compensation Fund up to the time it became its own insurer. It is held that the company is entitled to certain dividends. Officials in charge of the fund have announced their intention of filing a cross-suit asking for the return of dividends already paid, thereby, they say, testing the law at both ends.

VIRGINIA

Three suits growing out of operations of the Tidewater Coal Exchange at Norfolk during and immediately after the close of the World War have been brought in the U. S. District Court in Norfolk by Andrew W. Mellon, as director general of the American railroads. The suits are against three local coal concerns, then members of the exchange. The New River Coal Co. is sued for $7,500; West Virginia Coal, $5,000; Eastern Coal & Export Corporation, $5,000. The suits are for the purpose of clearing up disputes over demurrage claims of long standing.

The Virginia Fuel Corporation, of South Norfolk, manufacturers of "Certified Coal" briquets, made from half soft coal and half anthracite slack, has shipped its first cargoes abroad, consisting of three small lots consigned to England. The company has obtained a through rate to New England, and is now working its plant to the full capacity of 15 cars a day for the first time since it began operating.

WEST VIRGINIA

Reports were current in southern West Virginia last week that eastern capitalists are making an effort to purchase the old Hartford City property at Clifton, Mason County, consisting of an old salt mill, a quantity of coal land and 350 acres of surface.

The Camp Fork Coal Co., which recently was organized by G. R. Krebs, of Charleston, and others, has acquired the Greendale mine of the Concordia Coal Co., at Greendale, Nicholas County, and will operate it to take care of the summer trade.

The mine of the Davis Creek Land & Coal Co. on Davis creek in the Kanawha field has closed down.

The H. T. W. Coal Co. of Huntington, has increased its capitalization from $20,000 to $50,000.

Loss estimated at several thousand dollars was sustained when a blaze believed to have originated from a short-circuit destroyed the carpenter shop and electrical repair shop at the Kingmont mine of the Hite interests, at Fairmont, March 13.

Directors of the Island Creek Coal Co. on March 17 declared a dividend of $4 a share on the common stock and the regular quarterly dividend of $1.75 a share on the preferred stock. On Jan. 1 last a dividend of $5 a share was paid on the common stock.

Coal production in West Virginia in 1925 totaled 125,434,130 tons, an increase of 21,451,128 tons over 1924, according to figures made public by A. O. Wilson, statistician of the Kanawha Coal Operators' Association.

Output in southern West Virginia, the statistics showed, aggregated 87,642,551 tons, an increase of 16,050,588 tons compared to 1924, while in the northern part of the state the output was 30,691,534 tons, an increase of 5,400,540 tons compared to 1924.

The Consolidation Coal Co. reports total earnings of $19,839,109 in 1925 against $19,263,184 in 1924. After allowing for all expenses and charges for depreciation, depletion and interest the net profit was $225,606, against a loss of $2,125,650, after similar deductions, in 1924. The profit for 1925 was equal to $2.25 a share earned on the $10,000,000 7 per cent. preferred stock outstanding. The surplus carried to profit and loss was $50,606. During the year the company and its lessees mined 10,794,903 tons of coal, compared with 10,075,068 in 1924.

CANADA

The United British American Coal Co., of Vancouver, has acquired 900 acres of coal lands at Deep Valley, 4½ miles from Princeton, B. C., and has started to develop the property.

The Canadian Pacific Ry. has placed an order for 400,000 tons of coal with the McGillivray Creek Coal & Coke Co., and is negotiating with other operators in the Crows Nest Pass district of British Columbia for a further supply.

The North Pacific Forests & Mines has been organized to take over and develop the Slate Chuck coal mine and surrounding timber limits, situated at Skidegate Inlet, Queen Charlotte Islands, B. C.

The South Okanagan Collieries, near Princeton, B. C., which had been idle for some time, has re-started development work, new capital having been obtained in Vancouver.

In its annual report for the year ended Dec. 31, 1925, the International Coal & Coke Co. reports operating profits of $124,659, in addition to sundry profits of $18,008, or a total of $142,667. This record compares with an operating loss of $9,582 in the preceding year. During the last year the company's mine in Alberta worked 156 days, employing an average of 344 men. Total production was 178,542 tons.

Miners at the Minto Coal Co.'s mines at Minto, N. B., have gone on strike, and the mines are completely closed. The strike arose from the failure of the company to accept a new wage agreement outlined by the miners.

A scheme of unemployment relief for the 470 families at Sydney Mines, N. S., who are suffering as a result of prolonged inactivity of the colleries, is being undertaken by the town, the Canadian Government, and the Provincial government. All three bodies will grant equal shares.

Intense excitement prevails at Port Simpson, B. C., where the Indians are said to have discovered an outcropping of coal on the reserve. The whole property has been staked and steps taken to record it. No work on it has been done yet, but the Indians are very hopeful. The whole of the United Church mission property is included in the blocked-out area. Port Simpson is on the British Columbia coast at the mouth of the Skeena River, south of Prince Rupert.

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Personal

J. O. Colley has been appointed superintendent of the Flat Creek Division of the Alabama By-Products Corp. coal mining operations, succeeding Edmund Ewing. **Frank House**, former superintendent of the Porter Coal Co., at Porter Mine, has been made superintendent of the Alabama By-Products Corp.'s Praco operations. He was succeeded at Porter Mine by **John Rutledge**. **W. C. Paxton** has been appointed superintendent for the State of Alabama at Banner Mines, of the Alabama By-Products Corp., where convict labor is employed.

B. M. Chaplin, well-known coal-operator of Morgantown, W. Va., who has just returned from a six weeks business sojourn in Florida, has decided to locate in Florida and engage in the contracting and construction business. Mr. Chaplin has long been identified with the Chaplin Collieries Co.

James L. Davidson, secretary of the Alabama Mining Institute and prominent industrialist, was named on the board of governors at the recent meeting in Memphis of the southern division of the American Mining Congress.

W. P. Barrick recently resigned as superintendent of the Macbeth (W. Va.) mine of the Thurmond Consolidated Coal Co.

H. A. McAllister recently resigned as manager of the Logan (W. Va.) division of the West Virginia Coal & Coke Co.

P. C. Thomas, assistant general manager of the Helen (W. Va.) mine of the East Gulf Coal Co., which was absorbed by the Massachusetts Gas Co., has resigned.

Sandy Marshall, superintendent of the Monitor and Yuma Coal & Coke Cos., at Wilkinson, Logan County, W. Va., resigned recently.

John Sincock, of Uniontown, Pa., who has for several years been general superintendent for W. J. Rainey, Inc., operating six of the largest coal and coke plants in the Connellsville coke region, has resigned that position, to take effect at once. Mr. Sincock will be retained by the Rainey company as consulting mining engineer. No statement has been made as yet as to who will succeed Mr. Sincock as general superintendent, but the place is being filled temporarily from the New York office.

William Heitzman, who for the past six years has been general western sales manager for the Central Pocahontas Coal Co., has resigned effective April 1 to go into the real estate business in Cincinnati, where he has large holdings. He has been succeeded by S. E. Butler, who has been in charge of the Detroit office of the company for the past five years.

Howard Stutchbury, Industrial Commissioner of Alberta, has returned to Alberta following a month spent in Eastern Canada in an endeavor to promote the use of Alberta coal. Mr. Stutchbury advocates an extensive campaign on the part of the Alberta Government to popularize Alberta coal in Ontario and eastern Canada.



W. M. Wilshire

William M. Wilshire, recently elected president of the West Virginia Coal & Coke Co., as successor to C. E. Hutchinson, who resigned, will make his headquarters in Cincinnati, it is said.

Obituary

Lochren Donnelly, general superintendent of the coal-mining operations of the Northwest Improvement Co. at Colstrip, Mont., died March 17 at Glendive, Mont., after a short illness of heart disease. He was 29 years old. Mr. Donnelly was the son of Charles Donnelly, of St. Paul, Minn., president of the Northern Pacific Ry., which controls the Northwest Improvement Co. The younger Mr. Donnelly had been connected with the organization for about six years and had been in charge of the mining operations for two years. Burial took place in Seattle, Wash.

Traffic

Central Pennsylvania Accepts Challenge on Rates

Central Pennsylvania coal operators have accepted the challenge of the southern West Virginia, Virginia and eastern Kentucky coal operators in the matter of freight rates. The Southern operators have petitioned the Interstate Commerce Commission to reopen Docket No. 15006, originally begun as an investigation into and concerning anthracite rates and which later by order of the Commission was made to include rates on bituminous coal from Southern coal fields to all-rail destinations in Northeastern states.

By order of the Commission certain rates were temporarily established from mines in the Southern fields to the above-named destinations. These rates were to expire April 30, 1926. The Commission stated these rates were to take care of an emergency due to the anthracite strike. The so-called emergency is now passed and certain interests in New England are asking that the rates be made permanent and be extended to all sizes of coal, mine-run and slack as well as prepared sizes for household fuel, to which the temporary rates only applied.

In the answer made by central Pennsylvania coal operators to the petitions of New England and the Southern coal fields it is contended:

(1) That the combination rates in effect on Southern coal previous to the temporary rates are not unjust or unreasonable and should be maintained on Southern coal.

(2) That the temporary rates were established to take care of an emergency without full and complete hearings. There now exists no reason why these rates should be extended as the anthracite strike has been settled, and if extended would involve the Commission in a breach of faith, relied upon by the central Pennsylvania operators in good faith that these rates would be temporary rates only.

After asking for a denial of the petitions of the New England interests and the Southern coal operators, the central Pennsylvania operators say:

"Protestant prays also that should the Commission grant further hearing in this proceeding, such further investigation and hearing should embrace by appropriate supplemental orders of the Commission, the reasonableness, the relation, and the propriety and lawfulness otherwise of all rates, including tidewater transshipment rates, on bituminous coal from all producing districts in Pennsylvania, Maryland, West Virginia, Virginia and eastern Kentucky to all destinations in Virginia, the District of Columbia, and in the Middle Atlantic and New England states."

Suspend Proposed Rate Changes From Illinois Mines

By an order entered March 6 in Investigation and Suspension Docket No. 2621, the Interstate Commerce Commission suspended from March 8, 1926, and later dates until July 6, 1926, the operation of certain schedules as published in tariffs issued by various carriers publishing rates on coal from Illinois mines and Lake Superior ports.

The suspended schedules propose to increase rates on bituminous coal from Illinois to destinations in Minnesota on the Minnesota Western R.R. and to reduce rates on bituminous coal from Lake Superior ports to the same destinations. The following rates in cents per net ton are illustrative:

To	Present	Proposed
Lake Lillian, Minn.		
From		
Duluth, Minn.	303	261
Springfield, Ill.	404	441
Herring, Ill.	434	471

Penna.-Ohio Operators File Briefs in Lake Case

Briefs in behalf of the Pennsylvania and Ohio bituminous coal operators who are seeking a reopening of the lake cargo case have been filed with the Interstate Commerce Commission. Opponents have ten days in which to reply, after which the Commission will take the application for reopening under advisement. Operators from the southern fields opposing an increase in the freight rate differential, and hence opposed to reopening the case which was decided in their favor last year, met in Washington March 15 in a conference over the situation, with particular reference to division of the expense of defending the case.

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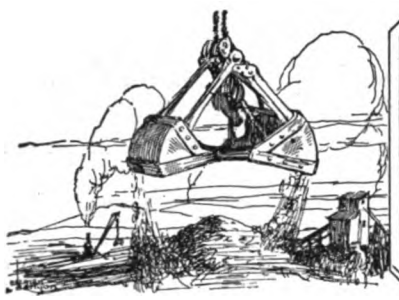
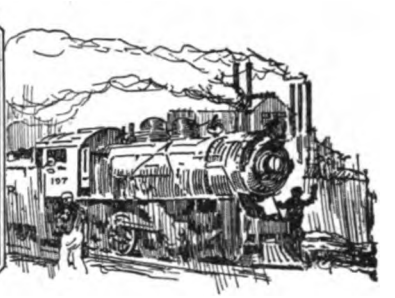


Production And the Market



Union Fields Move to Meet Non-Union Competition In New Coal Year; Contracting Lags

The labor situation again has assumed a commanding position in the bituminous coal trade of the country. That and the indifferent success attending the attempts of producers to hurry contract renewals far overshadow the superficial developments in spot trading as the coal year draws to a close. These developments have nothing to distinguish them from the season-end changes and minor upsets of other years.

The labor situation is pressing forward on two separate fronts. In Illinois and Indiana interest centers about the program of certain large producers to sell non-union western Kentucky coal in markets in which they have heretofore put tonnage from their own mines. This movement, initiated by the Peabody Coal Co., is, it seems, to be followed by two other—and possibly more—well-known operators in Illinois and Indiana.

In this change of front, the operators in question are duplicating a policy followed by certain producers in Ohio and Pennsylvania, who have tried to meet non-union competition by becoming non-union operators or sales agents. Ohio, however, is now going a step further and is reviving the campaign to force a downward revision of the Jacksonville scale. Unless this is done, the union is warned, there will be further indefinite suspensions at union operations.

Fight Shy of Contracts

While these struggles are in the formulative stages, producers elsewhere are redoubling their efforts to persuade consumers to renew contracts. Some business, notably that of the Norfolk & Western, has been closed at approximately last year's basis. For the most part, however, buyers are pursuing their traditional policy of waiting. In the East they have been fortified in this campaign by the large tonnage of slack available while demand for bituminous lump and egg was heavy and by the distress tonnage seeking a purchaser after the anthracite strike ended.

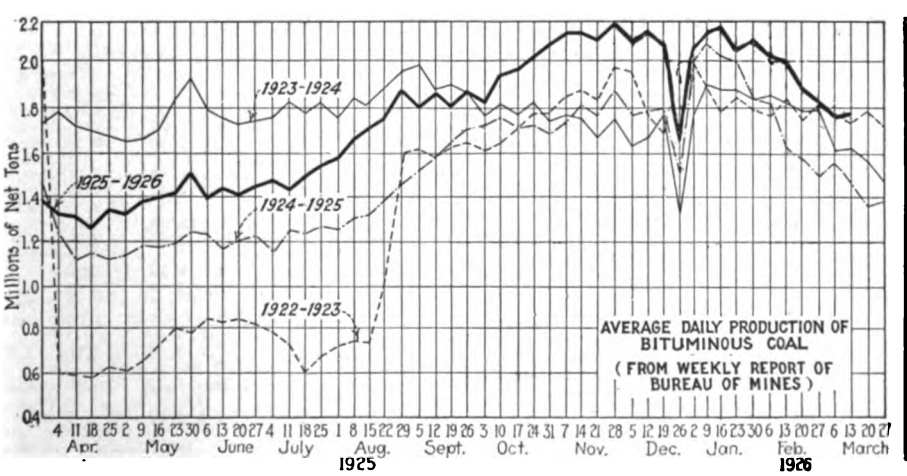
A suspicion that some of the canny purchasing agents have been further improving their position by buying up low-priced coal at the mines is strengthened by the production estimates for the week ended March 13. The total output that week, according to the Bureau of Mines, was 10,691,000 net tons, an increase of 231,000 tons over the preceding week. This was the first check in the decline which set in two months ago.

Prices Well Stabilized?

On the whole, the price situation appears to be fairly well stabilized—particularly in the Middle West. Pool quotations along the Atlantic seaboard also are less wobbly than a few weeks ago. This degree of stabilization is probably due to the fact that in most cases spot quotations have sunk as low as possible with safety to the seller. *Coal Age* Index of spot bituminous prices on March 22 was 167 and the corresponding price was $2.02.

Anthracite demand is broadening. Production the second week of the month totaled 1,966,000 net tons, as compared with the pre-strike average of 1,825,000 tons. Chestnut still leads in popularity, with stove and egg contending for second place. Pea also enjoys a good demand, which is made more apparent by the fact that the mines have no storage piles to draw on to fill orders.

The Connellsville coke market is featureless. There is little call for spot furnace coke and less disposition to hurry into the negotiation of second quarter contracts. Foundry coke has been in moderate demand.



Estimates of Production

(Net Tons)

	1925	1926
BITUMINOUS		
Feb. 27	8,855,000	10,890,000
March 6 (a)	9,384,000	10,460,000
March 13 (b)	8,641,000	10,691,000
Daily average	1,440,000	1,782,000
Coal yr. to date (c)	451,531,000	515,743,000
Daily av. to date	1,548,000	1,764,000
ANTHRACITE		
Feb. 27	1,605,000	1,609,000
March 6 (a)	1,655,000	1,789,000
March 13	1,656,000	1,966,000
Coal yr. to date (c)	82,474,000	46,488,000
BEEHIVE COKE		
March 6 (a)	281,000	262,000
March 13 (b)	243,000	264,000
Cal. yr. to date (c)	2,668,000	3,309,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

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Non-Union Coals Gain in Middle West

Day by day trading in the markets of the Middle West at the present time attracts less attention than the plans being made for handling business in the future. The most significant development is the proposal of Illinois and Indiana operators to go into the jobbing of non-union coals upon a large scale. The Peabody contract to handle the output of a number of western Kentucky mines was the first open move in that direction. At least two other well-known producers have made similar arrangements. Their theory is that the biggest job confronting them is to hold their customers; if they cannot do it with coal from their own mines they propose to do it with cheaper coal from non-union mines.

The adoption of such a policy, of course, means further shutdowns in the Illinois and Indiana districts. Current spot movement for the past few days has been confined largely to domestic coals. The weather has been the key to this movement. Nevertheless, "no bills" can be found in all fields. Standard prices, however, have been well maintained; the greatest uncertainty is in quotations on stripping coal for railroad business. Contract buyers, for the most part, still turn deaf ears to pleas for early renewal of expiring agreements.

Local domestic trade at both Chicago and St. Louis was more active last week as a result of weather demand. Retailers generally are more interested in cleaning up stocks on hand than in ordering forward fresh supplies. As for some time past, smokeless coal is in slight demand at St. Louis and the resumption of hard-coal mining has brought no sharp call for anthracite tonnage. An increasing percentage of the lump trade in the St. Louis territory is going to western Kentucky.

Kentucky operators and sales agencies are pressing reluctant industrial consumers to close 1926-27 contracts. Some buyers fight shy of renewing at the old figures, feeling that a period of slack demand and lower prices is at hand. The sellers scoff at that idea, emphasizing the broader market for western Kentucky all-rail coal in the Middle West and the Northwest and the prospects of a heavy lake movement from eastern Kentucky.

Kentucky Spot Trade Good

On the whole, the current spot business has been good. Cold weather has kept up domestic demand in odd lots; curtailed production has kept up prices on screenings and mine-run has shown unusual strength. Some choice eastern Kentucky block still is quoted at $3 or better, but the general range is $2@$2.75, with 2-in. lump at $2@$2.25; nut and egg, $1.75@$2. Western Kentucky block is $1.75@$2; egg and lump, $1.50@$1.75; nut, $1.35@$1.50; mine-run, $1.10@$1.50; screenings, 85c.@$1.

Compared with February, shipments from the docks at the Head of the Lakes have fallen off. The movement,

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	Mar. 23, 1925	Mar. 8, 1926	Mar. 15, 1926	Mar. 22, 1926†
Smokeless lump	Columbus	$3.10	$3.85	$3.85	*$3.25@$3.50*
Smokeless mine run	Columbus	1.90	2.10	2.10	2.00@ 2.25
Smokeless screenings	Columbus	1.15	1.15	1.15	1.00@ 1.35
Smokeless lump	Chicago	3.10	3.75	3.10	3.00@ 3.25
Smokeless mine run	Chicago	1.75	1.95	1.95	1.75@ 2.15
Smokeless lump	Cincinnati	3.25	4.00	3.60	*3.00@ 3.50*
Smokeless mine run	Cincinnati	2.00	2.10	2.25	2.25
Smokeless screenings	Cincinnati	1.50	1.30	1.35	1.25@ 1.50
*Smokeless mine run	Boston	4.35	4.45	4.45	*4.30@ 4.50*
Clearfield mine run	Boston	1.95	1.95	2.05	1.85@ 2.25
Cambria mine run	Boston	2.30	2.30	2.35	*2.10@ 2.50*
Somerset mine run	Boston	2.10	2.05	2.15	*1.90@ 2.35*
Pool 1 (Navy Standard)	New York	2.65	2.85	2.80	**2.75@ 3.00**
Pool 1 (Navy Standard)	Philadelphia	2.65	2.80	2.80	2.65@ 3.00
Pool 1 (Navy Standard)	Baltimore	2.10	2.25	2.10	2.10@ 2.15
Pool 9 (Super. Low Vol.)	New York	2.05	2.30	2.25	**2.20@ 2.50**
Pool 9 (Super. Low Vol.)	Philadelphia	2.00	2.35	2.35	2.20@ 2.50
Pool 9 (Super. Low Vol.)	Baltimore	1.85	2.10	2.05	*1.95@ 2.05*
Pool 10 (H.Gr.Low Vol.)	New York	1.80	2.00	1.95	1.80@ 2.10
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.65	2.05	2.05	1.90@ 2.25
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.75	1.85	1.80	1.75@ 1.85
Pool 11 (Low Vol.)	New York	1.55	1.85	1.75	*1.55@ 1.90*
Pool 11 (Low Vol.)	Philadelphia	1.55	1.80	1.80	1.75@ 1.85
Pool 11 (Low Vol.)	Baltimore	1.50	1.75	1.65	1.65@ 1.70
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.50	1.60	1.50	1.40@ 1.60
Pool 54-64 (Gas and St.)	Philadelphia	1.45	1.45	1.45	1.35@ 1.55
Pool 54-64 (Gas and St.)	Baltimore	1.70	1.55	1.55	*1.35@ 1.40*
Pittsburgh sc'd gas	Pittsburgh	2.40	2.45	2.45	2.40@ 2.50
Pittsburgh gas mine run	Pittsburgh	2.00	2.10	2.05	2.00@ 2.15
Pittsburgh mine run (St.)	Pittsburgh	1.80	2.05	2.00	2.00
Pittsburgh slack (Gas)	Pittsburgh	1.35	1.25	1.45	1.40@ 1.50
Kanawha lump	Columbus	2.10	2.10	2.05	**1.85@ 2.35**
Kanawha mine run	Columbus	1.50	1.55	1.55	1.40@ 1.70
Kanawha screenings	Columbus	.80	.70	.70	**.75@ .95**
W. Va. lump	Cincinnati	2.10	2.25	2.15	*1.85@ 2.25*
W. Va. gas mine run	Cincinnati	1.40	1.50	1.50	1.40@ 1.60
W. Va. steam mine run	Cincinnati	1.30	1.35	1.35	1.25@ 1.50
W. Va. screenings	Cincinnati	.90	.85	1.00	*.75@ 1.00*
Hocking lump	Columbus	2.35	2.50	2.50	2.25@ 2.75
Hocking mine run	Columbus	1.45	1.50	1.50	1.35@ 1.70
Hocking screenings	Columbus	1.05	1.05	1.05	1.00@ 1.15
Pitts. No. 8 lump	Cleveland	2.30	2.40	2.25	1.90@ 2.65
Pitts. No. 8 mine run	Cleveland	1.80	1.85	1.85	1.85@ 1.90
Pitts. No. 8 screenings	Cleveland	1.35	1.25	1.35	1.30@ 1.40

Midwest	Market Quoted	Mar. 23, 1925	Mar. 8, 1926	Mar. 15, 1926	Mar. 22, 1926†
Franklin, Ill. lump	Chicago	$2.75	$3.00	$3.00	$3.00
Franklin, Ill. mine run	Chicago	2.35	2.40	2.40	2.35@ 2.50
Franklin, Ill. screenings	Chicago	1.95	1.65	1.85	1.75@ 2.00
Central, Ill. lump	Chicago	2.35	2.60	2.60	2.50@ 2.75
Central, Ill. mine run	Chicago	2.20	2.10	2.10	2.00@ 2.25
Central, Ill. screenings	Chicago	1.90	1.40	1.40	1.35@ 1.50
Ind. 4th Vein lump	Chicago	2.60	2.85	2.75	2.50@ 3.00
Ind. 4th Vein mine run	Chicago	2.35	2.30	2.20	2.10@ 2.35
Ind. 4th Vein screenings	Chicago	1.95	1.70	1.70	1.65@ 1.75
Ind. 5th Vein lump	Chicago	2.30	2.15	2.15	2.00@ 2.35
Ind. 5th Vein mine run	Chicago	2.10	1.95	1.95	1.85@ 2.10
Ind. 5th Vein screenings	Chicago	1.80	1.30	1.30	1.25@ 1.35
Mt. Olive lump	St. Louis	2.85	2.75	2.75	2.75
Mt. Olive mine run	St. Louis	2.35	2.15	2.15	2.15
Mt. Olive screenings	St. Louis	1.75	1.40	1.40	1.40
Standard lump	St. Louis	2.35	2.50	2.50	2.50
Standard mine run	St. Louis	1.80	1.80	1.80	1.75@ 1.85
Standard screenings	St. Louis	1.60	1.15	1.15	1.10@ 1.25
West Ky. block	Louisville	1.85	1.85	1.85	1.75@ 2.00
West Ky. mine run	Louisville	1.35	1.35	1.35	*1.15@ 1.50*
West Ky. screenings	Louisville	1.25	.90	.95	.85@ 1.10
West Ky. block	Chicago	1.85	1.75	1.75	1.65@ 1.85
West Ky. mine run	Chicago	1.25	1.50	1.15	.80 1.50
South and Southwest					
Big Seam lump	Birmingham	2.35	2.35	2.35	2.25@ 2.50
Big Seam mine run	Birmingham	1.75	1.75	1.75	1.50@ 2.00
Big Seam (washed)	Birmingham	1.85	2.10	2.10	2.00@ 2.25
S. E. Ky. block	Chicago	2.10	2.60	2.60	2.25@ 3.00
S. E. Ky. mine run	Chicago	1.35	1.65	1.65	1.50@ 1.85
S. E. Ky. block	Louisville	2.10	2.50	2.35	2.00@ 2.75
S. E. Ky. mine run	Louisville	1.35	1.40	1.55	1.35@ 1.75
S. E. Ky. screenings	Louisville	.95	1.00	1.00	.90@ 1.10
S. E. Ky. block	Cincinnati	2.25	2.35	2.25	2.00@ 2.50
S. E. Ky. mine run	Cincinnati	1.35	1.50	1.30	**1.25@ 1.75**
S. E. Ky. screenings	Cincinnati	1.05	1.00	1.00	*.70@ 1.10*
Kansas lump	Kansas City	4.25	4.50	4.35	4.25@ 4.50
Kansas mine run	Kansas City	2.85	2.85	2.75	**2.75@ 3.00**
Kansas screenings	Kansas City	2.75	2.40	2.40	**2.50**

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**; declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	March 23, 1925 Independent	March 23, 1925 Company	March 15, 1926 Independent	March 15, 1926 Company	March 22, 1926† Independent	March 22, 1926† Company
Broken	New York	$2.34	.....	$8.00@$9.25	.....	$8.25@$9.25	.....	$8.25@$9.25
Broken	Philadelphia	2.39	.....	9.15	$9.00@12.50	9.00@ 9.25	$9.00@12.50	9.00@ 9.25
Egg	New York	2.34	$8.25@$8.50	8.25@ 9.25	9.25@11.50	8.75@ 9.25	**10.25@11.25**	8.75@ 9.25
Egg	Philadelphia	2.39	8.65@ 9.15	8.80@ 9.25	9.25@12.50	9.15@ 9.25	9.25@12.50	9.15@ 9.25
Egg	Chicago*	5.06	8.17@ 8.40	8.08	.....	8.13	.....	8.13
Stove	New York	2.34	8.50@ 8.75	8.50@ 9.50	9.60@11.75	9.25@ 9.50	**10.50@11.50**	9.25@ 9.50
Stove	Philadelphia	2.39	8.90@ 9.65	9.15@ 9.50	9.60@12.50	9.35@ 9.50	9.60@12.50	9.35@ 9.50
Stove	Chicago*	5.06	8.80@ 9.00	8.53@ 8.65	.....	8.33@ 8.58	.....	8.33@ 8.58
Chestnut	New York	2.34	8.50@ 8.75	8.25@ 9.40	9.25@11.75	8.75@ 9.15	**10.50@11.50**	8.75@ 9.15
Chestnut	Philadelphia	2.39	8.90@ 9.65	9.25@ 9.40	9.25@12.50	9.00@ 9.15	9.25@12.50	9.00@ 9.15
Chestnut	Chicago*	5.06	8.61@ 9.00	8.40@ 8.41	.....	8.33@ 8.53	.....	8.33@ 8.53
Pea	New York	2.22	4.25@ 5.00	5.25@ 6.00	6.00@ 8.25	6.00@ 6.35	**7.50@ 8.25**	6.00@ 6.35
Pea	Philadelphia	2.14	4.75@ 5.75	6.00	6.50@ 7.50	6.00@ 6.50	6.50@ 7.50	6.00@ 6.50
Pea	Chicago*	4.79	5.36@ 5.75	5.36@ 5.95	.....	5.65@ 5.80	.....	5.65@ 5.80
Buckwheat No. 1	New York	2.22	2.00@ 2.75	2.50@ 3.00	2.50@ 3.50	3.00@ 3.50	2.75@ 3.25	3.00@ 3.50
Buckwheat No. 1	Philadelphia	2.14	2.25@ 3.00	3.00	3.00@ 3.50	3.00	3.00@ 3.50	3.00
Rice	New York	2.22	1.90@ 2.25	2.00@ 2.25	2.00@ 2.25	2.00@ 2.25	*1.85@ 2.25*	2.00@ 2.25
Rice	Philadelphia	2.14	1.70@ 2.25	2.25	2.25	2.25	2.25	2.25
Barley	New York	2.22	1.35@ 1.50	1.50	1.50@ 1.75	1.60@ 1.75	1.50@ 1.75	1.60@ 1.75
Barley	Philadelphia	2.14	1.50	1.50	1.75	1.75	1.75	1.75
Birdseye	New York	2.22	1.40@ 1.60	1.60	.....	2.00	1.40@ 1.60	2.00

*Net tons, f.o.b. mines. †Advances over previous week shown in **heavy type**; declines in *italics*.

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however, is large enough to convince operators that they will enter the new shipping season with no great surplus on hand. Stocks as of March 1 were officially reported at 2,875,000 tons of bituminous and 17,000 tons of anthracite, as compared with 2,818,000 and 255,000 tons, respectively, a year ago. It is estimated that stocks will be reduced to approximately 2,000,000 tons by the opening of navigation.

Smokeless Weaker at Superior-Duluth

Smokeless coals, which had the call during the anthracite strike, are weakening. Dock quotations on lump, egg and nut have been shaded 50c. and it is reported that some coal can be had at figures still lower. Mine-run and slack, on the other hand, are strong at $5.25 and $4.25. The bituminous list, too, is unchanged. There is considerable diversity of opinion as to how much of the hard-coal business smokeless will be able to hold next year. Dealers have been anxious to get anthracite, but the effect of the price differential between the two coals has not yet been measured.

Unusually cold weather has helped the domestic trade in the Twin Cities, but most of the buying is of the hand-to-mouth variety. Some all-rail anthracite has been shipped to St. Paul and Minneapolis. The steam coal trade is draggy. Receipts of anthracite at Milwaukee are increasing slowly and they are still insufficient to meet the brisk demand from householders. There also is a good call for all grades of bituminous coal despite moderate weather.

As the market in the Southwest grows weaker, more shaft mines in Kansas are closing down and crusher activity at the stripping operations is growing. Much of the business ordinarily taken care of by shaft-mine screenings is now going to crusher mine-run. Lump prices range from $4 to $4.50; screenings and crushed mine-run are firm at $2.50. Little improvement in Arkansas production is expected before the summer storage season starts.

Far Western Domestic Trade Drags

Unseasonably mild weather in Missouri River territory has had a disastrous effect upon domestic demand at Colorado mines. Operations have been cut to a 50 per cent basis. Another factor in holding back orders has been the reduction in list prices which went into effect on Monday of this week. The weather also has taken toll of lump business in Utah. Large lump is now quoted at $4, the same price asked for 3-in. coal; the former price was $4.50. Screened slack has been advanced from $2 to $2.25 and straight slack from $1.25 to $1.50.

In the Cincinnati market the annual contest between lake buyers and producers is running true to form. After trying to beat down a $1.50 figure to $1.35@$1.40, however, these buyers are swinging into line. They also are showing interest in slack at $1. The fact that the Norfolk & Western Ry. has renewed its contracts upon practically the same basis as last year has had a tonic effect upon the situation. Cold weather and reduced production, too, are helping.

The low-volatile shippers still are trying to readjust themselves to changed conditions. A $3 quotation on lump and egg now is forecast for April business. Nut has slumped to $2.50, but mine-run holds at $2.25. How to raise slack to a point where it will carry more of its share of the cost load is a problem. Current quotations range from $1.25 to $1.50.

Struggle to Move Prepared Coals

It is a struggle to move prepared low-volatile coals. Some of the large Logan County producers have cut lump to $2 and shrewd buyers are able to shade that 15c. Hazard lump is $2@$2.25. Egg is extremely soft. Steam business, however, helps the mine-run situation and byproduct coals are stronger. Slack, on the other hand, has lost some of its recent firmness and some fair grades can be bought around 75c.

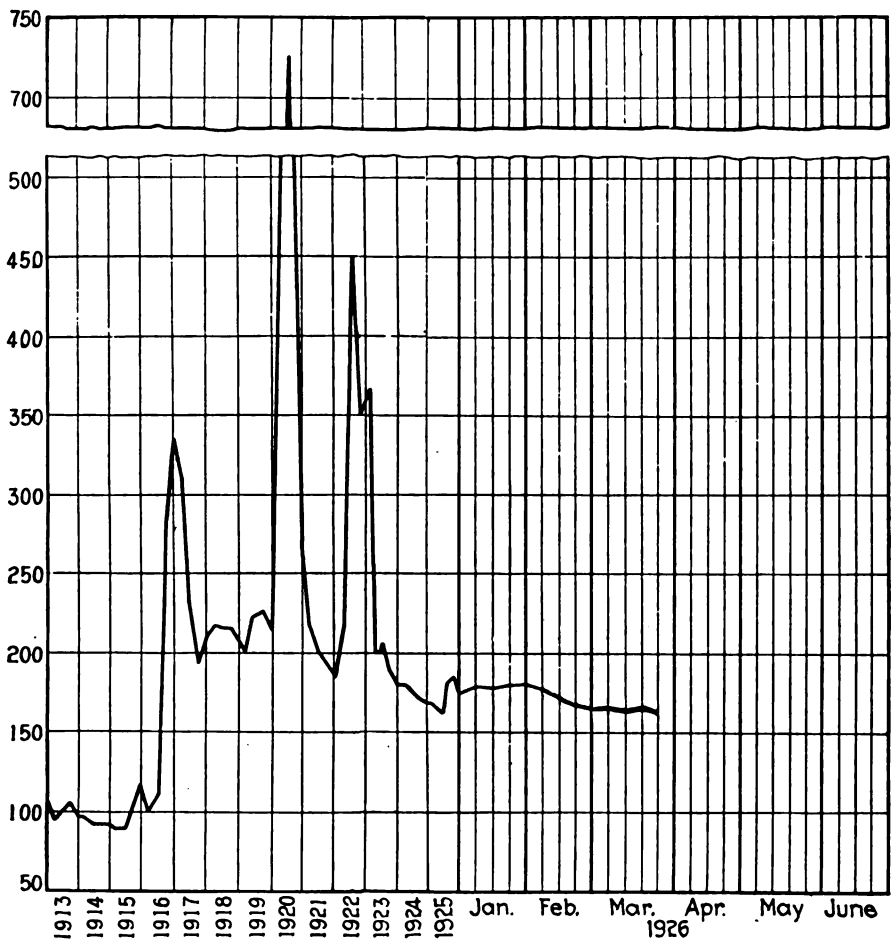
Movement of coal through the Cincinnati gateway, according to the latest weekly report of the American Railway Association, totaled 10,971 cars, an increase of 488 cars over the preceding week and a gain of 2,157 cars over last year. The largest increase was on the Louisville & Nashville—364 cars; the Norfolk & Western was second with an increase of 111 cars. A heavier movement of empties to L. & N. mines brought the empty interchange to 17,084 cars, an increase of 728 cars over the preceding week.

River business has been excellent. For April delivery it is understood that the retail trade will ask $8.50 for smokeless lump, $5.75@$6 for mine-run, $5.75@$6.25 for bituminous lump.

Central Ohio Steam Trade Puzzles

To a certain extent the steam trade in central Ohio is an enigma. General industrial conditions seem to have improved, but demand for coal has not reflected any increase. The contract outlook is uncertain. Railroads have asked for bids on substantial tonnages, but no awards have been made. Certain other large consumers also have made contract inquiries, but many are still out of the market. In the spot market there is a better tone to screenings—due solely to decreased production.

Weather, of course, is the controlling factor in the domestic trade. March retail business has been above the average, but wholesale buying has been in small lots. Consumer buying, too, has been for limited quantities. Smokeless is retailing at $9.50@$10; West Virginia splint and Kentucky block, $7@$7.50; southern Ohio, $6@$6.50.



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926				1925	1924
	Mar. 22	Mar. 15	Mar. 8	Mar. 1	Mar. 23	Mar. 24
Index	167	168	167	169	163	176
Weighted average price	$2.02	$2.03	$2.02	$2.04	$1.97	$2.13

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average of the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.

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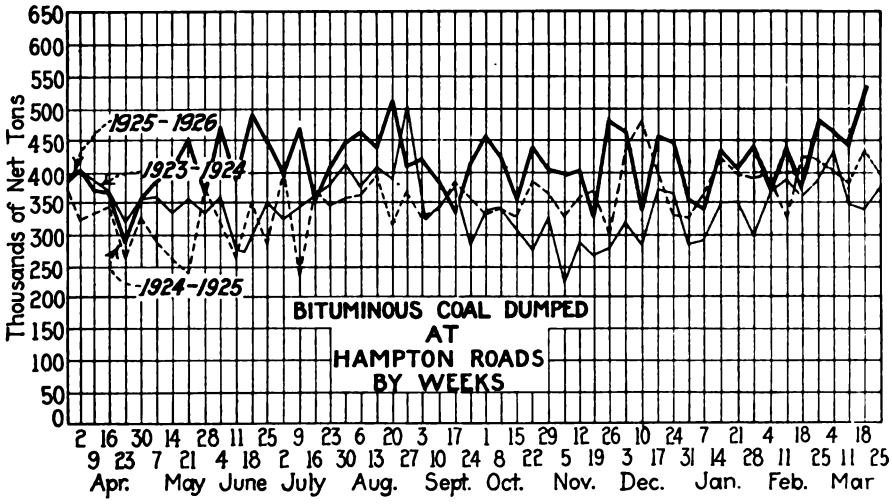


Southern Ohio production again has declined. No increase is looked for until the lake season is in swing. A considerable tonnage already has been loaded in bottoms tied up at the lower ports awaiting the opening of navigation.

There has been no change in spot prices in the Cleveland market. The steam trade is weak and domestic demand dull. There is more distress tonnage to be had than inquiries for fresh shipments. Production in the eastern Ohio field for the week ended March 13 approximated 250,000 tons, or 36 per cent of capacity. Compared with the preceding week this was a decrease of 8,000 tons; compared with a year ago, it was an increase of 4,000 tons.

No Joy Pierces Pittsburgh Gloom

Optimism apparently is a stranger to the Pittsburgh district at the present time. Demand is growing weaker and weaker; few contracts are being renewed and more mines plan to close down on April 1. The labor situation is again in the limelight as the result of the dissolution of the district labor organization formed shortly after the Pittsburgh Coal Co. began reopening mines at the 1917 scale. Following the refusal of the company to restore the Jacksonville scale, the defunct union called a strike and went over to the United Mine Workers. The strike appears to have failed before it was started.

Central Pennsylvania is finding its annual seasonal dullness made more bitter by comparison with the business enjoyed during the anthracite strike. Little progress has been made in reducing the accumulation of 1,800 "no bills." Prices on all coals are easier. The Broad Top, Clearfield and Cambria County fields seem to be hit the hardest in the present slump.

Buffalo is running Pittsburgh a close second for unrelieved pessimism. Industrial spot buying is niggardly. Cold weather has given some aid to distributors of domestic bituminous, but most of the demand from householders is for anthracite, which is now coming in in quantities sufficient to meet requirements. Aside from a scarcity of nut, Toronto retailers are experiencing no difficulty in taking care of orders for hard coal. Demand for low-volatile bituminous and coke has dropped.

No Improvement in New England

The New England steam coal market is not only sluggish; it is distinctly weak. Spot buying is slow and the few orders placed are for small tonnages. Spasmodic efforts have been made to interest consumers in contracts and it was rumored last week that certain public utilities were on the point of closing. The price most commonly mentioned is $1.75 net, mines, for high-grade smokeless.

Spot prices on Navy Standard coal on cars at Boston and Providence have sagged to $5.70@$5.85 per gross ton. Terminal facilities are blocked with unsold coal. Accumulations are still the order of the day at the southern loading piers, where coal is now offered at $4.30@$4.50. Unless there are further drastic cuts in the output, the decline in prices will continue.

Prepared smokeless coal is practically a drug on the market. Shippers with rejected tonnage on hand can place it only with great difficulty. In many cases the coal has been sold for freight and demurrage. Other substitutes for anthracite are faring little better. Several cargoes of foreign coke and ovoids are being diligently hawked about, but retail buyers are indifferent.

New York Working Toward Normal

The bituminous situation at New York is slowly approaching normal. Distress tonnage is coming down, but there still are about 4,000 cars standing at the piers. Spot buying, except of distress coal, is not brisk either at tidewater or in the line trade. Contracting, too, is backward, although some business has been closed at figures approximating those carried in last year's agreements. On contract some shippers are quoting pool 9 at $2.05@$2.25; pool 71, $2.40@$2.50 and pool 1, $2.75 @$3. Late last week, however, it was reported that 125,000 tons of pool 9 quality had been closed at $1.70.

Philadelphia sales agencies are endeavoring, with no great success, to induce steam buyers to sign on the dotted line for next year and to take a little extra tonnage on the expiring agreement. Leading factors say they are holding to $2.65@$2.75 on contracts, but there have been a number of offers of good trade coal at less. The railroads have bought so much bargain-counter tonnage since the anthracite strike ended that they are as reluctant as the general industrial consumer to tie up on contracts for the new season.

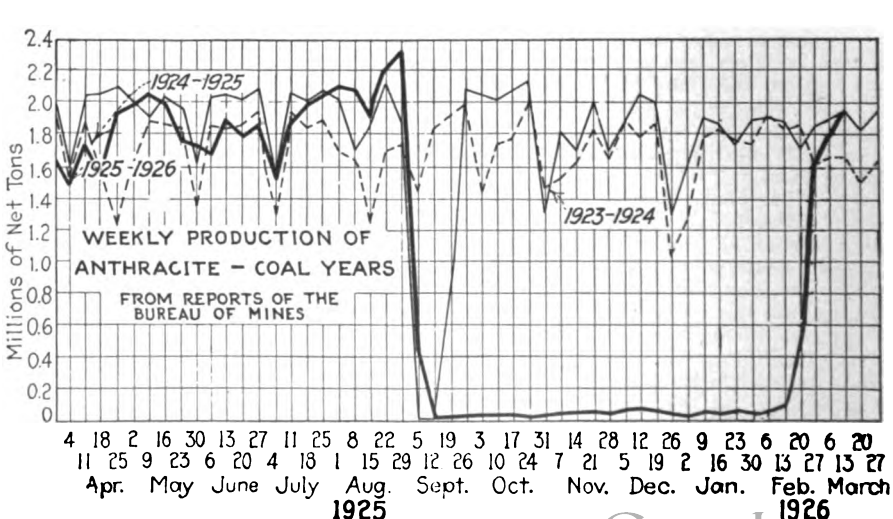
Conditions at Baltimore differ in no important detail from those now controlling at New York and Philadelphia. Few inquiries looking toward contract renewals have been made by the buyers. The poorer grades of steam coal are a drug on the spot market and the better grades are only in fair demand. All gas coals are sluggish. The only ray of immediate hope is in the faint revival of export movement.

Birmingham Has Weather Flurry

A sudden drop in the thermometer was responsible for a brief buying flurry in the Birmingham domestic market last week. Producers expect to announce their spring prices within a few days and contracting on a liberal scale is forecast. It is rumored that the new schedules will show some advances in the contract prices of the better grade coals.

Black Creek, Cahaba washed and mine-run and other standard grades from the Warrior field are still in good demand for industrial, coking and bunker fuel. Shipments against contracts continue heavy, with the railroads and public utilities taking their maximum quotas. Poorer grades are less active and mines producing such coal are curtailing their output.

Reduction in the tonnage of "substi-



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Car Loadings and Supply

	Cars Loaded—All Cars	Cars Loaded—Coal Cars
Week ended March 6, 1926	964,681	182,441
Preceding week	912,658	180,434
Week ended March 7, 1925	930,009	163,533

	Surplus Cars—All Cars	Surplus Cars—Coal Cars	Car Shortages All Cars	Car Shortages Coal Cars
March 8, 1926	202,432	72,949	.....	.....
Feb. 28, 1926	207,683	74,151	.....	.....
March 7, 1925	279,430	138,045	.....	.....

tute" fuels in New York retail yards has increased the demand for anthracite in the metropolitan district. Old line companies are prorating their output among customers who have not felt the urge to buy large quantities of independent tonnage. This has prevented large premiums on the latter coal as the demand is just sufficient to keep prices steady.

Chestnut Leads in Demand

Most independent shippers are pressing buyers to take either egg or stove with chestnut. The last named size still leads in demand. Stove lags behind egg, which is growing stronger. Pea coal is moved without difficulty—an unusual situation for this time of the year. The steam coals are holding firm.

Complaint of insufficient receipts of anthracite is common in the Philadelphia market. Most of the coal is moved out of the retail yards as fast as it is unloaded. As at New York, chestnut is leading in popularity. Egg, however, is outranked by stove, but retail dealers accept it unhesitatingly. Pea, too, is enjoying an unwonted demand and there are no storage piles at the mines to quiet appeals for speedy shipment.

The steam market is absorbing the production sent to Philadelphia—but there is no excess of demand. On the contrary, there is evidence that some of the tonnage is coming from the breakers faster than the consumers throughout the anthracite steam-coal area as a whole are willing to take it.

At Baltimore the situation is still one of demand exceeding the supply because the retailers are adhering to their refusal to augment company shipments with purchases of high-premium independent anthracite. Retail prices are on a pre-strike basis, which excludes paying $12@$15 at the mines for coal.

Connellsville Output Tobogganning

Week by week the Connellsville ovens are continuing their efforts to bring beehive coke output in line with consumer requirements. During the week ended March 13, according to the Connellsville *Courier*, furnace oven production was cut 2,300 tons and merchant oven output 8,260 tons. The total production for the week was 188,990 tons, of which 100,400 tons came from furnace ovens.

Blast furnaces have shown little interest in the market and there is not much second-quarter business in the offing. Ovens talk $3.50 for furnace coke and the furnacemen talk $3.25. Spot tonnage is to be had at the latter figure. Foundry coke has been in moderate demand, with standard tonnage at $4.50@$5. A fair run of buying by miscellaneous consumers also has helped the market.

Railroads Use Less Fuel Oil During 1925

A total of 59,355,000 barrels of fuel oil was consumed by locomotives of the principal railroads in the United States in 1925, compared with 61,738,000 barrels in 1924, according to returns received from railroads by the American Petroleum Institute. These figures include fuel oil consumed in all classes of service.

The largest consumption of fuel oil was shown in the Middle Western and Southwestern district, totaling 27,386,000 barreles in 1925 compared with 29,153,000 barrels in 1924. Consumption in the Southwestern Pacific district totaled 22,940,000 barrels in 1925 compared with 23,924,000 barrels in 1924. In the Northwestern district 6,637,000 barrels were consumed in 1925 compared with 7,060,000 barrels in 1924. In the Southern district locomotives consumed 2,278,000 barrels in 1925, compared with 1,470,000 barrels in 1924. In the Eastern district the consumption totaled 114,000 barrels, compared with 131,000 barrels in 1924.

Canada's Coal Output and Consumption Drop in 1925

Canada's consumption of coal during 1925 fell short of the level of the previous two years and amounted to only 90 per cent of the average for the five years 1920-24 inclusive, according to figures recently prepared by the Dominion Bureau of Statistics and received in the U. S. Department of Commerce. Of a total of 29,000,000 net tons made avaliable for consumption last year almost half is accounted for by domestic production.

Nova Scotia led in the mining of bituminous coal with 3,800,000 tons, followed by British Columbia with 2,700,000 and Alberta with 2,100,000. Alberta also produced 3,200,000 tons of lignite and 570,000 tons of sub-bituminous coal. Labor troubles occasioned by strikes were given as the cause of production falling below the 1924 total and the average for the preceding four years. Nova Scotia, which suffered particularly in this respect, had a yearly output amounting to only 64 per cent of the average for the period 1920-24.

Exports also experienced a decline to 786,000 tons, or 45 per cent of the five-year average for 1920-24.

Utilities Consume Less Coal But More Oil in January

Public utility power plants in the United States consumed 3,738,006 net tons of coal in January, compared with 3,801,372 tons in the preceding month and 3,471,524 tons in November, according to the U. S. Geological Survey. Fuel-oil consumption bv utilities in January totaled 1,016,316 barrels, as against 811,777 barrels in the preceding month and 790,734 barrels in November.

The average daily production of electricity by electric public-utility power plants in January was 197,300,000 kw.-hr., a little less than the revised daily rate for December but nearly 10 per cent larger than the output for January, 1925. The amount produced by the use of water power was 15 per cent larger and the amount produced by fuel power was 7 per cent larger.

Bituminous Coal Produced by Stripping Operations In the United States in 1924*

State	Number of Strip Pits	Number of Shovels	Net Tons Mined by Stripping	Tota Net Tons Produced (same mines)	Men Employed—Underground—Total Value (all coal)	Men Employed—Underground—Miners, Loaders, etc., (a)	Men Employed—Underground—All Others	Men Employed—Surface	Men Employed—Total	Days Worked	Per Cent of State Total Mined by Stripping
Alabama	10	19	370,081	643,440	$1,456,657	269	110	608	987	183	1.9
Arkansas	10	16	223,307	223,307	793,406	...	...	398	398	123	15.4
Georgia	1	2	65,657	72,947	267,063	53	18	68	139	250	87.6
Illinois	17	42	2,295,860	2,376,325	4,385,362	87	28	888	1,003	183	3.4
Indiana	27	57	2,511,189	2,511,189	4,995,889	...	...	1,537	1,537	159	11.7
Kansas	26	33	795,074	795,074	2,124,413	...	...	601	601	119	18.7
Kentucky	13	30	1,300,855	1,321,413	2,031,662	25	10	746	781	164	2.9
Missouri	19	27	979,700	979,700	2,730,487	...	...	814	814	132	39.5
North Dakota	13	9	434,184	445,509	955,835	17	4	231	252	171	36.2
Ohio	46	99	2,866,683	2,941,650	4,733,869	180	57	1,730	1,967	141	9.4
Oklahoma	13	21	312,109	319,609	1,159,753	31	8	382	421	177	13.4
Pennsylvania	31	54	902,818	1,509,728	2,910,476	392	132	870	1,394	177	0.7
West Virginia	4	7	244,448	244,448	348,694	...	...	94	94	152	0.2
Other states (b)	4	4	304,989	309,889	598,117	7	2	55	64	224	3.2
Total	234	420	13,606,954	14,694,228	$29,491,683	1,061	369	9,022	10,452	160	3.1
Pennsylvania (anthracite)	42	95	1,865,677	16,289,110	$88,566,614	13,834	8,200	9,334	31,368	273	2.1

Compiled by U. S. Bureau of Mines.

* For mines that recover coal both by stripping and by underground operations, the returns do not permit separating men engaged in stripping from those engaged in other work. For this reason the figures of men employed represent ll persons working at these mines, including those underground. The total tons produced by both methods at these same mines also are shown.

(a) Includes also shotfirers.

(b) California, Iowa, Montana and Texas.

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Foreign Market And Export News

Welsh Trade Unsettled; Export Market Uncertain; Newcastle Still Sluggish

Though the tonnage situation has improved with better weather, the Welsh steam coal trade is still unsettled as regards early shipments. Coal has accumulated to a considerable extent and operators are still engaged in clearing their cars, until which time regular working of the pits is impossible.

The prospects of improved export of Welsh coal are not altogether good because shipping is still short of requirements and freights are heavy. On the other hand the operators have plenty of orders in hand and the ruling high freights will no doubt attract shipping before long.

The best contract to report is one for 32,000 tons of best Admiralty large for the Palestine Rys. for delivery for six months from April to Haifa. Beyond this there seems to be little inclination on the part of either buyers or sellers to enter into negotiations pending the developments in the industry after May 1. So far the returns show a discrepancy of 3s. 2d. per ton between the cost of production and the selling prices, the discrepancy, of course, being on the wrong side of the balance sheet.

The Newcastle market is dull and cheerless and the prospects for the next month are anything but favorable. Newcastle is still losing business to Germany and Silesia.

Output by British collieries during the week ended March 6, according to a special cable to *Coal Age*, totaled 5,285,000 gross tons, compared with 5,370,000 tons in the preceding week.

French Market Marks Time

Paris, France, March 4.—Demand for industrial fuels continues satisfactory, but the consumption of domestic grades has been greatly reduced. British imports of household fuel have been sharply reduced.

Belgian sellers of sized coal have decided to apply to the March deliveries in France the same price estimate as for last month. Owing to the rate of exchange this means an increase of 6@10 fr. per ton. Russian anthracitic is a drug on the market in the Paris district; cobbles can be used only for central heating purposes. In Rouen, Russian nuts, 25/55, are quoted at 380 fr. and cobbles 55/80 at 370 fr. These prices are out of line with Welsh anthracite, quotations of 390@435 and 380@410 fr., respectively, for the same sizes.

During the first twenty days of February, the O.H.S. received 354,900 tons of coal, 187,000 tons of coke and 24,900 tons of lignite briquet from the Ruhr.

The O.H.S. new price list for indemnity coals, effective March 1, increases the price of coal delivered by sea 5 fr. The price of industrial coal delivered via the Belgian frontier is increased 3 fr., on unscreened 20/25 and 5 fr., on unscreened 30/40.

Belgian Trade Holds Position

There was no material change in the Belgian coal market the first week of the month, reports Brussels under date of March 4. Orders have been reduced for some grades of both steam and domestic coals, but prices generally are well maintained. The exception has been in the quotations on certain domestic coals for which demand has almost disappeared.

French imports are below last year's figures, but the difference between January, 1926, and December, 1925, was only about 5,000 tons. British and Dutch arrivals are more irregular. Receipts of free German coal are near a vanishing point. On Jan. 31 Belgian stocks were down to 1,398,180 metric tons, as compared with 1,558,120 tons a month earlier.

There is a good demand for industrial lean coals. Semi-bituminous steams are not much sought after, but the 5x10, 6x8 and 10x15 grades are strong and prices have been increased 2@4 fr. per ton in both the Borinage and Liege districts. Screened sizes are almost unprocurable and coking smalls are firm. Duffs for brick-making are held at 66 fr.

Current quotations are as follows:

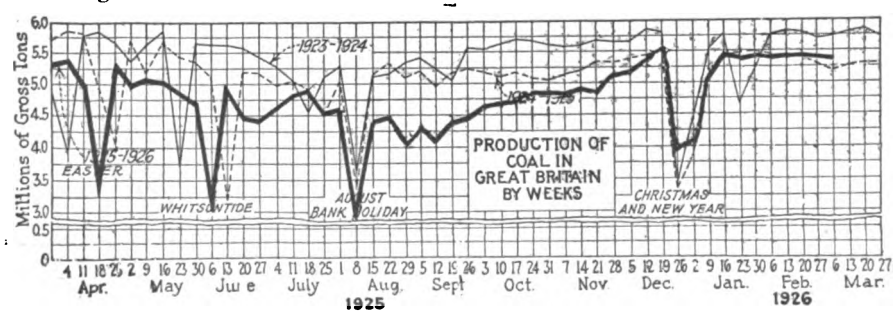
Anthracitic: 80x120, 180 fr.; 50x80, 200 fr.; 30x50, 215 fr.; 20x30, 175 fr.

Semi-bituminous: 80x120, 140@145 fr.; 50x80, 150@155 fr.; 30x70, 175 fr.

Bituminous: 80x120, 135@140 fr.; 50x80, 150@155 fr.; 30x70, 155@160 fr.; 20x30, 130@140 fr.

The demand for briquets has improved a little, but it is still unsatisfactory. The prices of patent fuels rise in proportion with the price of pitch.

Belgium received 312,632 tons of reparation fuels (including 11,266 tons of coke) from Germany in January, as against 275,875 tons in December.



Chile Mines 1,473,000 Tons

Chile's coal production during 1925 has been estimated at 1,473,000 metric tons by the geological section of the Chilean Ministry of Agriculture, Industry and Colonization. Although this figure is 40,000 tons less than that for 1924, it is still considered unexpectedly high, as a number of mines worked only part time a large part of the year.

Export Clearances, Week Ended March 18, 1926

FROM HAMPTON ROADS

	Tons
For Brazil:	
Nor. Str. Augvald, for Rio de Janeiro	6,532
Ital. Str. Calaba, for Rio de Janeiro	7,251
For Bermuda:	
Nor. Str. Gerlon, for St. Georges	2,995
For Italy:	
Ital. Str. Marina O, for Porto Ferrajo	1,910
For Cuba:	
Br. Str. European, for Havana	4,607
Dan. Str. Delaware, for Havana	3,717
For Argentina:	
Br. Str. Illingworth, for Buenos Aires	7,232
For Spain:	
Br. Str. Denham, for Valencia	3,355
For Newfoundland:	
Nor. Str. Urter, for St. Johns	2,003

FROM BALTIMORE

For Argentine:	
Br. Str. Rustington, for Buenos Aires	5,397
For Italy:	
Ital. Str. Valcerusa, for Civitavecchia	7,133

FROM PHILADELPHIA

For Cuba:	
Nor. Str. Thorgend, for Havana	——

Hampton Roads Coal Dumpings*

(In Gross Tons)

	Mar. 11	Mar. 18
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week	164,800	190,426
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	84,816	127,159
C. & O. Piers, Newport News:		
Tons dumped for week	147,706	167,546

* Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

	March 13	March 20†
PIERS		
Pool 1, New York	$5.65@$5.85	*$5.60@$5.75*
Pool 9, New York	5.20@ 5.40	*5.15@ 5.35*
Pool 10, New York	4.80@ 5.10	*5.75@ 5.10*
Pool 11, New York	4.50@ 4.75	4.50@ 4.75
Pool 9, Philadelphia	5.10@ 5.40	5.10@ 5.40
Pool 10, Philadelphia	4.95@ 5.15	4.95@ 5.15
Pool 11, Philadelphia	4.60@ 4.80	4.60@ 4.80
Pool 1, Hamp. Roads	4.50@ 4.55	4.50@ 4.60
Pool 2, Hamp. Roads	4.20@ 4.30	4.25@ 4.30
Pools 5-6-7, Hamp. Rds.	3.90@ 4.00	3.90@ 4.00
BUNKERS		
Pool 1, New York	$5.90@$6.10	$5.75@*$6.00*
Pool 9, New York	5.45@ 5.65	5.40@ *5.60*
Pool 10, New York	5.05@ 5.35	5.00@ *5.35*
Pool 11, New York	4.75@ 5.00	4.75@ 5.00
Pool 9, Philadelphia	5.35@ 5.65	5.35@ 5.65
Pool 10, Philadelphia	5.20@ 5.40	5.20@ 5.40
Pool 11, Philadelphia	4.85@ 5.05	4.85@ 5.05
Pool 1, Hamp. Roads	4.55	4.60
Pool 2, Hamp. Roads	4.30	4.30
Pools 5-6-7, Hamp. Rds.	4.00	4.10

Current Quotations, British Coal, f.o.b. Port, Gross Tons

Quotations by Cable to *Coal Age*

Cardiff:	March 13	March 20†
Admiralty, large	23s.@24s.	23s.6d.@24s.
Steam smalls	12s.	12s.
Newcastle:		
Best steams	17s.@18s.	18s.
Best gas	19s.	20s.
Best bunkers	16s.6d.	*16s.*

† Advances over previous week shown in **heavy** type; declines in *italics*.

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Coming Meetings

Lehigh Valley Section, A. I. E. E. Sterling Hotel, Wilkes-Barre, Pa., March 26, 6:30 p.m. Secretary Wilkes-Barre section, E. B. Wagner.

New England Coal Dealers' Association. Annual meeting, State Armory, Worcester, Mass., April 7 and 8. Secretary, E. I. Clark, 141 Milk St., Boston, Mass.

American Welding Society. Annual convention, 29 West 39th St., New York City, April 21-23. Secretary, M. M. Kelly, 29 West 39th St., New York City.

California Retail Fuel Dealers Association. Thirteenth annual convention at Del Monte, Calif., April 22-24. Secretary, J. B. Muir, Oakland, Calif.

National Retail Coal Merchants' Association. Ninth annual convention, New Willard Hotel, Washington, D. C., May 17-19. Resident vice-president, Joseph E. O'Toole, Transportation Bldg., Washington, D. C.

Electric Power Club. Convention at The Homestead, Hot Springs, Va., May 24-27. Secretary, S. N. Clarkson, B. F. Keith Bldg., Cleveland, Ohio.

The American Mining Congress. Annual Exposition of Coal Mining Equipment, May 24-28, at Cincinnati, Ohio, in conjunction with the annual meeting of practical operating officials. Assistant secretary, E. R. Coombes, Washington, D. C.

International Geological Congress. The fourteenth congress will be held in Madrid, Spain, commencing May 24, 1926. From May 5 to 22 excursions of interest to the visiting delegates will be arranged. Information concerning the congress can be obtained from the secretary of the organizing committee, Enrique Dupuy de Lome, Plaza de los Mostenses, 2, Madrid, Spain.

Midwest Retail Coal Merchants Association. Annual meeting, May 25 and 26, at Kansas City, Mo. Secretary, James P. Andriano, St. Joseph, Mo.

Western Canada Fuel Association. Annual meeting at Winnipeg, Manitoba, Can., May 27 and 28. Secretary, W. H. Morrison, Winnipeg.

American Wholesale Coal Association. Annual meeting at Toledo, Ohio, June 7-9. Treasurer, R. B. Starek, Union Fuel Bldg., Chicago, Ill.

Association of Iron & Steel Electrical Engineers. Exposition and convention at Hotel Sherman, Chicago, Ill., June 7-10. Secretary, J. F. Kelly, 1007 Empire Bldg., Pittsburgh, Pa.

American Institute of Electrical Engineers. Annual convention, White Sulphur Springs, W. Va., June 21-25. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

American Society for Testing Materials. Convention at Haddon Hall, Atlantic City, N. J., June 21-25. Secretary, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

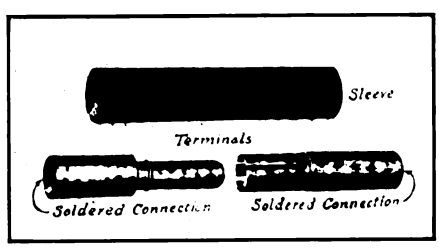
American Society of Mechanical Engineers. Spring convention at San Francisco, Calif., June 28-30. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

New Equipment

Insulated Connector Affords High Current Capacity

Small diameter, high current capacity, a lack of screws or bolts, the ability to hold against considerable tension before pulling apart, and provision for quick connection and disconnection are highly valuable attributes of any motor lead connector. The new cable connector of the Ohio Brass Co., Mansfield, Ohio, embodies these features.

This connector is intended for use on motor leads and trolley-pole connections of mine locomotives as well as for general use on stationary and portable motors. The terminals, which are of phosphor-bronze, have a double-spring contact. The slotted end of the male connection is compressed by the solid part of the female portion, and likewise the slotted end of the female element grips the solid portion of the male. One excellent detail of the design is the raised ring or boss on the solid portion of the male element. This fits into a corresponding groove in the spring or slotted part of the female element and gives the connector its ability to withstand considerable pull before coming apart.



Easily Made but Tenacious

The two terminals are soldered to the cables to be connected. A push forces the two parts together and the ring on the one fitting into an internal groove on the other holds them in place. A rubber sleeve spans the completed connection and insulates it.

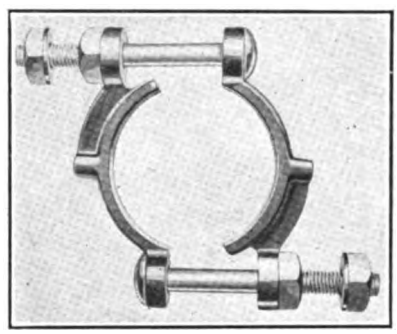
The cable ends are soldered into the tinned sockets of the connector. In application the cable insulation is trimmed back just far enough so that when the connector is snapped together the distance between the ends of the insulation is slightly less than the length of the tight-fitting rubber sleeve which spans and covers the metal sleeves. In this way a well-insulated joint is attained without the use of tape.

Trolley Guard-Board Support

A simple clamp that makes it possible to install guard boards after a trolley line is in place in a mine is a recent development of the Ohio Brass Co., of Mansfield, Ohio.

Often when haulageways are extended it becomes desirable to add guard boards to the trolley line. This simple device consisting of two clamping pieces and bolts, can be fastened around the skirt of any insulated trolley hanger having a diameter ranging from 3¼ to 3¾ in. After the two clamping pieces are rigidly attached to the hanger, it is a simple matter to slip suitably drilled guard boards over the extended clamping bolts. A nut and washer on the outside of each guard board holds it in place.

This fitting is said not to affect the installed trolley hanger or clamp and can be readily removed and reinstalled in another location when desired.



Fastens Board to Insulated Trolley Hangers

This clamp may be slipped around the skirt of hanger. The clamping bolts are then passed through holes in the guard boards. Both trolley and guards are thus suspended from the same hangers.

A New Recording Pyrometer

Charles Engelhard, Inc., 30 Church St., New York City, has recently brought out the Type S recording pyrometer illustrated in Figs. 1 and 2, in which have been embodied a number of improvements, principal among these being the mercury contact switch shown in Fig. 3.

The outer case of the instrument is made up of two castings, the back half, which forms the base of the instrument, being made from cast iron and the front half or cover, from cast aluminum. The mechanism is assembled on a sub-base that is secured to the casing by four bolts.



Fig. 1—Type S Recording Pyrometer

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The galvanometer-moving system which is mounted on the back of the sub-base responds to the electromotive force applied to the terminals of the instrument, and its deflection from the low-scale division is a measure of the electromotive force, which in most cases is calibrated directly in terms of temperature. A clock mechanism drives

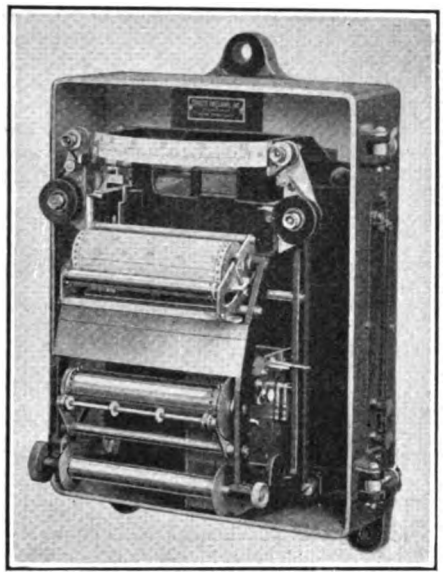


Fig. 2—View of Pyrometer Mechanism

the chart at a fixed rate of speed. A depressor bar above the pointer is operated intermittently from the power unit. When the depressor bar is lowered, the pointer presses the inked ribbon against the chart and records the pointer's position.

The power unit is controlled from a contact switch mounted on the clock. Each time that a circuit is established through this contact switch, the power solenoid is drawn down and drops the depressor bar against the pointer.

The recording chart is of the ribbon type and approximately 100 ft. in length, the over-all width of the chart being 6⅜ in. This chart is held against the driving drum by a series of rollers that are mounted in a separate frame, hinged so it can be swung outward while the rolls are being changed. The

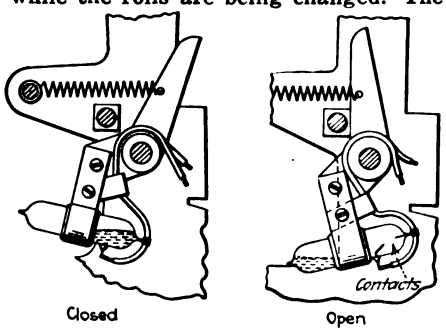


Fig. 3—Mercury Contact Switch

driving drum for the chart is connected to the gear train by an adjustable clutch.

The electric clock for the unit is designed for alternating current and is of the Warren type. The mercury contact switch previously referred to is furnished on the multi-record instrument and forms part of the power unit. This switch consists of levers mounted on a spindle and spaced from one another. To the lower ends of the levers is attached a small glass tube containing mercury and sealed-in electrodes. The normal position of the levers is such that the bulbs are tilted and the mercury is not in contact with the electrodes. Opposite each lever on a revolving spindle that is connected to the pinion of the power unit is a stud that throws the lever forward when turned to the right position. This action tilts the switch bulb so that the mercury completes the circuit between the two electrodes as shown in the closed position, in Fig. 3.

Automatic Re-centering Motor Bearings

Many of the troubles experienced with electric motors are the result of bearing wear permitting the rotor to rub on the stator. To insure a continuous uniform air gap in motors, the Howell Electric Motors Co., of Howell, Mich., has brought out a complete line of motors with anti-friction bearings, in which any looseness in the bearing, caused by wear or otherwise, is instantly and automatically taken up, so as to keep the rotor of the motor continually centered. This is done by using a Timken tapered roller bearing, shimmed with a fluted wire spring which acts as a compression spring.

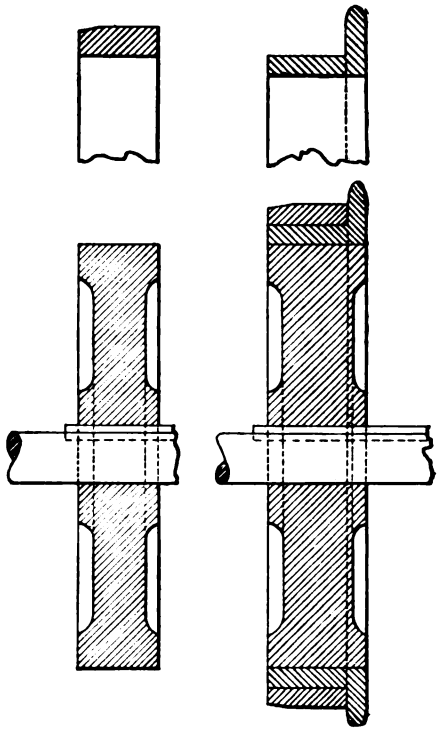
The inner race or cone of the roller bearing is fitted on the shaft with a light press fit. The outer race or cup is fitted into the housing of the motor end bell with a sucking fit which allows creeping of the outer race. The spring is held tight against this outer cup by the outer grease cap; pushing the cup tightly against the rollers and keeping the bearings tight at all times. This type of bearing is put in each end of the motor. The roller bearing is made of nickel-molybdenum steel.

Two-Piece Locomotive Tire

In the accompanying illustration may be seen a new type of locomotive tire recently patented by J. N. Abbott, superintendent of Mine No. 3 of the Columbus Mining Co., of Christopher, Ky. In this construction the tire is made in two parts, the inner one carrying the flange and the outer acting as the tread proper.

When the tread wears, as all treads do, it can be replaced without incurring the expense incident to a complete tire renewal. In order to change locomotive tires at most mines it is necessary to withdraw the drivers and their connecting axle, remove the gear and send the balance to the machine shop where the tires are ground or turned down. This consumes much time and keeps the locomotive out of commission for at least one shift.

With the construction here shown it is claimed that a change can be made much more quickly. It is merely necessary to raise one end of the locomotive and cut off the worn tread either with a hammer and chisel or with the acetylene torch. The new tread having been previously heated may then be slipped into place, and allowed to shrink. It is claimed that replacement of a worn tread may be accomplished in a few minutes time and that one flange will outlast several treads.



Cross-Sections of Wheel and Tire

As may be seen the tire is made in two parts the flange being part of the inner band and the outer one serving as the tread proper. Inasmuch as the tread wears much more rapidly than does the flange it is well that the former can be removed without making a renewal of the flange necessary.

Clamp Holds Angle Iron Trolley

The use of the bulldog trolley clamp principle has been extended by a recent development of the Ohio Brass Co. to include an application where angle iron is employed as the trolley contact. The adaptation consists in the substitution of clamping jaws shaped to grip a standard 2½x2½-in. angle, in place of the customary wire clamping jaws. With this device the bulldog line is said to include suitable clamps to handle practically any form of trolley contact and feeder suspension.



Angle Iron Clamp with Strong Holding Jaws

Trolley lines made of angle iron can now be supported by a type of clamp commonly used for mine trolley suspension.

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Miners Will Profit from Advent of Mechanical Loader, Page 466

APR 5 1926

COAL AGE

The World's Accepted Authority on Coal Mining

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Inviting Bids—



on mine cars is just ordinary business. But placing orders for mine cars is as interesting and as important as any other work an official is called upon to do.

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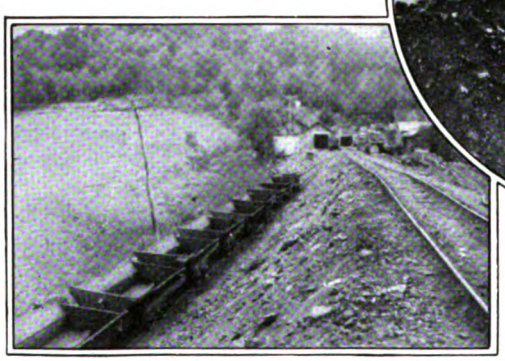
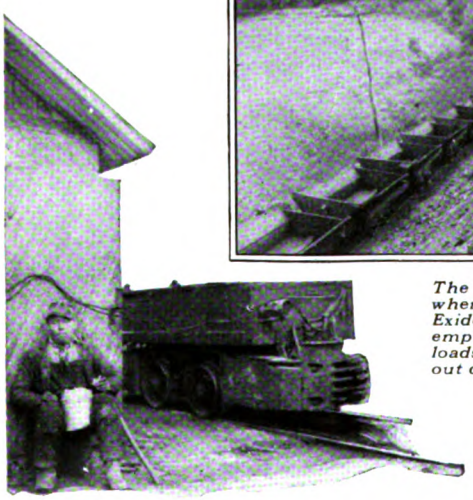
An Exide-Ironclad-equipped motor hauling a heavy trip up a steep grade at W. R. Gallagher & Bros. Coal Company, Houtzdale, Pa. An Exide-Ironclad Battery always has plenty of power in reserve for grades or extra heavy loads.



How many cars did you load and ship today? Many mines that have tried Exide-Ironclad Batteries have found the smoothness and efficiency of their haulage service so increased that more tons go over the tipple.





The empties are ready, but where is the motor? When an Exide-Ironclad is on the job empties are hustled in and the loads brought right out—without delay.

* * *

The motor is ready to take the empties in and the motorman is giving the Exide-Ironclad a "boost" while he eats his lunch. The battery takes its charge quickly, easily, and with little waste of current.



The miner and his helper rarely have to quit work for lack of cars, when the gathering motors are equipped with Exide-Ironclad Batteries.

Hauling more coal for less money

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 29 — New York, April 1, 1926 — *Number* 13

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COAL AGE

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Flywheel Equalizes Hoist's Demand for Steam 459
BY C. H. S. TUPHOLME.

By Mechanical Loading an Attack Is Made on the Largest Cost Items of Coal Mining 466
BY NIXON W. ELMER.

Believe Cutting Machine Caused Blast at Eccles Mine 469

Coal Legislation Barrage Opens in Congress 474

Government Accepts Commission Plan to Adjust Britain's Coal Difficulties; Seek Measures for Lasting Solution 475

Increasing Statistical Work Among Coal Associations Presages Plans to Meet End of Jacksonville Pact 477

Coal Men You Should Know—Robert Grant 465
Sale of Coxe Bros. Probable 475
Receivers Likely to Sell Carbondale Coal Corp. 475
N. Y. Retailers Discuss Outlook for Soft Coal and Coke as Anthracite Rivals 476
N. C. A. Names Delegates to U. S. Chamber Meeting 476
Mine Inspectors' Institute Plans Live Program 476
Union Labor Starts Battle Against Injunctions 477
Machine Scale Ratified in Kansas; Loaders Get 90c.; Operators, 25c. per Ton 478
Pittsburgh Coal Co. Omits Preferred Dividend 478
N. C. A. to Hold Three-Day Annual Meeting in Chicago 478
Erie Coal Holdings May be Segregated Soon 478
Funds Voted for Study of Mine Accidents 478
May Keep Tabs on Inquiries in Trade Trend Records 478

Editorials 457
Underground Operation 472
Practical Pointers 471
News Items from Field and Trade 479
Traffic 482
Weekly Review and the Market 483
Foreign Market and Exports News 488
New Equipment 489

Inching Toward Safety

Coal Age is specializing on mine accidents, for only by due consideration of the causes of these can we attain safety. The Minister Stein explosion will be described next week and its causes discussed. No gas had even been found where the explosion took place, but it may have been there in sufficient quantity to ignite when the shot that blew up the mine was fired. It was only a small shot, and some will wonder if mine officials and the state authorities were right in visiting it with the blame when there were so many other possibilities present. But the story of the explosion, even if the cause has been wrongly assessed has several morals for all of us to draw, and M. Touwaide, the author has a lucid way of presenting them.

Taking the Dirt Out of Coal

What shall be done with bone coal? Some believe that if the operator can't use it himself, he can't afford to waste it and should send it to market in the fine sizes. Much coal has to be wasted to lower the ash content materially after once the segregated slate is removed. But whatever the operator does decide, it should be based on the facts and not on a guess as to the ash analysis he prefers. He should be able to get a mathematical figure to show just what he can afford to throw away and what he is obliged to market. He should enter those markets only that are adapted to his coal. The article helps him to decide on the dividing line.

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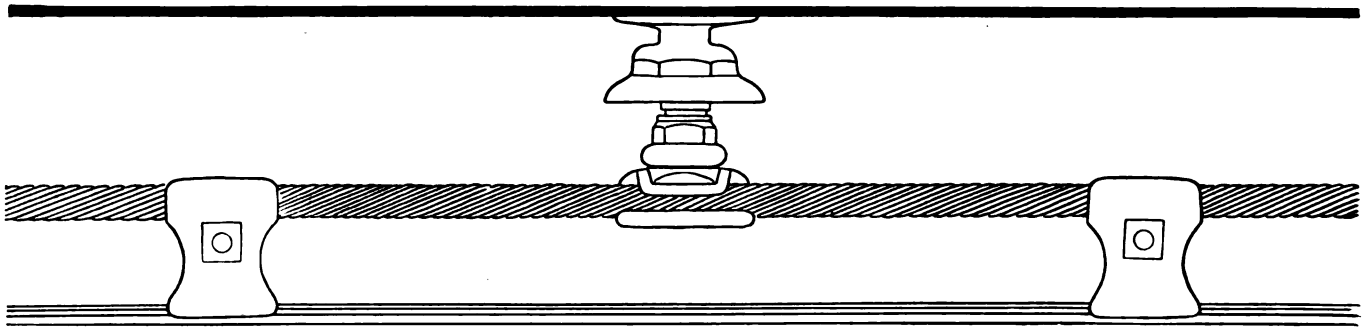

A Flexible and Economical Construction

It is obvious that flexibility in the overhead prolongs the life of the trolley wire and fittings themselves, and reduces the wear and tear on trolley wheels and bushings. Mining practice is tending toward catenary construction for high grade, permanent work. But heretofore, the lack of a simple method with inexpensive fittings has delayed progress.

O-B has now contributed the solution of this problem.

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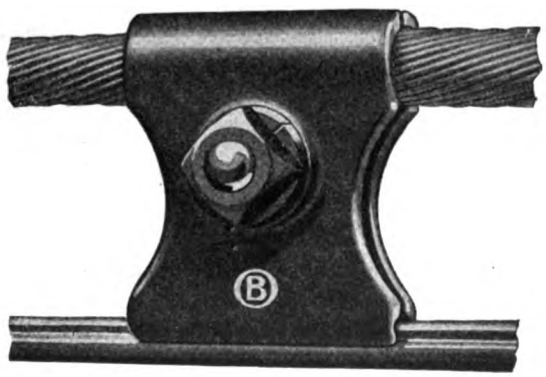

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COAL AGE

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

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Time for a Showdown

ONE OF THE LEGACIES of the late anthracite tie-up has been the accumulation of orphan cars of bituminous coal and coke rejected by consignees after hard-coal mining had been resumed. At one time there were 1,200 such cars blocking railroad sidings in and around New York. While less has been printed about conditions in other cities, the rejection evil has been felt with varying degrees of intensity all along the Atlantic seaboard.

Consignees who have blocked traffic in this manner allege in justification of their action that the coal and coke rejected was of inferior quality. That there have been cases where the greed of producers or intervening middlemen has led them to send forward fuel unsuited for domestic consumption is no doubt true. In such cases, assuming misrepresentation, refusal to accept the shipments was the proper course to be followed by the consignees. Nobody has the temerity to suggest, however, that, if the hard-coal suspension had continued, rejection on that or any other ground would have been the fate of most of the tonnage filling railroad terminal tracks.

Where coal has been refused so that the consignee might escape the burdens of a bargain made bad by changed conditions, such action constitutes sharp practice which cannot be too severely condemned. The strange part of the case, however, is that many producers who are the victims of such practice condone by a policy of inaction the unscrupulousness from which they have suffered. They decline to invoke the processes of law to compel observance of their contracts of sale. They seek relief in fulmination where they should seek redress at the bar of justice.

Such an attitude is hardly more defensible than the rejection of tonnage without just cause. Such a policy injures not alone the shippers directly involved but also those retail distributors who lived up to their purchase obligations even when they knew that it meant accepting tonnage which could be resold—if at all—only at a substantial loss. Condonation of sharp practices reflects upon the whole industry and makes sound merchandising and fair dealing that much more difficult.

If, as has been suggested in some quarters, loose methods in handling orders militate against a successful action at law, then the sooner the coal trade embarks upon a campaign of self-reformation the better it will be. There is something to be said upon the opportunities for confusion, misunderstanding and evasion inherent in a lack of fixed, uniform standards of sizing and quality in the different producing fields. It is a subject worthy of further attention as a step toward improving merchandising in the future.

That, however, should not be set up as a bar to action in the present cases. Shippers of rejected tonnage who resort to technicalities to excuse their failure to defend their good name place themselves in the unenviable position where their own sales practices and integrity appear properly objects of suspicion.

Coal Dust at Lower Landings

MANY OPERATORS are gravely concerned over the quantity of coal dust suspended in the air at the working face and are searching for feasible schemes of eliminating this hazard. But at the mines of many of these same operators, coal is dumped in the path of the intake and tons of this dust are daily sifted into the air at the bottom of shafts and slopes, without much thought of the danger involved. The hazard of this practice is too great to be excused and is so important that it would justify the great expense involved in the construction of a third opening. In all cases the mine bottoms in which are installed dumping equipment should be neutral as to ventilation, on a separate split or on the return. Furthermore, possible agents of ignition should be kept away from this location.

It is true that an arrangement in which the air in the bottom is neutral would stop the travel of dust and allow it to accumulate within narrow confines, but the accumulation would be large enough to be exceedingly dangerous and the dust would have to be removed at frequent intervals. As some means should be provided for carrying away the coal dust as quickly as it is suspended in the air, and as air itself is no doubt the most convenient of the two, the separate split is the more logical provision. The arrangement might well involve a hood over the dump, from which could be led a suction pipe to the outside where a dust collector might be located.

In either event permissible electric motors or air should be used to operate the dumping equipment. Pneumatic power is peculiarly suitable to the operation of mine-dumping equipment, in which also it is fairly efficient.

Public Opinion and the Coal Industry

PUBLIC OPINION is rated by many students as the most effective force in the world today. Certainly that applies to the United States, and to the coal industry. When did John Lewis lose the recent anthracite strike? When he failed to enlist public good opinion and support, which he had counted on and which had not failed him in former campaigns. But when the public frowned and stiffened its back against Lewis' pressure, the game was already up.

But let us not imagine, on that account, that the coal industry is popular. It is not; it is unpopular. The unanimity of opinion of the men on the street is striking in this respect. It was not that the public

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loved the coal operators more; it was that it loved Lewis less.

One who is curious to learn just why the public has this uniform prejudice against the coal industry can ascertain, as a result of many desultory conversations, that it has its basis in the direct dealings of the average man or woman with the industry, and these, of course, are to a great extent, the individual purchases of fuel for domestic heating. The popular grievance with this particular part of the business is fairly uniform and turns upon two features in the preparation of coal for the market, and the marketing. It is universally stated that an unstandardized product with a widely varying proportion of incombustible material is forced upon them at uniform prices; and that such is the organization of producers and retailers that they have no chance to shop around and get a better grade or a lower price. There is no other commodity, the complaint runs, where a man cannot buy discriminatingly; where he cannot, as the phrase goes, "get a run for his money." Therefore the general conclusion that retailers and producers alike are "robbers." Statements showing the unfavorable returns of many coal companies and the fair profits of others have no effect on this frame of mind. The average individual does not grudge profits, small or large, as, for example, to the automobile manufacturers; but in buying an automobile, he insists he knows exactly what he is getting and has a competitive field from which to select.

The coal industry should consider how far the public's grievances are justified, and how to rectify them—how to please the public, in short. It would probably make more rather than less money by so doing. It also would build up public goodwill which would stand in good stead in future discussions as to government regulation or labor domination. And, in addition, a policy of openness and frankness on the part of the industry with the public would be disarming. The arguments as to the relative merits of open and secret diplomacy are extensive, but experience in the United States is that placing the cards face up on the table is the best way to play the game. What is only surmised invariably is suspected. The coal industry might well spend a little money on publicity and indulge in a little honest program of educating the public as to the inherent facts and problems.

The Only Way Out

THE ANNUAL REPORT of the Pittsburgh Coal Co. for 1924 so clearly foreshadowed the financial results of the past calendar year that the net operating loss of $1,266,940 in 1925 comes as neither a surprise nor a shock. The latest report, however, is more than a mere chronicle of past disaster. It is a heartening record of courage to face the future—not with blind resolution but with a well-considered plan to overcome some of the tremendous difficulties confronting the bituminous coal industry. The key to that plan is modernization.

Acting upon the report and recommendations of nationally known consulting engineers, the company last year dismantled thirteen of its older operations "found to be uneconomic, wasteful of labor and unprofitable in competition with modern plants." This scrapping of obsolete plants and equipment meant the writing off of $1,385,902 from its surplus account. The company also consolidated several existing plants and is considering further consolidations and the complete modernization of all its operations in the Pittsburgh district. "These projects," states the report, "will involve large capital expenditures which, however, in the judgment of your officers, will be justified by the increased efficiency and lower production costs so attainable."

The Pittsburgh company is not the only operator that has adopted such a program. Neither is it the only producer that should invite the attention of engineering skill. There are probably hundreds of mines which stand in the need of drastic rehabilitation. Many, unfortunately, lack the courage to acknowledge their shortcomings. Many that are willing to confess their weaknesses have not the financial resources to effect modernization. If these latter cannot attract capital, they will drop out of the competitive race. The same fate awaits those that delude themselves with the idea that plants which were the last word in efficiency a few years ago can stand up against the newer, larger units. Modernization is a continuing process. Only the company that is ready at all times to scrap something good for something better can hope to survive.

Of course, no small measure of the troubles of the Pittsburgh company since 1923 has been due to rigid union wage rates. In recent months that company has launched upon an expensive experiment to free itself of that drawback. The importance of wage rates is not to be denied. Nevertheless, the labor question may profitably be subordinated when a modernization program is to be considered in its broadest aspects. It is a reasonable assumption that the uneconomic wage rates must inevitably find an economic level. When that condition is reached, the necessity for modernization will be still greater because business naturally will gravitate to the operators who can profitably produce the best prepared coal at the lowest cost. A common wage rate places a premium upon efficient operation and skillful management.

Despite the sad wailing of the professional mourners, the bituminous coal industry is not going to the dogs: it is the thousand-and-one brightly labeled political panaceas which have failed. Operators with courage are looking ahead, not back, and are working out their own economic salvation through modernization that starts underground and travels from the tipple to the sales department. They are breaking the path to a stabilization that will be effective because it is based upon sound operating policies and a sound merchandising program.

Profiteering in Brick

BRICKMAKERS declare that the high price of brick is due to the increased cost of coal. One cannot see any justification for such a claim. If by chance before the strike they burned anthracite they could easily have replaced that fuel by bituminous coal and kept their prices down. Now brick is coming to America from England, France, Belgium and Holland and there is a loud cry for a tariff, for which there is no real reason. If the prices are set right the American manufacturer has adequate protection, for brick is costly to load and unload, delaying shipping and absorbing precious wharf space.

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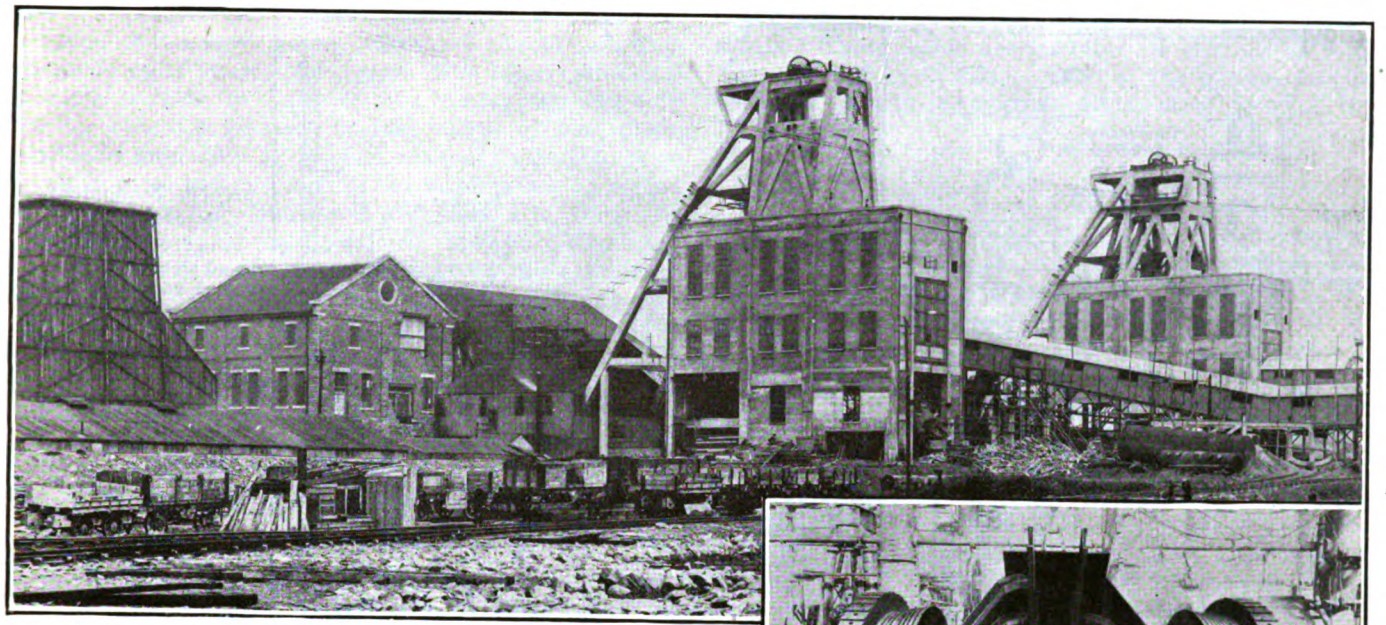

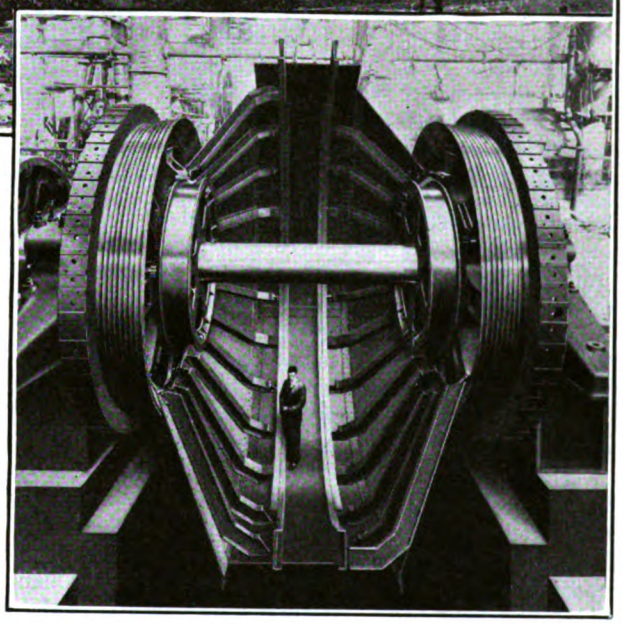

Flywheel Equalizes Hoist's Demand for Steam

Small Turbine Operates Large Hoist Through Flywheel—Dynamic Braking Employed — Double-Cylindro-Conical Drum Reduces Excessive Load Peaks

By C. H. S. Tupholme
London, England

IN MOST coal regions the mine output must be hoisted to the surface either up a shaft or through a slope. The power demand of the hoist motor is not only intermittent but fluctuating. Heretofore it has not been deemed feasible to correct this inequality and make the demand for steam on the generator constant. This has been practically accomplished, however, at the Harworth Colliery in England, and although British hoisting practice varies radically from that normally followed on this side of the Atlantic, this installation will prove of interest to American coal men.

The Harworth Colliery, owned by Barber, Walker & Co., is located about 20 miles east of Sheffield. It is provided with two shafts, each 22 ft. 4 in. in diameter and about 2,940 ft. deep to the coal, being sunk to the Barnsley seam, which is the measure worked. These shafts, which were put down by the aid of the cementation process, are lined with concrete throughout the entire thickness of the water-bearing strata penetrated or to a depth of roughly 800 ft.

In selecting a suitable hoist equipment for these shafts, the following considerations were taken into account:

The upper illustration forming the headpiece of this article is a general view of the upper works of the Harworth Colliery. Two shafts have been sunk, and coal will be hoisted through both. Both tipples as well as the headframes serving them are built of reinforced concrete. On the right is a view of the interior of the drum during erection. The huge size of the drum (its outer diameter is 26 ft.) can be judged from the size of the man standing within it.

Total depth of hoist	3,000 ft.
Output per hour	300 tons
Net load per hoist	7½ tons
Weight of cage and chains	10 tons
Number of cars per cage	9
Weight of empty car	840 lb.
Diameter of hoisting rope	2½ in.
Type of rope	Locked coil
Decking period	10 sec.

When both shafts are in operation the colliery will be capable of producing about 4,000 tons per 7-hr. shift. The power necessary to carry the load other than that consumed in hoisting, such as pumps, haulages, compressors, ventilating fans, preparation screens and coal-washing equipment, totals approximately 1,500 kw.

Several schemes for obtaining the necessary power were investigated. These included steam hoists fitted with mixed-pressure turbines to carry the auxiliary load; a main power station where electrical energy for all purposes would have been produced by high-pressure turbo-generating units and the purchase of electric energy from a public utility. The Stubbs-Perry system was finally adopted.

By this system advantage can be taken in mine hoisting of the direct application of the high-speed condensing turbine, with its well-recognized economy, reliability and small size. Furthermore, this system entails a minimum of electrical equipment and assures precise and smooth operation. The consequent reduction in

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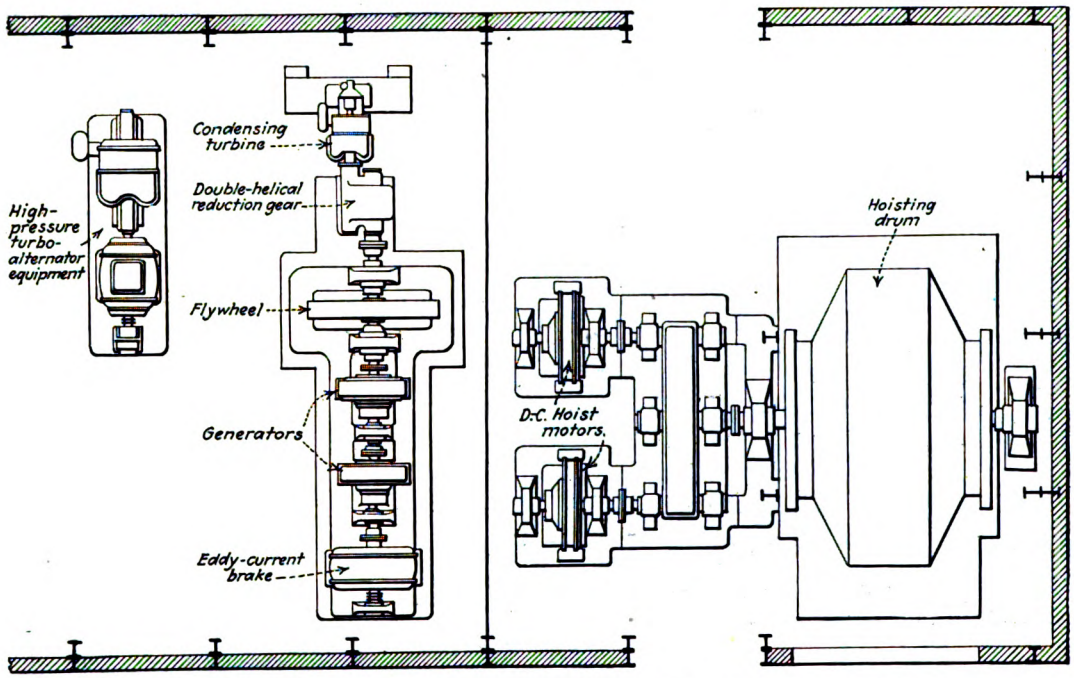

FIG. 1

Hoist Equipment

This shows the relative positions and sizes of the various pieces of apparatus. It makes a compact layout and one which could probably all be operated by one man or at the outside two. Labor charges for operation are thus reduced to a minimum.

boiler capacity, cooling towers and the possibility of using modern high-pressure boilers has enabled many improvements to be obtained, with a corresponding reduction in the initial expenditures.

Theoretically the system affords the following advantages: (1) Complete isolation of the hoist-equipment load from the remainder of the power demand. (2) Elimination of large fluctuations either in the form of electrical energy or of high steam demands.

With these broad advantages in mind, it is easy to perceive that the equipment may be arranged to suit the widely varying conditions found at collieries. Thus Fig. 1 shows an arrangement adapted to a large mine operating in a country district beyond the range of existing power lines. It should be noted that the eddy-current brake forms a means for absorbing all regenerative energy above that required to return the flywheel to its normal speed. In other words, the only energy absorbed by the eddy-current brake is regenerative energy returned to the flywheel set during a trip in which material is being lowered into the shaft. This brake is automatic in its operation and is controlled by the turbine governor. In effect, such as installation operates like a Ward-Leonard equipment, drawing its power from a large centralized supply.

Fig. 2 shows the hoisting equipment installed at Harworth, comprising a 14x26 ft. bi-cylindro-conical drum. Each of the hoist motors geared to the drum is of 1,200 hp. The arrangement is shown in Fig. 5. The two motors are connected through flexible couplings to pinions meshing with a common double helical gear secured to the drum shaft. Both motors, the gearing and two of the drum-shaft bearings are mounted on a massive cast-iron bedplate of box section and form a self-contained unit in themselves. At the other end of the drum shaft the bearing pedestal is cast integral with the bedplate. Both the pinion and drum-shaft bearings consist of four-part cast-iron shells lined with white metal and capable of adjustment by wedges.

To the right of the headpiece may be noted the

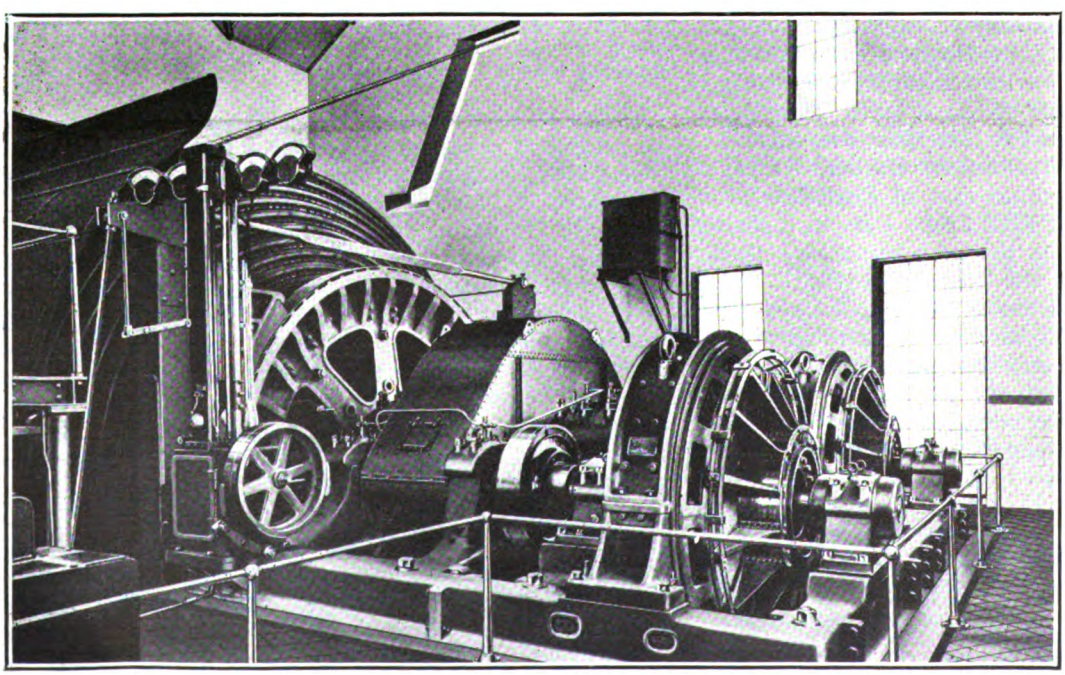

FIG. 2

The Hoist

A general view of the two motors geared to the hoist shaft. All the bearings on this side of the rope drum are attached to a common bedplate of heavy box section affording great rigidity of construction and assuring correct alignment of all shafts. The outboard bearing on the farther end of the drum is carried in a pedestal cast integral with its bedplate. The overwinding and overspeeding device practically forms a part of the depth indicator. It is so connected with the engine control as to assure safety.

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internal construction of the drum itself. With the exception of the cheek pieces, which are of cast iron, this drum is built up of steel plates. The large cylindrical portion is 26 in. in diameter over the lagging and 6 ft. 2¾ in. wide. It is made of four pieces of 1-in. plate, stiffened internally by 15x4-in. channels placed back to back in pairs and fastened to the scroll plates by means of 6x6-in. angles. The scroll plates are ¾ in. thick and each is made up of eight sections. These are connected to each other, to the drum cheeks and the cylindrical part of the drum by 8x8-in. broad-flanged beams, two 8x6-in. beams being used as intermediate stiffeners on each section. The drum cheeks each have eight arms which are cast integral with the brakeways and the small-diameter cylindrical portion of the drum. They are cast in halves and held together by two 4-in. bolts and four shrunk keys recessed into the bosses, which are of 46-in. diameter and 28 in. wide.

TEN TURNS FOR ACCELERATION

Scroll iron is riveted to the scroll plates and carries the rope from the small to the large diameter of the drum in 10 turns. Of the eight convolutions of rope on the small cylindrical portion of the drum three are dead. Two cast-iron spare-rope reels, each having a capacity for 300 ft. of rope are mounted on the drum shaft. These reels, which are made in two parts, are clamped to the drum cheeks during winding operations, but may be rotated by hand-operated spur gearing when it is necessary to pay out or take up rope. The drum sides are securely stayed by large tie bolts and nuts. The large cylindrical portion of the drum or barrel is lagged with well-seasoned oak secured by bolts with countersunk heads.

Brakeways are placed on each side of the drum. These are 16 ft. in diameter and 12 in. wide and are ventilated on the underside. Twin brakes of the post type are employed. These consist of 24 in. x 7½-in. I-beams reinforced with flats. They are applied by means of a weight and released by an air-brake cylinder 14 in. in diameter with an 18-in. stroke.

The drum shaft is built in two parts with the spur wheel sandwiched between them. This shaft is of 26-in. maximum diameter and 32 ft. 10 in. long. The maximum diameter lies within the drum cheeks, the shaft being only 24 in. in diameter in the center of the drum. A 4-in. hole is bored through this shaft from end to end.

The double helical gearing by means of which the drum is driven is of particular interest. The pinions

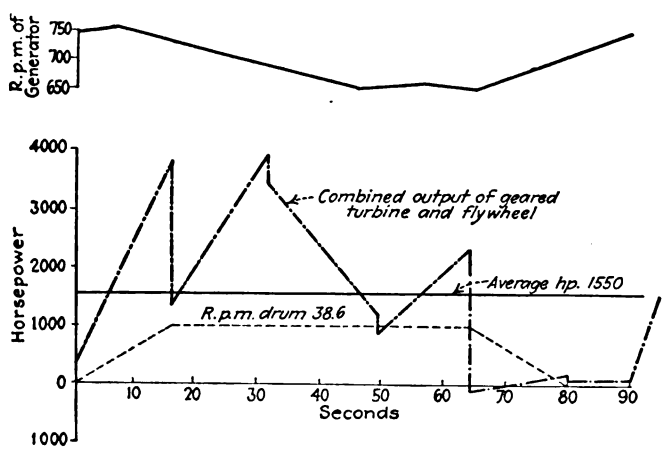

Fig. 3—Motor Duty Cycle for a Coal Hoist

This is a horsepower-second diagram showing that a complete hoist takes about 1½ min., and consumes a maximum of roughly 4,000 hp. Although three distinct peaks are apparent none is large.

are of oil-tempered nickel-steel forged integral with the shafts. These latter are mounted in journals of 9-in. diameter and 19 in. long. Each of the pinions carries 38 teeth of 1.15-in. circular pitch, meshing with the

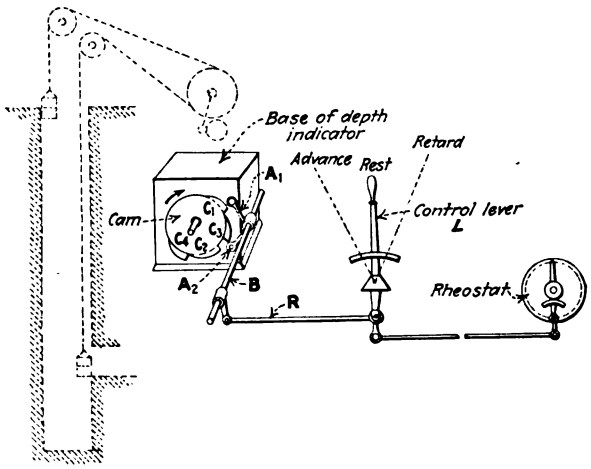

Fig. 4—Diagram of Safety Control

By a system of shafts, levers and links the overwinding and overspeeding device which is geared to the depth indicator is attached to the hoist-control lever in such a way that the machine would be stopped automatically should the hoistman mismanipulate his levers at the beginning or end of a hoist.

gear wheel which has 345 teeth. This wheel has a cast-iron center provided with a forged-steel rim, which is securely shrunk and pegged to it. In order to minimize shrinkage stresses, the spider rim is slit across in four places, make-up pieces being inserted in these openings. This wheel has a pitch diameter of 10 ft. 6½ in. and an over-all width of 39 in., the effective width of face being 36 in.

Fig. 3 shows the variation in horsepower throughout a complete coal hoist. It will be noted that the beneficial effect of using a double-cylindro-conical drum is pronounced, inasmuch as the diagram shows a moderate peak load instead of one with a high acceleration, as the load gets under way on the small diameter of the drum. A secondary peak appears as the rope mounts the cone, but this also is of moderate height, thus reducing the cost of hoist motors in proportion.

The maximum energy exerted by the motors during a normal coal hoist is slightly over 3,000 hp., but the motors are capable of exerting a momentary peak of approximately 6,000 hp. The electrical control of this hoist is normally effected by the driver by means of a single lever from the control platform. Under certain conditions, however, the machine is controlled automatically and quite independent of the hoist engineer. This is accomplished by means of a cam gear which operates in conjunction with the depth indicator.

DEPTH-INDICATOR DESIGN

The depth indicator is gear-driven from the drum shaft, and on its shaft is mounted a cam wheel as shown diagrammatically in Fig. 4. The arms *A1* and *A2* are both keyed to the shaft *B* and carry rollers which engage with the cams. The cams and arms are so arranged that the cams *C1* and *C2* engage with arm *A1* and cams *C3* and *C4* with arm *A2*. The control lever can thus be operated from the cam wheel through the rod *R*.

Suppose that the hoist is running at full speed with a cage approaching the dumping point, the control lever and controller being then in the forward position with the cam wheel revolving in the direction of the arrow. Should the hoistman neglect to reduce the speed at this

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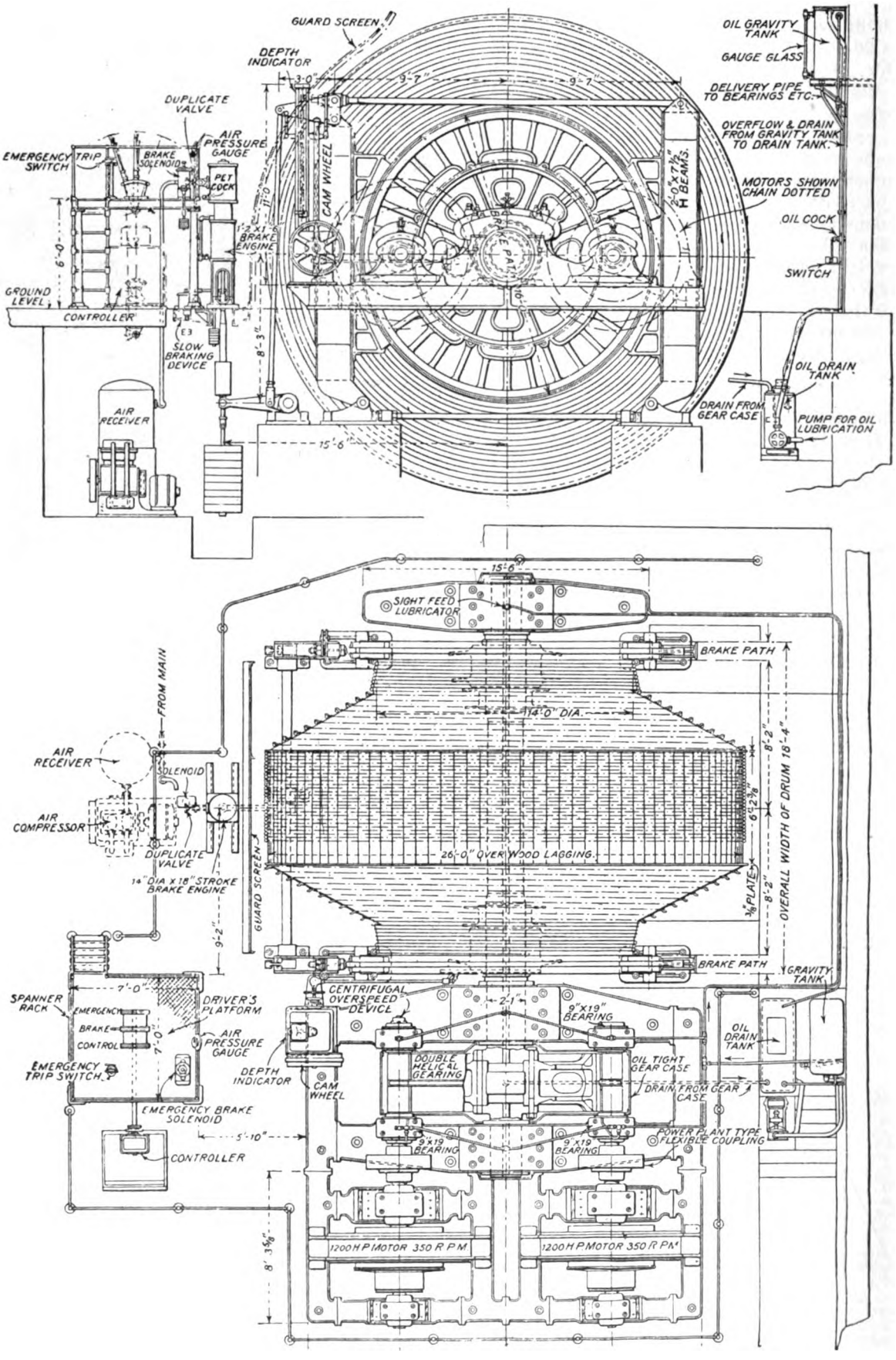

Fig. 5—General Plan of the Hoist at Harworth Colliery, near Sheffield, England

This shows the arrangement and some of the details of the various parts of this machine. Built-up drums of the diameter of this one are almost unknown in this country. But so at coal mines are 3,000-ft. hoists.

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point by returning the control lever toward the off position, the cam *C1* will come into contact with the roller arm *A1* and the control lever will be returned automatically toward the off position, thus bringing the cages almost to rest. The hoist, however, is not quite stopped at the decking level, but will creep past that point at a slow speed.

It will be observed from Fig. 4 that when the controller is in the off position the rollers on arms *A1* and *A2* are clear of their respective cams. It is possible for a careless hoistman to start the machine from rest in the wrong direction, but no harm would result should the overwind switch be brought into operation and the emergency brake applied, as the hoist moves off in either direction at an extremely low speed. It will be observed from Fig. 4 that at the beginning of the hoist the operator must keep the roller pressed against the cam in order to obtain the correct rate of acceleration.

The duty of the mechanical brake, under normal conditions, is not to bring the hoist to rest but to hold it after it has been stopped by electrical braking. The wear on the brake blocks is thus reduced to a minimum. The safety device is added to provide a means for automatically stopping the machine in case of overwind, overload, failure of current, or overspeed of the flywheel set. It is so arranged that it may be tripped by the driver in case of emergency.

Safety Devices Always Ready

This safety device comprises a field-discharge contactor and discharge resistance, as well as an emergency brake and solenoid contactor. It is designed to operate under the following conditions: (1) By hand (in case of emergency), by means of a push button or hand lever; (2) in case of overwind by means of the overwind limit switch; (3) on overload by means of a relay operating in the main Ward-Leonard circuit; (4) by overspeed of either the hoist motor or the generator set; and (5) on failure of the power supply. Should any of the above conditions arise, the safety device causes the emergency brakes to operate, at the same time taking the load off the hoist motor by open-circuiting the exciter field.

The eddy-current brake shown on the left in Fig. 6 absorbs regenerative energy when materials or men are being lowered. It is arranged to operate at a function of the turbine speed. Thus, assuming that the turbine flywheel equipment is running at its light-load speed and that a load is being lowered into the shaft, the regenerative energy returned to the flywheel equipment will have the effect of increasing its speed. Immediately this takes place the mechanical arrangement connected with the turbine governor operates a contactor system which energizes the field of the eddy-current brake, thus holding the speed of the turbine flywheel equipment within safe limits.

In capacity this brake is such that the maximum load possible may be lowered with safety and may be held electrically in any position. In installations where auxiliary electrical power is available an induction motor may be installed in place of the eddy-current brake. Such a motor operates in exactly the same way as the brake described, but in addition may on occasion be used as an induction motor, the turbine being unclutched meanwhile. This feature greatly increases the flexibility of the installation. It provides an alternate means of operating the hoist engine, thus enabling the turbine and steam plant to be shut down for extended periods. It also offers certain economies during off shifts when the equipment may be operated electrically.

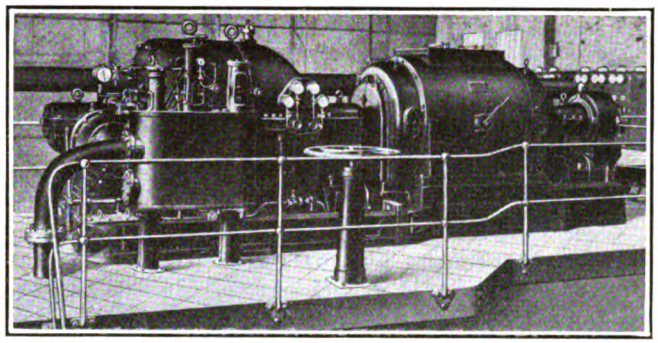

Fig. 7—Turbo-Generator Carrying Colliery Load

This alternating-current generator shoulders all of the colliery load except that of hoisting. This machine has a capacity of 1,500 kw. and is installed in the same room with the direct-current flywheel unit shown in Fig. 6.

At Harworth power for the hoist engine is supplied by means of the turbo-flywheel equipment shown in Fig. 6. This consists of two 875-kw. direct-current generators, a solid cast-steel flywheel weighing 22 tons, the eddy-current brake and a 1,550-hp. high-pressure steam turbine, designed to operate on 170 lb. of gage pressure and 200 deg. of superheat and to exhaust into a 27.68-in. vacuum. This machine operates at a speed of 4,500 r.p.m. and with its condenser occupies an extremely small space considering its capacity. The direct-current generators and flywheel operate at 750 r.p.m. and naturally are driven through reduction gear-

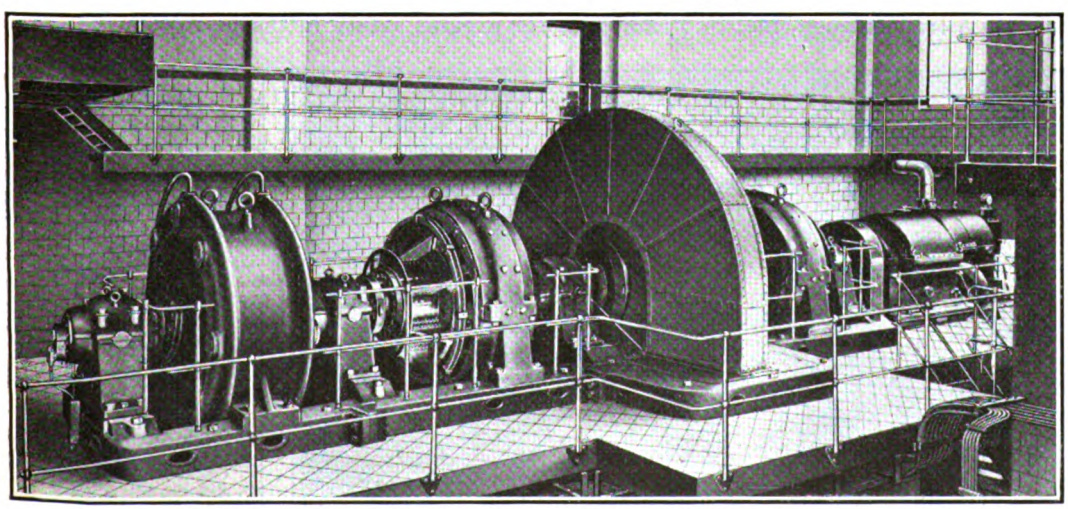

FIG. 6

Flywheel Turbo Set

Flywheel motor-generator sets furnishing power to hoist engines are fairly common but here is a turbo-generator set fitted with a flywheel. By this means the steam demand of the turbine is nearly equalized and rendered almost constant. The turbine is connected to the generator shaft through a reduction gear.

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ing, the ratio being 6 to 1. The arrangement is such that during peak loads the turbine decreases its speed, thus allowing the flywheel to give up its stored energy and equalize the demand for steam imposed on the boilers.

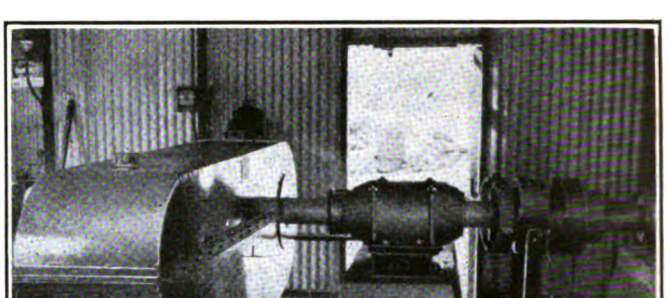
At this mine the auxiliary load is carried by a 1,500-kw. 3,000-r.p.m. high-pressure turbo-alternator erected in the new power station shown in the background of the general view of the colliery. This alternator also is shown in Fig. 7.

At the present time the upcast shaft only is in operation so that the power-house building is only half completed. The other half of the hoisting equipment or that for the downcast shaft is being put together at the factory.

As the output of this colliery increases automatic decking arrangements will be installed, and the coal will pass along covered galleries to the screening plant. This is designed to handle 4,000 tons of coal in 6 hr. 40 min.

Barber, Walker & Co., owner of this colliery, is building a modern village for its employees. This will eventually consist of 1,000 to 1,200 houses, together with the necessary shopping and recreational facilities. At present about 600 of these dwellings are completed and occupied. The village has been laid out on generous lines, the houses being supplied with water and electric light and placed in such a manner that the surrounding grounds may be utilized for gardens and lawns.

I am indebted to the Metropolitan-Vickers Electrical Co., Ltd., for the data upon which this article is founded and the photographs accompanying it. This firm designed and installed the system here described.



A Restricted View in the Motor House

The short "belt center" possible with silent-chain drive cuts down the size of building required. The inclosing casing of this chain can be seen at the left. At the right is the square-jaw clutch on the fan shaft.

Mulga Mine Has Three Fans Using Common Intake

Mine ventilation, as one of the factors pertaining to safety, receives its full share of attention at the Mulga mine of the Woodward Iron Co., at Mulga, Ala. To the ventilating equipment, which until recently consisted of two fans pulling over 175,000 cu.ft. of air through the mine, there has been added a new fan, with a rating of 160,000 cu.ft. per minute at 5-in. water gage. All three fans are operated on a common intake. An auxiliary drive forms a part of the equipment at each fan. The two old fans which are located close to the tipple and power plant can be operated either by steam engine or motor. Electric power for the latter is available from two sources: the local plant and a transmission line.

The new fan, an 8x3-ft. multivane unit rated at 275 r.p.m., was installed at a recently-completed escapeway located in a secluded hollow a long distance from the tipple. The regular drive of this fan is a 200-hp., 435-r.p.m. motor of the wound-rotor type. A silent chain connects this motor to a short drive shaft, which in turn is connected to the fan by means of a square-jaw clutch.

The auxiliary drive is a four-cylinder fuel-oil engine having a rating of 200 hp. at 285 r.p.m. It was purchased second-hand and is not one of the latest type. Starting is by means of compressed air furnished by a small gasoline unit. The large engine is direct-connected to the fan through a square-jaw coupling of the same type as is used on the motor side. A tank of approximately 10,000 gal. capacity, erected close to the fan stores a supply of cooling water.

Because of the remote location, an attendant is at the fan at all hours. At regular intervals he starts the engine in order to assure its being constantly in working order. With such precautions as taken with the fan equipments at the Mulga mine, any interruption to ventilation because of fan trouble is unlikely.

APPROXIMATELY 140,000 workers in the mineral industries have now been trained in mine rescue and first aid methods by employees of the Bureau of Mines, according to the 1925 report of the director. The chief purpose of the Bureau's recently organized safety extension service will be to give advanced training in rescue work and bring to the attention of mine officials the latest advances made in the prevention of mine fires and explosions and in the conduct of rescue operations and disasters. The Bureau has also recently begun a campaign for greater safety in the petroleum industry.



Construction View of Fan at Mulga

The regular drive is a 200-hp. motor installed in the small building at the right. The auxiliary drive, a fuel-oil engine of the same power, is in the large building at the left. Cooling water for the engine is stored in the tank back of the motor house. The fan is a multivane unit 8 x 3 ft., having a rated capacity of 160,000 cu.ft. per minute at a 5-in. water gage.

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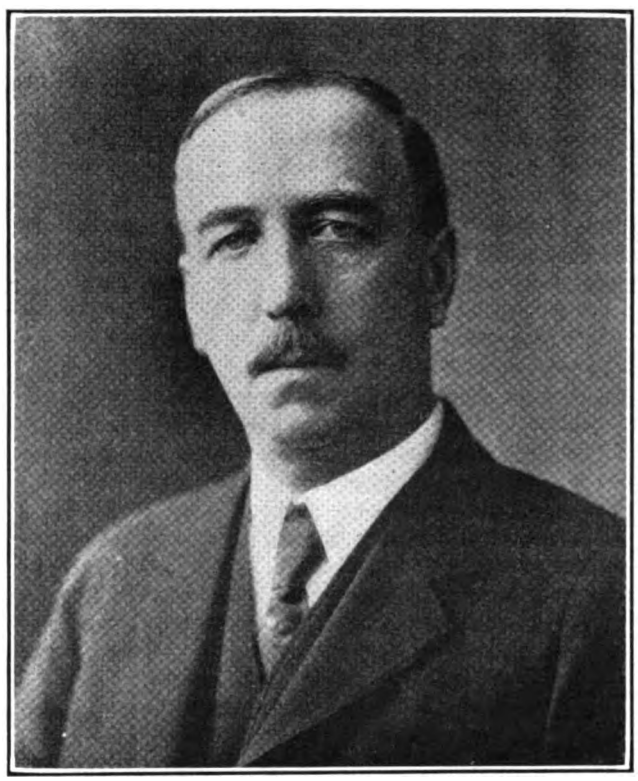
Coal Men You Should Know

Robert Grant

By J. S. Burrows

THE RECENT merging of some of the larger smokeless mines under the ownership of the Massachusetts Gas Companies has brought to the front rank of the smokeless industry, Robert Grant, as president of the several companies now controlled by this Boston corporation. Mr. Grant is a man whose talent for efficiency in organization and management has carried him from the lower clerical positions of a large city gas office to the active direction and management of important public-utility companies and other corporations, embracing high- and low-volatile coal producing properties, gas plants, byproduct coke ovens, iron furnaces, steamships, towboats, and barges, which it may be added includes nearly all the important coal-consuming industries. Mr. Grant is now president of the E. E. White Coal Co., the East Gulf Coal Co., the Pemberton Fuel Co., the Prince Wick Coal Co., the Long Branch Coal Co. and the Glencoe Coal Co. of West Virginia. He is also president of Castner, Curran & Bullitt, Inc., of New York—a well-known selling organization with branches in Boston, Chicago, Cincinnati, and other cities.



Robert Grant

Mr. Grant was born and educated in Glasgow, Scotland. He came to the United States when a young man and entered the employ of the New England Gas & Coke Co. Shortly after joining this organization, and while he was employed as a junior accountant, the company was placed under a receivership and the auditor of the company resigned. Mr. Grant was placed in charge of the accounting department at this most important time and when a reorganization came about and his company was taken over by the Massachusetts Gas Companies, Mr. Grant was placed in charge of the accounting department of the greater Massachusetts Gas Companies. In the years that followed his special organizing ability brought additional responsibilities and recognition. Mr. Grant was made an executive of the parent company early in its career and has been closely identified with its expansion program from the beginning. He has supervised the formation of all the subsidiary companies acquired in recent years. In 1915 he became president of the "Commercial Companies" of the Massachusetts Gas Companies such as the New England Coal & Coke Co., New England Fuel & Transportation Co., Mystic Steamship Co., etc., and was elected vice-president of the parent company in 1918. Mr. Grant is an indefatigable worker, a fine example of the sturdy stock from which he comes and a great lover of his native game, golf. He has always found time to keep in close touch with his subordinates and the thousands of employees of the companies he directs. He is not only personally acquainted with most of these people, but is deeply interested in their individual welfare. As the directing head also of the Federal Mines near Fairmont, W. Va., Mr. Grant has had practical operating experience in coal mining and is well-known in that part of the state as a successful operator. His entry as an operator into the southern West Virginia field foreshadows a successful, efficient mining organization of which its members may be proud. Such organizations have been the life-work of Robert Grant.

The steady growth of the smokeless coal industry of West Virginia—so often attributed solely to the high quality of its product or to the fact that the mines are non-union—could not have been brought about without an aggressive marketing policy, which from necessity has been developed within the industry itself.

These fields, lying in the southern counties of West Virginia, were actually hewn out of the wilderness by the pioneering type of operator as far back as the early eighties and lacking a contemporaneous growth of coal consuming industries nearby—as for example, the Pittsburgh region—they have remained in an isolated position hundreds of miles from any markets.

As the smokeless industry is vitally dependent upon long-haul transportation by rail and water and as it must derive its sustenance from many kinds of consumers in distant markets both at home and abroad, it is plainly a business which can succeed best when conducted on a large scale, which under modern conditions means corporate ownership of properties under experienced men like Robert Grant.

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By Mechanical Loading an Attack Is Made on the Largest Cost Items of Coal Mining

Miner Should Favor Mechanization as It Makes for Better and Easier and More Social Working Conditions—Doubles Tonnage per Man and Reduces Room "Rent"

By Nixon W. Elmer
Consulting Engineer, Quincy, Mass.



Nixon W. Elmer

IN EVERY industry there is a natural tendency to do things as every one else in the same industry is doing them, each individual concentrating his efforts on doing them a little better than the other fellow. No general change of methods takes place in any industry in a brief space of time, except under the spur of necessity, usually furnished by bitter competition.

I think that you will agree with me that such necessitous conditions exist in the bituminous coal-mining industry today. Reacting to this universal stimulant, necessity, the coal-mining industry has studied its standardized practice and customary sequence of operations with an open mind and a searching eye.

After repeated study of operations and cost data, man after man in widely separated districts has apparently come to the same conclusion, namely that the opportunity for a major saving lies in one place only. This is at the face and as far back as the haulage entry.

Here is located the greater part of the labor item in mine coal cost. Much of this is hand labor, in fact it is safe to say that more than 95 per cent of all the coal used by the industries today, has been manhandled about as follows: Dug out of the side of a pile in semi-darkness with a shovel, carried an average of one step on the shovel, lifted higher than the miner's shoulders and placed in a car, not in place to receive it more than 75 per cent of the time.

Of course the miner does not need to shovel coal for 8 hr., but the 2 hr. he loses are generally speaking, during the time when he must shovel coal because the face is not ready to work on till the free coal is cleaned up. This means that he either wastes this time or uses it uneconomically in moving the more distant coal closer to the place where the car will be, thus handling this part of the coal twice.

A commonly expressed, though perhaps not a very thoughtful viewpoint, has been that the miners generally work on a tonnage basis and will demand and receive double wages, at the expense of the operator, if their output is doubled by mechanical means, the corollary of this thought being that in this event the individual miner will work but half the time that he would if he did not receive this assistance. The point missed is that, with group machinery, there is no longer any possibility of individual tonnage payment, the very machinery itself will force tonnage work to be of the group type, and with group work provision for an average number of absentees can always be made and their places can be filled without loss of production.

Furthermore, in setting such new group-tonnage rates it is not probable that these new rates will be such that the miner who had formerly made $10 per day, for example, would be raised to $20 per day for the same time and easier work. As a matter of fact most of such work now going on is being done on a day-rate basis, and the men like the idea and take to it, both because the work itself is easier and because of the element of social intercourse thus introduced into lives that are notably barren in this respect. The logical development would seem to be in the direction of day labor with a group bonus for group-tonnage production. The factor just mentioned, namely the social element introduced into the miners' lives in this way, is an intangible, and so seems an airy nothing to the man in a busy office seeking privacy, but to the miner underground it seems to be of real importance. When we stop to think, this in understandable. Men always prefer to do manual labor in gangs rather than individually or in pairs. Those of us who have passed through a stage of being paid for muscle alone should be able to remember this.

Many an otherwise thoroughly competent engineer or executive has failed to make a success of a carefully planned and mechanically correct project, through

MR. ELMER declares that with mechanization, individual tonnage payment becomes impossible, making group payment or the day wage essential. He declares that to mechanize is to Americanize. He avers that when mechanization is complete men will load at least twice as much coal. He urges that one improvement only should be made at a time and that conveying should precede machine shoveling, making enough profit to pay for complete mechanization.

Article entitled "The Mechanization of Our Coal Mines, from the Viewpoint of the Material-Handling Engineer," read March 11 in New York City before the Material-Handling Section of the American Society of Mechanical Engineers acting with the National Coal Association.

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neglect of such human preferences—the likes and dislikes of the man behind the shovel.

Though I, for one, cannot claim to have foreseen this result, and more time will have to pass before it can be said to be proved generally, still it is interesting to note that, even with no increase of wages, these better, easier and more social conditions are attracting a higher and more intelligent grade of labor underground. This is certainly important and will mean much to the industry, if general experience parallels individual experience in this respect. Broadly speaking, does not the history of other industries teach us that to mechanize is to Americanize?

To get back to the general subject of mechanizing the hand-labor operations from the face; let us ask ourselves two questions: (1) What is the order of magnitude of the possible savings at this point? (2) What means are in sight that appear as possible or probable means for achieving such savings?

Taking up the first question: "What is the order of magnitude of the possible savings over present hand-labor methods from the face out to the haulage entry?" Please note that this question deals solely with the possible saving in hand labor, without defining the particular mechanical method to be used.

No One Best Method of Loading

Though larger figures have been given on good authority, the figures I am going to give are based on personal experience. I do not believe, however, that the use of this or that particular method or means should affect these results materially, provided the method selected fits the conditions in the particular mine. This is a new thought to many and deserves to be emphasized. There is not and never has been one best method of handling bulk materials mechanically. Success follows a wise selection of mechanical means, where the machine and the method are respectively so modified and co-ordinated that they work together to the best advantage under the special conditions in the particular mine.

Where a certain group of workmen average 10 tons per 8 hr., laying their own track at the face and their own drilling and shooting, under a suitable and carefully planned mechanizing system, these same men can and do handle from 20 to 30 tons per 8-hr. shift, depending upon how much shooting, drilling and moving of equipment they are required to do.

The actual tons quoted are not significant, it is the proportional increase obtained that has a real meaning for us. The means used for mechanical handling to which these figures apply were mostly chain conveyors. I have seen, and others here can relate, similar results with belt and apron conveyors. In such cases, shovels, man-handled, are used as of old; merely the conditions under which the shovelers work, are changed.

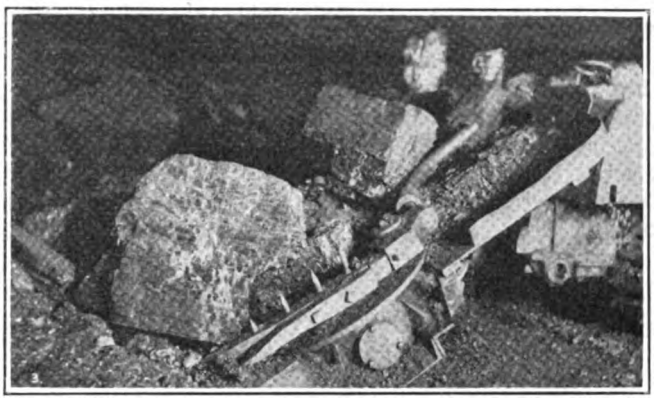
Under other mining conditions, cable drags have successfully replaced the shovelers entirely with equal or better results, and where lumps are not large belts will undoubtedly find their place in the future. Circumstances frequently call for a combination of two or more of these methods, but the results to date fall within the limits mentioned of two to three times the normal room-and-pillar output for the same individual.

The mining methods used in these various applications run the whole gamut from straight room-and-pillar, through modified room-and-pillar, modified long-wall to longwall. It does not require a prophet to see that some of these applications, useful as they are in themselves, are merely half-way stations furnishing the necessary background for a still more substantial success with loading machines.

It has seemed to me sometimes that the cart frequently preceeded the horse in much of our experimenting with loading machines. A suction dredge without a discharge pipe would be analogous to a loading machine without anything in which to load. Like most machinery, loading machines can earn no dividends when they are idle.

We are now ready to attempt the answer to our first question: "What is the order of magnitude of the possible savings through mechanizing the operations from the face to the haulage entry?" On the face of the results quoted, this would appear to be not less than 50 per cent of the direct labor.

Please note that we are speaking of the possible saving. The actual saving to date has usually been less than 50 per cent of the direct labor, particularly at the start. This is not surprising, because the mechanical details of the various types of equipment have not had time to go through the normal cycle of improvement and the operating forces have not had time to develop the technique of operation.



Lifting Large Lumps to Level of a Mine Car

Looking at these heavy masses of coal being carried to a mine car by a mechanical loader will convince anyone that the miner's opposition to the machine where it exists will be of short duration and be followed by a demand for its universal adoption.

Under almost every conceivable mechanizing scheme, the unit becomes a group instead of one or at most two individuals. This means that one consequence of the complete mechanizing of any mine must be to reduce greatly the area developed for a given production. Concentration of working areas of the order of magnitude of 10 to 1 are to be expected.

On paper your mine foreman can show from this a saving of general underground overhead labor of from 20 to 25 per cent, but this saving will not appear on the cost sheets till the whole mine is mechanized, the idle parts closed, and the unnecessary portion of the overhead labor pried lose from its hereditary jobs and absorbed in the productive labor. This takes time.

It took the Government five years to reduce their departmental organizations in Washington, after the war! When this reduction has become accomplished, this item of savings in overhead labor should fully balance the extra men used to handle and operate the machinery employed in the mechanizing. Then the possible saving will become the actual saving. At first we will have to be satisfied with about half the possible.

We now come to our second question: "What means are in sight that appear as possible or probable means for achieving such savings?"

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In some of the early efforts, the assumption was made that the mining system would have to be altered radically to fit the mechanizing means. In the light of present experience this seems to have been unnecessary, because the available means for mechanizing are so numerous and various that suitable means can be and have been adapted to almost every type and method of mining.

On the other hand, it is often more economical in the individual case to change the mining system, where this is allowable. There are two main reasons for not changing a mining system, where money will be definitely saved by doing so: One is the safety of the workmen and property, and the other is mental inflexibility on the part of the management; of course either may function separately or both together. Where the mining system cannot be changed, it is reasonably certain that some form of mechanizing can be adapted and modified to fit existing conditions.

It is well to bear in mind that equipment already developed above ground should form the basis for the development of similar underground equipment; but that the mere transplanting of such equipment bodily, without suitable modification, will always prove unsatisfactory. In making such modifications to fit underground conditions, full advantage should be taken of the years of experience gained above ground with similar coal-handling equipment. This is where the material-handling section of the American Society of Mechanical Engineers may individually or collectively be made of use to the mining fraternity.

Too Little Use Made of Experience

The two or three statements about the use of above-ground experience below ground, sound so self-evident that they hardly seem worth saying, but they certainly need to be taken to heart because the facts are that our general practice seems to have been almost the exact opposite. That is to say, we have not generally made use of above-ground coal-handling experience underground, and we have attempted to transplant bodily equipment developed above ground to the work in our mines. In these two mistakes may be found the reason for many of our failures.

What means are in sight which are capable of achieving important savings near the face? As this is to be a verbal, not a visual, table, I will simplify it by restricting myself to conveying methods, and assume, for the reasons already stated, that the loading machine should follow rather than precede the conveyors. The more promising of the efforts with which I am acquainted, may be grouped as follows:

- Longwall
  - Cable scraper or hoe
  - Chain conveyors
  - Apron conveyors
  - Combined mining and conveying
  - Jigging conveyors
- Modified Longwall
  - Saw-tooth or Y
    - Apron conveyor
    - Chain conveyor
    - Cable scraper or hoe
    - One or more of these combined with belts
    - Jigging conveyors
  - V-Type
    - Apron conveyors
- Room-and-Pillar (Modified)
  - Cable scraper or hoe
  - Chain conveyors
  - A combination of either or both of these with belts
  - Belt conveyors alone.

Each of these conveyor types has its strong and weak points. Salesmen will present the former, but unless we familiarize ourselves with the inherent weaknesses of each type we cannot hope to select and adapt wisely, except by some more or less fortunate accident.

The logical line of development of the heavier type of apron conveyor will be to improve it so that it can come closer and closer to the face to be shot. This will leave little opportunity for the use of loading machines. On the other hand, the next and obvious step with most of the other types of conveyor (except the cable scraper) is to adapt a suitable loading device to caterpillar traction and develop a successful continuous feed therefrom to the conveyor and thus eliminate most of the hand-shovel labor, already materially reduced by the conveyor.

Make One Change at a Time

This, you will notice, assumes that the loader is introduced into the scheme after the conveyor application has been fully developed, has paid its way and reached a state of reasonable working perfection. It does not pay to attempt to introduce two separate but interdependent improvements at once. The reason that the conveyor should precede the loading device is that the conveyor installation will pay its way as it goes, and nothing will have to be undone when the loaders are later introduced. Also the cleaning problem is postponed.

Below ground as above, there is no one best type of conveyor; some types have received more attention than others and their underground development has proceeded farther, but each has its own strong points and weaknesses which must eventually determine its individual field of usefulness. It is inevitable that in many cases the best results will only be obtained by a judicious combination of types, each with its own proper function to perform.

The idea of cutting, mining and conveying at one and the same time and with one and the same machine is interesting many and should lead to important results. The cable drag or hoe is being tried out in many places, but under an unnecessary handicap. The device looks ridiculously simple, and, therefore, many operators are making the same mistake their brethren above ground made ten or fifteen years ago. They are using home-made outfits, and a good device will get a bad name in this way.

Any mechanizing system will be at a premium which favors the pillar-drawing part of room-and-pillar work, because of the large area of standing pillars throughout the country. In room-and-pillar work, retreat lags behind advance so that rooms frequently stand for years.

Make the Rooms Pay "Rent"

The rooms of a house or office either cost or earn money, which is called "rent." I have found it useful to charge standing rooms with a yearly rent, so-called. This underground room "rent" is obtained by dividing the cost of retimbering, relaying track and clearing up falls at the end of the period, by the number of years the room will have to stand before the pillars are drawn. The effect of this in interesting the local authorities to reduce this time element is astonishing. Such "rent" may amount to as much as a dollar a day per room, though this would be exceptional. Such information may be unpleasant, but it certainly helps to have the facts known and kept before the superintendent and foreman.

It is not unusual to hear not too thoughtful criticism expressed of the conservatism and resistance to change met with around coal mines. We should understand

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and appreciate that such an attitude is not only natural, but inevitable, and, in many ways, desirable. Life itself below ground depends upon the correct interpretation of the signs and sounds, and the man who has learned the meanings of these warnings under a given system will naturally and rightly resist any changes which may lessen the value of his hard-won experience.

In conclusion, let me say that the interest in all this to the community at large lies in the stabilizing effect which a general success in mechanizing the mines will have upon the coal-producing industry. The beneficial effect on the industry from reduced costs, both direct and indirect, is obvious, but perhaps it would mean still more if the number of companies operating were materially reduced. It is logical to anticipate that machine loading will reduce the number of companies operating, for several reasons: (1) Many "snow-birds" will drop out, because of the decreased margin available under which they can work. (2) Competition will gradually eliminate those mines which are unable to make improvements in their methods for any reason, physical, mental, or financial.

From the point of view of the bituminous-coal industry, such stabilizing of conditions would be of incalculable value. The interest of the general public therein has been well put by the Engineering Council: "In the last analysis it is the consumer who will profit most by any improvement in coal procurement."

Believe Cutting Machine Caused Blast at Eccles Mine

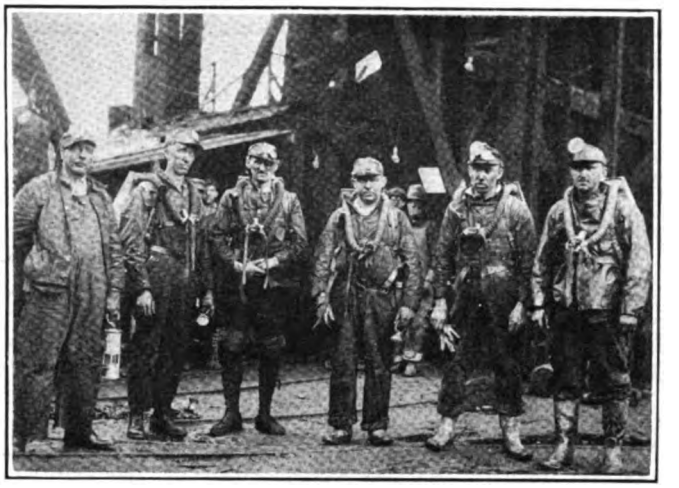
Barricade in Long Room Saved Ten Lives—Three Men Leave to Meet Death—One Man Killed in Upper Seam

IGNITION OF GAS by a cutting machine is thought to have been the cause of the explosion on March 8 of the No. 5 shaft mine of the Crab Orchard Improvement Co., Eccles, Raleigh County, W. Va., in which nineteen men were killed. Thirteen men who were at work in the southwest-entry section barricaded themselves in a room. Twenty-five hours after the explosion, ten of these men were rescued. Three of them met death in an attempt to leave the mine before the arrival of the rescuers. An explosion in the mine on April 28, 1924, killed 180 men.

The mine is in the Beckley seam and is served by a hoisting shaft which is 535 ft. deep. It connects with the No. 3 mine at the same horizon, about 270 ft. below the No. 6 mine of the company, which is working the Sewell seam. The coal from all three mines is hoisted in the one shaft mentioned. At the time of the explosion thirty-six men were at the upper level, that, namely, in No. 6 mine. All but one of these men reached the surface safely.

The explosion occurred at 6:50 p.m. An hour and a half after the explosion, No. 2 truck from the state rescue station at Mount Hope arrived on the scene with Inspector Robert Lilly who took charge until the arrival of Chief Inspector Lambie two hours later. These men were assisted in the rescue work by volunteers, including a team from the New River Co. at Scarbro, another from the McKell Coal & Coke Co. and a third from the E. E. White Coal Co. at Glen White.

Recovery was attempted, shortly after the explosion, through the upper level or No. 6 mine. In this operation thirty-five men were led to the surface through an auxiliary shaft. The explosion doors on the fan over the air compartment of the main hoisting shaft were blown off by the explosion and the air escaping through this vent was so charged with foul air that the men working at this replacement were required to wear gas masks. As the main force of the explosion was expended through this shaft, the curtain wall, buntons and guides were materially damaged. For this reason some time was lost in patching the shaft before a clear passage to the bottom was effected.



Rescue Team, White Oak Coal Co., Arrives First

This team started work at 10 p.m. cleaning and repairing shaft. At 6 a.m. of Tuesday morning the team entered the mine and advanced, in one shift, ¾ mile, building stoppings as it went.

DEBRIS HINDERED OPERATIONS

About 40 ft. from the bottom landing much debris was encountered, which, it was estimated, would have required about 48 hr. for its removal. The decision was reached, therefore, to stop the fan of No. 5 mine and to reverse the fan of No. 3 mine, on the same level, in the hope that the afterdamp would be pulled away from the southwest entries. The rescuers suspected that the men who were at work in this territory might still be alive.

At 7.30 p.m. of the following day the rescuers found a board in the southwest section, on which was chalked the information "Come to Second Right." Following this advice, they found a brattice barrier at a point 600 ft. inby, behind which were found ten survivors.



His Energetic Action Saved the Barricaded Men

Robert Lilly, district mine inspector, veteran fire fighter who had entire charge of recovery work till the arrival of Chief Lambie, and later subject to Mr. Lambie's direction. The car in the rear is one of the new West Virginia rescue trucks, two of which were rushed to Eccles following the explosion.

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Those Who Directed the Rescue Operations

From left to right, Robert Lilly; Ralph Taggart, vice president Crab Orchard Improvement Co.; R. M. Lambie, chief, West Virginia Department of Mines, and Stockton Garvis, West Virginia state rescue man. Lambie was overcome by carbon monoxide but Taggart and Garvis administered oxygen from their own tanks and brought him out saving his life.

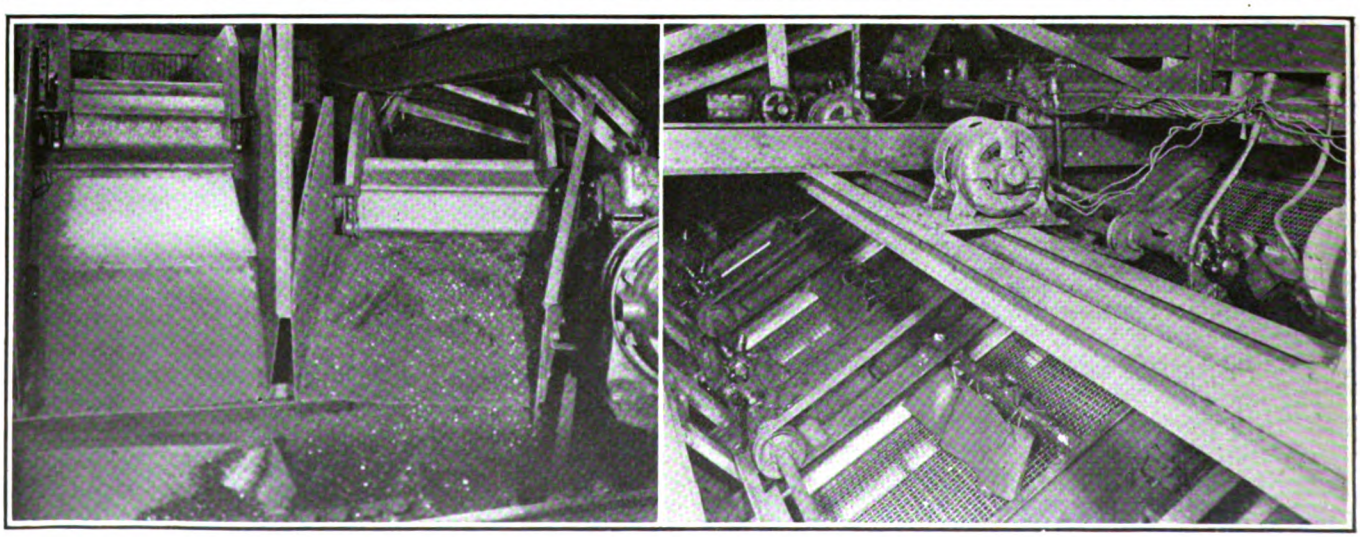
These men and three others, who subsequently died in an attempt to leave the mine, had erected a barricade of canvas and boards sealed with clay and refuse, at the mouth of a room, 1,000 ft. outby of the face. The room was 190 ft. long and had a volume of 11,000 cu.ft. In the barricade was built a small door and it was through this door that the three victims of afterdamp left the inclosure.

The survivors say that they had begun to grow impatient toward the end of their siege and were on the verge of attempting an exit when they were rescued. Throughout their work prior to reaching the barricaded men, the rescuers were as fearful that they would arrive too late as were the entombed men themselves. It was argued that, though the barricaded miners might escape the afterdamp, they might succumb to a shortage of oxygen caused by the liberation of methane and by the absorption of oxygen by the freshly-cut coal. The rescuers believed that the men had probably walled in a small area inby the last crosscut of an advancing entry. "The survivors," Chief Lambie said afterwards, "chose the location of their barricade with much wisdom," at a point that is far enough removed from the advancing entry faces.

Out of the explosion comes a new sense of the importance of selecting the proper place for erecting a barricade and of choosing the materials for its construction. In the light of experience at this mine disaster and at a recent explosion in the No. 8 mine of the Jamison Coal & Coke Co., Chief Lambie will outline the proper procedure in erecting barricades in a paper to be presented to the safety clubs of West Virginia, of which 250 are already organized.

In this explosion as in that at No. 8 mine of the Jamison Coal & Coke Co., was demonstrated the wisdom of an act of the last state legislature by which rescue trucks were provided for the use of the department of mines. In each case one of these trucks brought equipment and men to the scene soon after the explosion occurred. Governor Howard M. Gore, who is deeply interested in safety in mining in his state, played no small part in bringing about this arrangement and in co-ordinating the activites of the varous departments so that immediate aid is rendered at the scene of a mine disaster. The coroner's inquest will be held in Beckley on April 7.

ONE OF THE OLDEST electrified coal mines in existence recently closed down after 30 years of continuous operation. This was No. 22 Eureka colliery of the Berwind-White Coal Mining Co. in the Clearfield district of Pennsylvania. This mine was opened in 1894 and was the first plant installed in the district having electric haulage. There was not a mule or horse used in the mine. The mine cars were small and, when full, carried one gross ton of coal. From 1895 to 1901 the mine averaged 180,000 tons a year.



Handling the Coal on Part of Its Course Through Mt. Union Plant of the Rockhill Coal & Iron Co.

At the left are shown apron conveyors discharging onto a shaking screen. Two transfer conveyors of the apron type carry the coal from the narrow-gage railroad pits to a shaker screen within the transfer plant. This shaker, only a few openings of which may be seen, divides the coal into two products—over 4½ and under 4½ in. The oversize is picked and loaded over a picking-table loading boom and the undersize is carried by a conveyor into the coal-cleaning plant.

At the right is a battery of four vibrating screens. Each of these screens is driven independently by a 3-hp. motor. They are actuated through small throw eccentrics driven at high speed, and are composed of two decks. Each deck is made up of two screens in tandem. The upper screens separate a combination of furnace and range sizes from the stoker sizes and the lower screens separate sized stoker coal from stoker fines which are not washed. Each unit will handle a feed of 100 tons an hour. These screens are said to have the highest capacity of any in existence, each handling 100 tons per hour.

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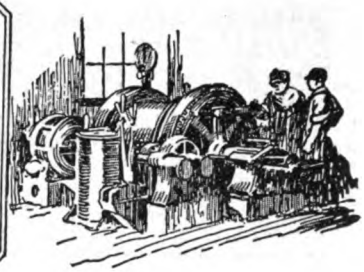
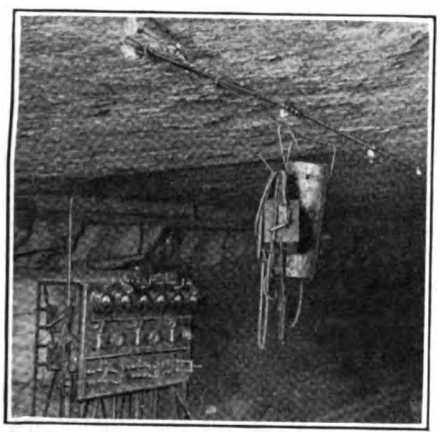
Practical Pointers For Electrical And Mechanical Men



Battery Watering Device Slides Along Cable

Method in the flushing of mine locomotive batteries will well repay the time and thought involved in its accomplishment. Water can be poured into the cells from a pitcher, but that is poor practice, for the reason that almost invariably much water is spilled on the cell covers. This moisture helps to collect dust and results in current leakage. A hydrometer syringe can be used, but filling by this process is slow and also usually results in a certain amount of spillage.

The best method is to use a small rubber hose with some sort of valve near the end. The supply to which the hose is connected can be a stationary tank, but this usually necessitates the use of a hose of cumbersome length. The accompanying photograph shows the convenient arrangement for watering batteries in the Nuttallburg, (W. Va.) mine of the Fordson Coal Co. In this charging station sufficient top has been taken down to leave room for suspending the water vessel above the locomotive.



Batteries Are Readily Charged in This Station

Above the track is a messenger cable located about 2 in. from the roof and stretched tightly. On this is hung the water tank, and the alarm box which indicates when the cells have been filled to the proper height. The outfit can be moved along the wire to either of the two locomotives on the track. At the left are charging panels for three locomotives.

A ⅜-in. galvanized steel messenger wire is stretched above the center of the track, close to the roof, between two anchor bolts. The battery watering tank can be slid to any point along this wire. With this arrangement one man can flush the cells of several locomotives in much less time than he would take were he to use any other method.

Screen Above Dry-Sand Bin Can Be Swung Clear

Often the sand-drying and handling arrangement at a mine is not as efficient as it should be. The fact that usually an extra man is required for this work and has time to spare is not a good excuse for continuing to use an unhandy and inefficient layout. If the drying can be arranged so as to take up but a small portion of a man's time, other productive labor can usually be provided for the other portion.

Considering the natural limitations of space, a handy and efficient sand-storing and drying outfit is that used by the Fordson Coal Co. at Nuttallburg, W. Va. This is shown in the accompanying illustration. The raw-sand bin is at the left, the dryer in the center space, and the dry-sand bin at the right. The mine supply track parallels the front of the shed.

The screen above the dry-sand bin is pivoted at the back end and is counter-balanced at the front end by a weight hung on the supporting cable. When dried sand is being put into the storage bin the front end of the screen is pulled down to a position somewhat lower than that shown in the photograph. The sand is shoveled on to the sloping screen which takes out any foreign material that is large enough to cause trouble. When sand is to be handled out of the bin and into the mine car the screen is raised out of the way, making it possible to get down in the bin and shovel out the sand over the end wall without inconvenience.

Shoes Outlast Wheels in Alabama Mine

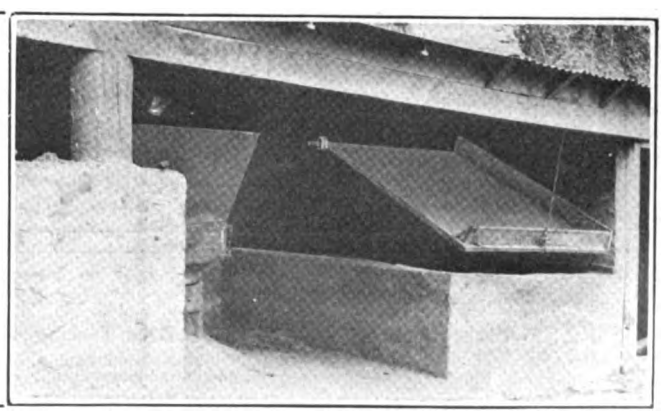
Trolley wheels lasted less than a week on a heavy-duty main haulage locomotive in the mine of the New Castle Coal Co., at New Castle, Ala. Now a shoe is used in place of a wheel, and the life is approximately three months.

M. G. Launius, superintendent, explained that recently they have started the practice of greasing the trolley wheels once a week with engine oil, and expect that this will greatly lengthen the life of the shoes.

At the time that a *Coal Age* representative was in the mine with Mr. Launius, some of the locomotives were still equipped with trolley wheels. When watching the loaded locomotives pass, it was observed that seldom was there any arcing from the shoe, but that there was much arcing from the trolley wheels, especially at each hanger.

Sand House

The screen above the dry-sand bin is pivoted at the back end, the front end being supported by a wire rope which passes over a pulley and to a counterweight.



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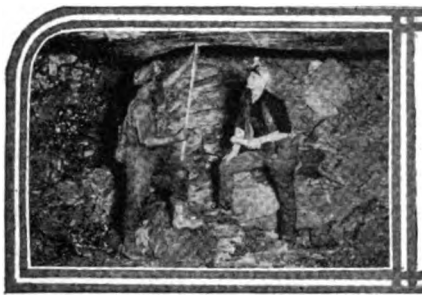
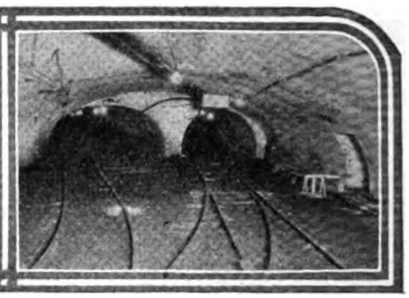


Underground Operation



Effect of Confinement on Violence of Coal-Dust Explosions

British Ascertain Effects of Exploding Coal Dust in Open Steel Tube and in One with a Partly Closed End

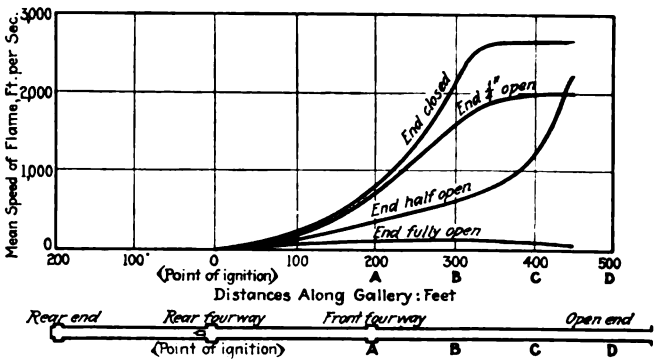
For some time it has been believed that coal-dust explosions are more severe if they occur at dead ends, with the charge, so to speak, ignited at the breach of the gun rather than at the muzzle; and recently the results of experiments made by H. P. Greenwald and R. V. Wheeler of the "Safety in Mines Research Board" confirming this belief have been published by that Board in Paper No. 14.

Briefly, the steel tube or gallery used was composed of boiler shells bolted together to form a straight tube of an internal diameter of 7½ ft. and 750 ft. long. One end was open and the other could be completely closed by a steel blank bolted in place. Except for fourway pieces inserted between adjacent boiler shells, one 200 ft. and the other 400 ft. from the rear end of the gallery, the tube was without side openings. There were no obstructions of any kind other than the rivets and the overlapping of the steel shells. In the experiment chosen for description, these fourways were closed by steel blanks. A series of wooden shelves was fastened along the gallery, five in each side. They extended from the open end to within 200 ft. of the rear end.

The explosions were started by a blown-out shot of 28 in. of black powder tamped with 8 in. of slightly damp clay, fired from a cannon having a 2-in. diameter borehole 34 in. deep. This blownout shot was fired into an open-ended tube 3 ft. in diameter and 10 ft. long, forming what will be known as the "impetus tube." This rested on the floor of the gallery in such a position that the end distant from the cannon was at the edge of the first fourway. Fig. 1 shows a plan of the gallery, giving the position of the cannon and impetus tube and of the two fourway pieces.

End Open and Closed

When fully open the flame travels at low speed, but when the end is closed it speeds along the tube at a velocity of 2,660 ft. per second.



The dust used was pulverized nut coal, ground so that 85 per cent would pass through a 200-mesh sieve. This was distributed as evenly as possible along the gallery at the rate of 1 lb. per linear foot. Twenty pounds of dust were strewn within the impetus tube, and an additional quantity was deposited on a plank, 14 ft. long and 15 in. wide, immediately in front of the tube. Beyond this plank the dust was thrown in the air by hand, right and left to settle on the floor and sides of the gallery and on the top of the shelves. No dust was strewn behind the cannon, so that there was a dustless zone 185 ft. in length between the cannon and the "rear" end of the gallery. The coal used for the experiment was Thorncliffe Silkstone having the following average analysis: moisture, 1.90; volatile matter other than moisture, 32.92; fixed carbon, 63.67 and ash, 1.51 per cent.

By the use of blanks at the "rear" end the degree of closure was regulated so as to entirely close, half-close and quarter-close the opening. The blanks in the last two cases had concentric circular holes bearing the relations indicated to the size of the full opening.

The results obtained by the explosion are as indicated in the graph Fig. 2 and in the table.

In one of the experiments with the rear end entirely closed the shell at the open end of the gallery was ruptured. When the rear end was left completely open the burning of the dust cloud was so slow that its progress could easily be followed by the eye, for the speed of the flame did not exceed 130 ft. per second, and the pressure developed was no more than 2 lb. per sq.in. at any point along the gallery. In one test with the rear end completely open, there was a strong west wind opposing the progress of the flame which sufficed to snuff it out before it could reach the end of the gallery.

Flame issued from the rear end of the gallery in all the experiments in which an opening was left there, and no inrush of air could be observed at the rear until the flame had passed out at both ends of the gallery. It was noticed, however,

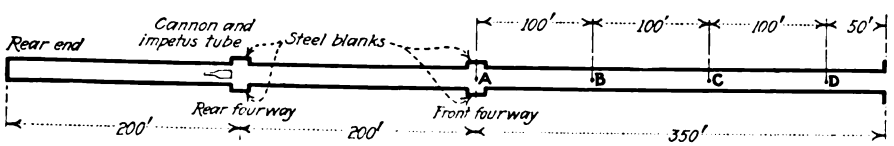


Fig. 1—Experimental Tube at the British Testing Station, Eskmeals

Tests at this station showed the not-too-astonishing fact that a cannon open at the breach or leaky along the bore does not show any real expulsive force when fired. Why didn't we think of this before?

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Effect of Openings in Gallery 200 Ft. Behind Point of Ignition on Development of Coal-Dust Explosion

Condition	Mean Speed of Flame (Feet per second) O–A	A–B	B–C	C–D	Maximum Pressure (Lb. per sq.in.) B	C	D	Flame Extension
End closed	240	1,310	2,660	2,660	39	68	73	Out at open end of gallery
End ½-open	195	1,175	1,940	2,000	22	37	70	Out at both ends of gallery
End ¼-open	175	515	825	2,270	15	18	48	Out of both ends of gallery
End open	90	130	110	95	2	2	2	Out of both ends of gallery

that when the speed of the flame was slow, as a result of the opening at the rear being large, its motion was markedly vibrating, the column of dust and air preceding the flame being expelled from the gallery in puffs rather than in a continuous stream and the flame itself could be seen to issue from one of the openings two or three times, a slight inrush of air occurring between each appearance of flame.

Briefly it may be said that when the gallery was closed at the rear end and openings made in the fourway in front or behind the impetus tube, the results in general were similar but when the rear fourway was closed and the front fourway was open with the impetus tube in the position in which it is placed in Fig. 1, the pressures and flame speeds were much higher, showing that the opening behind and beside the point of ignition do more to retard the progress and violence of an explosion than when some considerable distance in front of the point of ignition. With the front fourway fully open so as to give an opening 64 per cent as large as the cross section of the gallery the pressure averaged only 6 lb. at D as against 73 lb. with the rear end and fourways all closed.

Machine Undercuts Big Rock Band Which After Wetting Is Barred Down

In the lower section of No. 3 mine of the Phelps Dodge Corporation, Stag Canon Branch, Dawson, N. M., a rock roll has been encountered which is being successfully removed by the method outlined in Fig. 1. The rooms are driven 37 ft. 6 in. wide on 75-ft. centers. The face is advanced on an angle of about 51 deg., to a depth of 300 ft.

An arcwall slabbing machine, with an 8-ft. cutter bar, advancing as shown in Fig. 1, makes a kerf 6 ft. deep. After the completion of the cut, the face and kerf are thoroughly sprinkled. The rock, which is a hard sandy shale, is friable and fractures readily upon the application of water. The entire band to the full depth of the cut is removed by means of bars, and gobbed, as shown.

The section of the seam below the rock band is then drilled, shot and loaded out, after which the top section is removed.

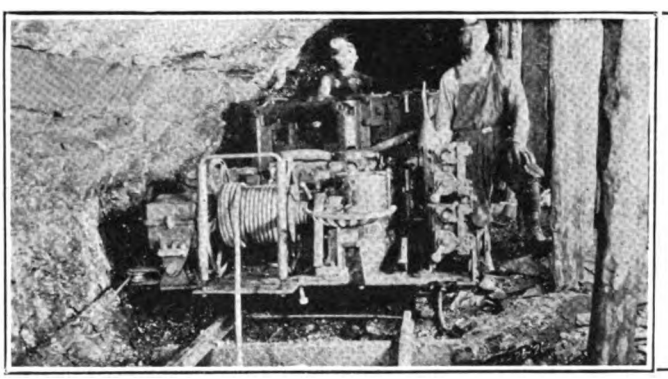

FIG. 3
Rear View of Cutter
View from the rear showing cable reel and drag line working its way across the inclined face.

Steel ties are used under the rails at the face, in order to save height and avoid brushing. The track from the curve to the end is made up in short sections convenient for advancing.

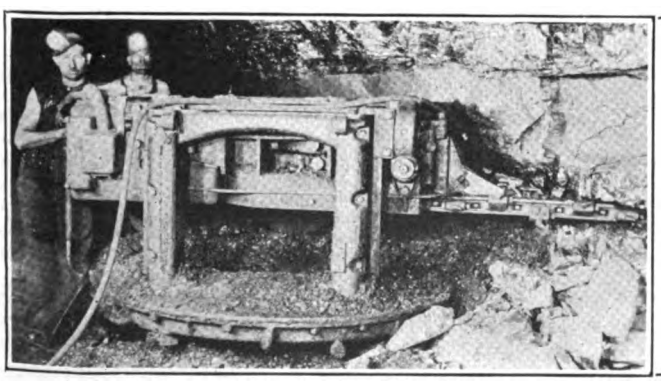

FIG. 2
Undercutting Rock Band
Shows the nature of the thick parting of rock, which, when undercut and wetted, can be readily pried down with bars.

Big bands of rock have usually marked the end of mining in the United States especially if they are larger than can be removed by a cutting machine. In Great Britain this is not so; thick rock bands are quite frequently mined and tossed in the gob, but the cost of mining is greatly increased where such bands are encountered. The question frequently arises whether to cut the band itself or to undermine it. The Gay Coal & Coke Co. mines the rock, but the Phelps Dodge Corporation undermines it.

In the Western country whether in Illinois or in the far West the measures are often quite dry, and watering breaks up the rock and clay more than in the East where water is usually present and where the measures have lost those chemical substances that are soluble in water. This may account for the readiness with which the rock band at No. 3 mine disintegrates when wetted and is so readily removed by bars.

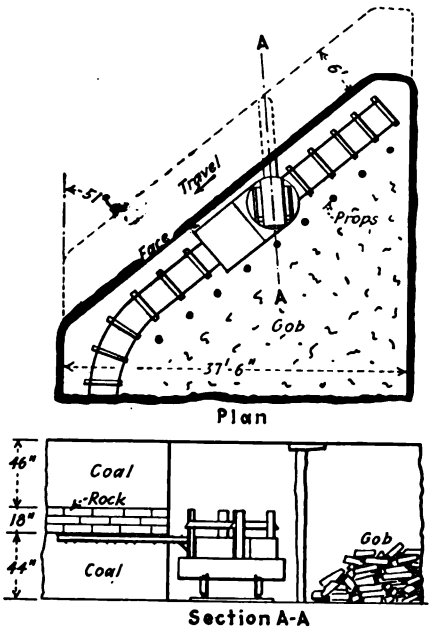

FIG. 1
Face Made Oblique to Afford Capacity
When bands can be mined or undermined they can be readily removed and then the shooting of the coal is light and easy, for the seam is in two masses instead of one.

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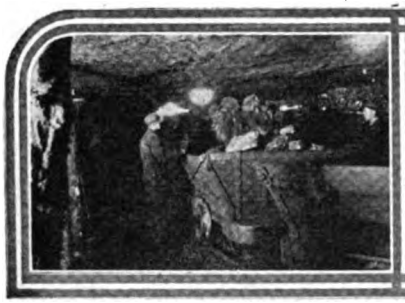
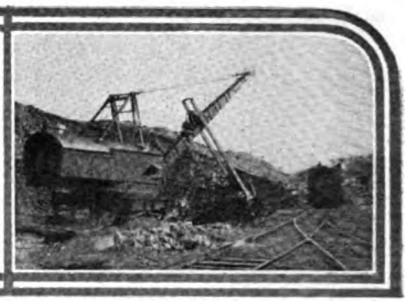


News Of the Industry



Coal Legislation Barrage Opens in Congress; Treadway Urges Laws Based on Coal Commission Report

(Special Dispatch to Coal Age)

Washington, D. C., March 30.—The opening gun in the campaign to revive congressional interest in coal legislation was fired today when Representative Treadway, of Massachusetts, appeared before the House committee on interstate and foreign commerce to urge that the recommendations of the United States Coal Commission be enacted into law. Congressman Treadway, the only witness heard during the session, directed his remarks to proposals to give the President emergency powers to seize and operate mines when strikes threaten and to compel continuous fact-reporting. Under a barrage of questions, however, he receded from his position on emergency control to the extent of agreeing with Congressman Newton, of Minnesota, that such a provision might encourage deadlocks and that for that reason it might be well to withhold such legislative action until the need developed.

Although declaring that the prices charged for bituminous coal and coke during the recent anthracite strike was warrant for including soft coal in the legislative program, Representative Treadway stressed heavily the interest of New England in anthracite. The State of Pennsylvania came in for caustic criticism on three grounds: The miners' certification law, the anthracite tonnage tax and royalties. Questioned by Congressman Wyant, of Pennsylvania, as to how he could change the anthracite tax in view of the Supreme Court decision upholding the imposition, he retorted that constitutionality did not necessarily imply moral justification and that it might be possible to shame Pennsylvania into a repeal.

Pressed by Congressmen Newton, of Minnesota, and Rayburn, of Texas, as to the exact powers he wished conferred upon the President, the witness fell back upon the Coal Commission report and the Coolidge messages of 1923 and 1925 and said the President's advisers and the committee's counsel could work out that problem. He insisted, however, that more recognition should be given to the public interest and that the public should sit in in coal disputes. He put great faith in the strength of public disapprobation in correcting unfair situations.

Costs, profits, wage rates and earnings, he argued, were no longer to be treated as matters of private business. The operators, he continued, had assured the public that they were resisting the miners' demands to increase costs. Nevertheless, he alleged, since the strike the price to the public has been boosted a dollar a ton, which meant, according to his figuring, an additional tax of at least $300,000 daily on the consumer. Compulsory, continuous publicity, he continued, would be an antidote for price gouging and would discourage the sale of premium coal. Much of the latter, he charged, was company production seeking the high dollar through a middle agency.

The sharpness with which some of the questions were flung at him provoked Congressman Treadway at one stage of the hearing to blurt out that he had been told the committee was packed against him. Upon protest, he said he made that accusation in a jocular vein and the remark was expunged from the record. There were so many interruptions from committee members that Chairman Parker, of New York, several times intervened to ask that cross-examination be deferred until the witness had concluded his direct statement. When the cross-examination by the committee was over the hearing was adjourned until Wednesday morning.

Old Ben Acquires Holdings In Non-Union Fields

The Old Ben Coal Corp., with offices in Chicago and large coal operations in southern Illinois, recently acquired extensive mining properties in West Virginia and established connections in eastern and western Kentucky, all in non-union fields. This move, it is reported, was to guard the company's business against the harassment of union labor troubles incident to the increasing depression in the Central Competitive Field, which is attributed to the Jacksonville agreement. The Peabody Coal Co. announced a short time ago that it had taken over several lines of west Kentucky coal.

In its official announcement, issued March 26, the Old Ben corporation stated that the step was made in order "to meet all competitive market conditions and to reduce strike interruptions to the minimum."

Senate Confirms Woodlock; Reed Placated

Thomas F. Woodlock, of New York, was confirmed by a vote of 52 to 25 as a member of the Interstate Commerce Commission after five hours of heated debate behind closed doors in the Senate March 26.

Soon after Mr. Woodlock was nominated, on Jan. 26, 1925, the insurgents of both parties began warfare against him as a representative of "Wall Street," though nobody questioned his ability or integrity. Senator Reed, usually ultra-regular Republican, was especially hostile, complaining bitterly that Pennsylvania had been denied proper recognition in Railroad Commission patronage.

Senator Reed was suddenly converted to Mr. Woodlock when the White House announced last week that Pennsylvania would be favored for the next commission vacancy.

Mr. Woodlock has been sitting as a recess appointee since April 2, 1925.

Hard-Coal Strike Reduced D. & H. Earnings

The adverse effects of the anthracite coal strike on the earnings of the Delaware & Hudson Co. in 1925 is reflected in the annual statement for 1925 released for publication this week. The report shows net income of $4,907,708 after all charges, or equal to $11.54 on the capital stock of the road, against $5,818,376, or equal to $13.69, in 1924.

Railway operating revenues declined $3,243,497 to $41,769,491. Freight revenues decreased $3,843,306, or 10 per cent. There was a reduction of $5,192,946 in revenue from anthracite traffic, which was partly offset by an increase of $647,368 from bituminous coal traffic. The net reduction in freight receipts from coal amounted to $4,535,578, or 20 per cent.

Railroads Use Less Coal In January; Price Drops

Class 1 railroads of the United States consumed in locomotives in freight and passenger service 9,155,429 net tons of coal in January, 1926, according to a report by the Interstate Commerce Commission. This compares with 9,102,555 tons in December and 9,209,439 tons in January of the preceding year.

The average cost of coal per ton by districts decreased 1c. in the Eastern and Western districts and 2c. in the country as a whole.

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Government Accepts Commission Plan To Adjust Britain's Coal Difficulties; Seek Measures for Lasting Solution

Stanley Baldwin, the British Prime Minister, announced on March 24 that the government has decided to accept the report of the Coal Commission, submitted March 10, and to pass such legislation as may be required to give effect to its recommendations for reorganization of the coal industry, provided the operators and miners agree to accept the report and carry on the industry on the basis of the recommendations.

The Premier made the government's decision known to representatives of owners and miners who had been invited to meet him in Downing Street. The government, he said, had not reached this decision without careful consideration of the report, and he indicated that acceptance of its recommendations required of the government the setting aside of certain preconceived opinions.

"The conclusions reached by the Commission," said Mr. Baldwin, "do not in all respects accord with the views held by the government, and some of the recommendations contain proposals to which, taken by themselves, the government are known to be opposed."

The Prime Minister said the government, however, had made its decision in the hope that, with the co-operation of all parties, it might be possible to find "a lasting solution of the problem."

Herbert Smith, president of the Miners' Federation, put a question which led the Prime Minister to make a statement in regard to the coal subsidy. This subsidy was granted last August for nine months, and is due to terminate at the end of next month. The Commission recommended that it should be abolished, and the government's acceptance of the report includes acceptance of that recommendation.

"But I recognize," said Mr. Baldwin, "that in some districts, if a settlement is to be reached, the sacrifice that might be required would be heavy, and if an agreement can be reached by May 1 I shall be willing to consider what temporary assistance may be required to ease the situation."

The Premier stressed two points in connection with further financial assistance from the government. In the first place, the amount of money available in the present condition of the country's finances is limited, and in the second place, the period for which further assistance is given also must be limited. The Prime Minister suggested that it be three months.

"Not one ton of coal will be handled throughout the country" if the government's decision in the coal controversy is unsatisfactory to the miners and they have to strike May 1, said A. J. Cook, secretary general of the Miners' Federation, in a speech at Westminster March 24.

"We also have made sure that no coal shall enter this country from America or Germany," he added. "We are not going to be slaves any longer. The miners will starve before they accept any reduction in wages."

The speech of Mr. Cook was delivered after he had been present at the two-hour conference between Premier Baldwin and the miners and operators' representatives.

Sale of Coxe Bros. Probable

Roger Shale, of Washington, D. C., has been appointed by the U. S. District Court to succeed the late Thomas R. Marshall as trustee, with James Neale, of Coxe Brothers & Co., Inc., coal subsidiary of the Lehigh Valley R.R. In some quarters this is seen as a step toward the separation of the coal company from the railroad. With two active trustees, railroad men believe that the next move will be an invitation of bids for the coal company. Mining engineers have gone over the property and submitted a report to the railroad company regarding its value. It is expected that Coxe Brothers will be sold outright.



Miners Discuss British Coal Commission Report

Herbert Smith, president of the British Miners Federation, is shown in the act of telling what he thinks of the findings of the Royal Commission. In the front row are W. Richardson, Tom Richards, Mr. Smith and A. J. Cook, secretary general of the Federation.

Industry Has Coal Supply For 35 Days

During February industrial consumption of bituminous and anthracite coal increased slightly over the preceding month, according to statistics compiled by the National Association of Purchasing Agents. The estimated consumption was 43,747,367 tons. Because of the depleted stocks of anthracite, the industries reporting showed an increased consumption of bituminous coal. The total consumption, however, is approximately eight million tons above that of the February (1925) mark.

Stocks of coal in the hands of industrial consumers on March 1 totaled 60,014,527 tons, compared with the Feb. 1 figure of 66,190,000 tons. Stocks on hand March 1 were sufficient to last 35 days at the February daily consumption rate of 1,706,424 tons. This is a drop from the figure for Feb. 1, which showed 49 days' supply on hand, and a slight drop under the figure for March 1 last year, when there was coal enough to last 38 days.

Receivers Likely to Sell Carbondale Coal Corp.

Robert P. Hobson, of Louisville, and Allen W. Mason, of Baltimore, who were named receivers for the Carbondale Coal Corp. by federal Judge Charles L. Dawson, in Louisville, have arrived in Madisonville, Ky., and taken over the properties involved. The Carbondale Coal Corp., which formerly was the Hawley-McIsaac Coal Co., has been operating coal mines in Hopkins and Ohio counties for several months.

Judge Dawson granted a receivership as result of a suit filed by the Baltimore Trust Co. against the Carbondale corporation. This action was precipitated by the corporation's failure to pay instalments on a sinking fund due upon an issue of $720,000 of bonds, according to announcement by Gordon, Gordon & Moore, attorneys.

Hobson's first move upon reaching Madisonville was to order suspension of operation at all of the plants controlled by the corporation. He was unable to say when operations will be resumed.

The Carbondale Coal Corp. owns large stripping operations at Carbondale and Nebo, in Hopkins County, and at Morrison, in Ohio County. It employed 175 workmen and produced 2,500 tons of coal daily. It is likely the properties will be sold under the hammer on court order for enforcement of the mortgage.

Federal Judge Dawson has postponed the sale of the D. B. Gore Coal Co., Providence, Ky., recently declared bankrupt, until April 6. The original order called for a sale on March 24, but because of unavoidable delays a postponement was found necessary, according to the announcement. The Gore company has been operating a stripping plant near Providence. It owned large undeveloped acreage.

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N. Y. Retailers Discuss Outlook for Soft Coal and Coke as Anthracite Rivals

Sharp differences of opinion as to the permanency of the markets won by bituminous coal and coke during the anthracite strike marked the discussions forming the major part of the program of the regional group meeting of the New York State Coal Merchants' Association at the Hotel Pennsylvania, New York City, March 25.

Walter R. Morris, Seaboard By-Products Coke Co., tracing the growth of byproduct coke production in recent years, was confident that coke as a domestic fuel was here to stay and warned the retailers that unless they co-operated in the distribution the coke ovens would find other means of selling to the consumer. Charles A. Owen, president, Imperial Coal Co., forecast a slow but steady gain for high-grade bituminous coal, particularly in the suburban communities and among those consumers to whom price was the controlling consideration. The natural increase in population also would be a factor in developing such a market because anthracite production could not keep pace with such an increase.

Say Anthracite Will Come Back

On the other hand, Arthur C. Wadley, president, Shanferoke Coal & Supply Co., in a paper read in his absence by Roderick Stephens, vice-president, Stephens Fuel Co., saw no barriers to the triumphant return of anthracite. Oil, he held, must be a lessening factor because of cost, uncertain supply and danger. Byproduct coke can compete only on a price basis and the increased costs of handling through the retail yards because of its bulk makes it unattractive to the retail coal merchant. Bituminous competition was too insignificant to be considered seriously. The incidental damages to property, menace to health and the methods required to burn it successfully all militated against its use.

Speaking from the retailer's standpoint, Hiram Blauvelt, vice-president, Comfort Coal & Lumber Co., urged vigorous merchandising methods to check the inroads of oil and praised the co-operation possible through the Anthracite Coal Service in meeting oil competition. He also pleaded for more stability in the merchandising policies of the operators, citing the situation in pea coal to illustrate his point. Responding to producers' appeals two or three years ago, his company had built up a consumer demand for pea coal which today it cannot fill because it cannot get enough of that size.

Mr. Blauvelt criticized the failure of the operators to take the retailers into their confidence as to price changes far enough in advance to permit them to map out adequate merchandising programs. In this connection he suggested that prices be changed on May 1 by a $1 reduction, with 25c. increases each month until the winter basis was reached. Such a basis, he felt, would offer a greater incentive to early buying than the old 10c. monthly discount system.

Lignite as Locomotive Fuel

Texas Lignite is being tested by the Missouri Pacific R.R. as a locomotive fuel in one of its locomotives running out of Palestine, Texas, on the International Great Northern. The engine has pulled as many as ninety-six cars, and as a steam producer the lignite is said to have been a success. The greatest fault of lignite in tests in Wyoming, Montana and Colorado is said by Kansas City operators, interested in those states as well as in the Southwestern district, to be sparks spread over the right of way and adjoining fields by the forced draft. The Missouri Pacific on some of its northern runs is now using northern Montana lignite, while the Rock Island is burning lignite in Colorado to a limited extent.

The meeting closed with a dinner at which Walter Gordon Merritt, general counsel for the Anthracite Operators' Conference, was the principal speaker. Mr. Merritt's subject was "The Public Stake in Anthracite." He declared unequivocally that the new wage agreement carried no provision, expressed or implied, for the check-off. The contest, he said, has taught the United Mine Workers that a strike can be lost and has demonstrated to the operators that a strike can be won. The politician has learned that meddling is undesirable and the public now knows that anthracite is not a necessity.

The Missouri Pacific R. R. applied to the Interstate Commerce Commission on March 25 for authority to acquire control of the Marion & Eastern R.R., a coal line extending from Marion to Paulton, Ill., a distance of 11.5 miles. The stock of the road is valued at $190,000. The Marion & Eastern through consolidation with the Missouri Pacific would have direct outlet to St. Louis and other coal markets.

N. C. A. Names Delegates to U. S. Chamber Meeting

Delegates of the National Coal Association to the annual meeting of the Chamber of Commerce of the United States were appointed March 23. The members of the delegation are engaged in the production of bituminous coal in the states of Colorado, New Mexico, Wyoming, Indiana, Kentucky, Ohio and Pennsylvania. They are: M. L. Gould, president of the Linton Coal Co., Indianapolis, Ind.; W. M. Ritter, Washington, D. C., chairman of the board of the Red Jacket Consolidated Coal & Coke Co., of Red Jacket, W. Va.; Whitney Warner, Cleveland, vice-president of the Warner Collieries Co., with operations in Ohio, West Virginia and Kentucky; John M. Jamison, Greensburg, Pa., president of the Jamison Coal & Coke Co.; G. P. Bartholomew, New York City, general manager of the coal department, American Smelting & Refining Co., with operations in Colorado and New Mexico; R. J. Ireland, Amityville, N. Y., president of the Owl Creek Coal Co., Gebo, Wyo.

Mine Inspectors' Institute Plans Live Program

The Mine Inspectors' Institute of America will hold a meeting May 11 to 13 at the Seventh Avenue Hotel, Pittsburgh, Pa., according to an announcement by G. B. Butterfield, secretary. The program, which is not yet complete in detail, will include the following subjects: "The Single-Entry System"; "Comparative Fatality Rates"; "Comparative Policies of Federal and State Mining Activities"; "Recent Coal-Mine Explosions"; "Regulations Governing Safety in Mines"; "Regulations for the Use of Permissible Explosives"; "Approved Electrical Mining Machines"; "Self-Rescuers"; "How Dust is Controlled by Watering in Alabama." A banquet has been arranged and a committee of six has been appointed to devise other entertainment features.



Men Who Took Part in Drafting Program for Cincinnati Meeting Of American Mining Congress

As the program committee is constituted chiefly of operating officials representing all coal centers of the country, questionnaires were sent out inviting each to contribute suggestions as to topics and speakers for the Cincinnati meeting. From the returns were selected the most weighty and attractive suggestions by the above group which met in Pittsburgh on March 20. They are, from left to right: Sitting, C. W. Wilson, S. A. Taylor, Ezra Van Horn, E. J. Newbaker and A. P. Cameron; standing, Alphonse F. Brosky, J. F. Callbreath, Newell G. Alford and George F. Osler. L. E. Young, of St. Louis, who also attended this meeting, was absent from the room when this photograph was taken.

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Increasing Statistical Work Among Coal Associations Presages Plans To Meet End of Jacksonville Pact

By Paul Wooton
Washington Correspondent of *Coal Age*

A revival of statistical activities among the local coal associations is noted by the Bureau of Coal Economics of the National Coal Association. An idea of the present extent of statistical reporting among the local associations may be gained from the following:

Stover's Smokeless Coal Bureau represents the smokeless fields of southern West Virginia. Its reports cover a rather wide range. There is a daily report showing by companies, for each of five subdivisions of the smokeless territory, the number of hours worked each day by each mine, the number of tons mined and the tons mined to date. A weekly distribution report of carload shipments classifies such shipments under ten grades and thirty-one destinations. Finally it publishes a weekly sales report of past transactions showing for each price the number of cars shipped at that price during the week for each of eight grades of coal and to each of six general destination groups.

For some months the Operators Association of the Williamson Field has been carrying on statistical work through a bureau of coal statistics which is finally intended to cover the high-volatile fields of southern West Virginia, eastern Kentucky and Virginia. Kanawha has joined forces with Williamson and they have opened a central statistical office at Huntington, W. Va., known as the Bureau of Coal Statistics of the High-Volatile Fields of Southern West Virginia, Eastern Kentucky and Virginia. The Logan district is about ready to join forces with Kanawha and Williamson.

Record Seam that Coal Is From

The Williamson reports as they have been issued show day-by-day sales at different prices grouped under seven grades, four destinations and five classes of use. They also show the particular seam in which the mine is located, whether the sale was spot or contract, whether it was to a jobber or a consumer, and the average price per ton spot sales and contract sales separately.

The Harlan County field of Kentucky issues a daily report showing the number of cars sold at each price during the day, grouped under six grades and four destinations. It also indicates whether the sale was spot or contract.

The Virginia Coal Operators' Association publishes a similar report based on daily shipments. It indicates the number of cars shipped at each price grouped under seven grades, twelve destinations and four classes of use. The reports also show whether the sales were spot or contract and, if the latter, the date when the contract was entered into.

The Southern Appalachian Coal Operators' Association recently inaugurated a daily sales report in which individual prices and number of cars shipped at each price are shown under eight grades, two destinations and four classes of use. The report also indicates the particular part of the field in which the mine is located and, for everything except spot sales, the date on which shipments are to be made.

The first weekly past sales report of the Brackett Statistical Service, operating in the northern West Virginia or Fairmont territory, was issued as of Feb. 16, 1926. This report differs from those already described in that it does not give the price of each individual transaction, but average high and low prices. The transactions are grouped under four grades and six destinations. Sales to brokers and to consumers are shown separately. The report covers both spot and contract sales.

The Alabama Fuel Association recently launched a past sales report which shows the number of cars sold at each price day by day. The seam from which the coal comes is indicated. The sales are grouped under ten grades and seven destination points. In some instances the date on which the coal is to be shipped is shown and in some cases it is indicated whether the sale was spot or contract.

Movement Is Spreading

The Central Pennsylvania Coal Operators' Association has made arrangements for inaugurating a similar statistical report. West Kentucky is actively engaged in formulating plans for similar work. The Southwest Interstate Coal Operators' Association also is considering similar plans.

Other associations are giving the matter of statistical reports active consideration.

These highly needed activities suggest the desirability of drawing together the results of local statistics into a comprehensive summary for the country. The Bureau of Coal Economics of the National Coal Association was designed for just that type of work. Its head, Alan H. Willett, is an economist and statistician of national reputation.

It is the hope of various officials in Washington who are interested in coal that the industry will undertake a constructive fact-finding program of its own. This will give the federal government an opportunity to concentrate on problems that industry will not undertake to solve.

Statistical work is expensive and the coal industry is poor as never before, so there are financial objections which will have to be overcome, but it is believed the wisdom of expenditures for such purposes is fairly well established among the producers, at least. Outlays in that direction ought to pay handsomely in promoting more efficient distribution; in avoiding shortsighted flooding of markets with unsold coal; in making possible a wiser program of production and in allowing the formulation of definite plans for future development.

In this connection consideration also should be given to the fact that the end of the Jacksonville agreement is only a year away. Its termination promises a period of uncertainty and stress, a period of controversy and public discussion. The industry must be ready to justify its case, both with the miners and with the country. The agreement may be renewed on the same terms. It may be renewed with different terms. The union districts may decline to renew at all.

Regardless of what happens it is perfectly plain that the coal producers will be in a position where they must have their case well prepared. The time is coming within a year when there will be desperate need for statistical data. A good start is being made. The clearing house exists, but as yet has not the support necessary to function on a scale commensurate with the increased activities of the local associations.

Labor Studies Records Of Congressmen

The executive council of the American Federation of Labor is making a study of the legislative records of members of Congress affecting labor measures. When records have been completed the Federation will send them into each Congressional district to be used in the elections next autumn. William Green, the Federation's president, said that 90 per cent of the 35,000 local unions in the country have formed non-partisan political campaign committees to participate both in the primaries and general elections.

Union Labor Starts Battle Against Injunctions

The American Federation of Labor made its first move in a national drive against the use of injunctions in labor disputes, at Albany, N. Y., March 26, when Assemblyman Frederick L. Hackenburg, Democrat, New York, introduced a bill defining combinations and conspiracies in trade and labor disputes and proposing that issuance of injunctions be prohibited in industrial controversies.

The bill, according to Mr. Hackenburg, is intended to "end the present abuse of discretionary injunction power by courts to inject themselves into labor disputes, arbitrarily."

Briefly reviewing the history of labor's campaign against issuance of this type of injunctions, the Assemblyman declared that the power of the first was employed after the railroad strikes in the latter part of the nineteenth century, and that since the American Federation of Labor has conducted a fight in every state, and at Washington, against the injunction power.

The New York Legislature, he added, is the first in which the present bill has been introduced, but that it will follow this year or next in legislatures of all the states.

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Machine Scale Ratified in Kansas; Loaders Get 90c.; Operators, 25c. per Ton

A machine mining scale for District 14 (the Kansas coal field) was formally ratified in Pittsburg, Kan., March 22, after having been agreed to two days earlier at the conclusion of negotiations extending over six weeks.

The machine rate is divided into the following differentials:

Ninety cents a ton to the miner for loading.

Twenty-five cents a ton to the machine runner and helper for undercutting the coal.

Ten cents a ton to the operators for furnishing the electrical machinery and other equipment.

The rate is based on $1.25 a ton. Although the miner receives 90c., or 35c. less per ton than the pick miner, the larger tonnage per day will equalize this, according to a statement issued for the Southwestern Interstate Coal Operators Association by W. L. Johnson, general commissioner.

In pick mining much of the coal is removed from the solid wall by blasting, resulting in approximately 50 per cent slack, but machine mining will give a larger percentage of lump, operators say.

At intervals for several years operators and the union officials had made efforts to agree on a scale. A representative of the international union was present during the negotiations, which were held in Pittsburg and Kansas City. Twenty-seven machines are now in use and consummation of the contract is expected to increase the number.

The machine scale will go into effect at once and expires March 31, 1927, at the same time the present pick mining scale expires. The contract provides that either party to the contract may within 90 days reopen negotiations if it deems an adjustment of the scale for dead work necessary.

Pittsburgh Coal Co. Omits Preferred Dividend

Dividend payments were suspended on the preferred stock of the Pittsburgh Coal Co. at a meeting of directors held in Pittsburgh, March 24. The regular quarterly dividend of 1¾ per cent was due to be declared at this time. A statement issued by the company said that "the dividend was not earned and it would be inadvisable to pay it out of surplus." The accrued unpaid dividends bear interest at the rate of 5 per cent. The directors felt the necessity of conserving working capital after a year of unprofitable operations, according to reports. It was further pointed out that the policy of modernizing the properties of the company would be continued. This work is being carried on for the purpose of improving mining methods in order to overcome high labor costs.

The following directors whose terms expired were re-elected for three years: W. K. Field, D. L. Gillespie, J. D. Lyon, A. J. Miller and W. M. Knox, William G. Warden was re-elected chairman of the board.

Roads Spent Heavily for Betterments in 1925

Class 1 railroads of the United States expended $754,000,000 in the form of capital expenditures for new equipment, improvements to facilities and extensions in 1925, according to a report by the Bureau of Railway Economics to the American Railway Association. Of this amount, about 45 per cent, or $339,000,000, went into new equipment in 1925, while the remaining 55 per cent, or $414,600,000, was expended for additions and betterments to roadway and structures.

As a result of these large capital expenditures the rail carriers in 1925 operated with the greatest efficiency and economy in their history and supplied to the shippers of this country the best transportation service that has ever been offered to them.

Despite this record efficiency, which has been increasing since the railroads were returned to private control in 1920, they have not earned either on their property investment or on their tentative valuation as fixed by the Interstate Commerce Commission, the "fair return" as fixed by the Commission.

N. C. A. to Hold Three-Day Annual Meeting in Chicago

The ninth annual meeting of the National Coal Association will be held at the Drake Hotel, Chicago, June 9, 10 and 11. This was the decision of the program committee, which held its initial meeting in New York City March 23, with the following present: Messrs. Gould, Van Horn, Richardson, Mouser, Kennedy, Shirkie and W. C. Shank (representing Mr. C. F. Spencer). Telford Lewis, chairman, was unable to attend because of illness.

Research will be the major subject discussed at the Wednesday morning session, June 9. On Wednesday afternoon there will be a sectional meeting of purchasing agents, at which the successful practices of the New River Coal Operators' Association along lines of co-operative buying will be described.

There will be three sessions on Thursday, the 10th. The morning session will be given over to insurance and safety; in the afternoon there will be a sectional meeting of sales agents and sales managers of coal companies; a banquet will be held in the evening. The program for the morning session of the third day includes discussion of taxation and a paper on the banker's viewpoint respecting consolidation proposals and the like.

A program is being arranged that will be rich in material of practical value to every bituminous coal operator and it is hoped that the interest of the industry will be centered in Chicago during the week of the annual meeting. The sessions will be open to nonmember operators and to the public.

Erie Coal Holdings May Be Segregated Soon

The coal properties of the Erie Railroad Co. valued at from $35,000,000 to $85,000,000 will soon be segregated, it is believed, in accordance with the ruling of the Interstate Commerce Commission. It is thought that the same plan will be followed in separating the coal properties from the railroad company as was followed in the case of the Delaware, Lackawanna & Western and the Lehigh Valley. A few years ago there was considerable opposition to the segregation by directors because it was pointed out that the road needed the income from the coal holdings, but now since the earnings from the railroad itself have increased so much they are not nearly so vital.

It is also thought that the directors will want to take some action on the separation of these properties before the inauguration of dividends on the first preferred stock. Earnings are running sufficiently well at present to permit the payment of dividends on the stock, but whether it would be advisable immediately is declared to be a question.

The coal properties are carried on the books of the Erie R.R. at $35,000,000, while the Van Sweringens testified before the Interstate Commerce Commission in the Nickel Plate hearing that they were valued at $85,000,000. Disinterested outsiders have placed the value as high as $100,000,000. The Interstate Commerce Commission in rejecting the Nickle Plate merger called attention to the fact that the properties had not been segregated.

Funds Voted for Study Of Mine Accidents

The House of Representatives, at Washington, has passed the Departments of Commerce, State, Justice and Labor appropriation bill carrying funds for the Bureaus of Mines and Standards and other bureaus as recommended by its appropriations committee. On motion of Representative Taylor (Dem., W. Va.) the House increased from $396,000 to $403,500 the appropriation of the Bureau of Mines for investigation of mine accidents. A previous amendment to fix the fund at $411,000 was defeated by a vote of 20 to 36. Mr. Taylor said that with $15,000 the Bureau could start a scientific investigation of the causes of the fall of roof and coal in mines.

May Keep Tabs on Inquiries In Trade Trend Records

Consideration is being given at the Department of Commerce to a plan under which a record would be kept in some instances of inquiries as well as orders. The current condition of industries now is judged largerly by the volume of orders. In some industries there is a considerable lag between the inquiry and the order. By plotting the inquiries over a good cross-section of certain activities some idea of the trend of demand could be had. The gathering of this information is expected to be of more value after the first year, when the curve can be compared with that of the preceding year.

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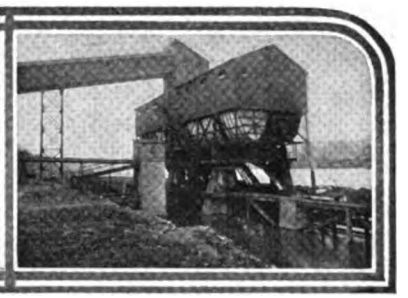
News Items From Field and Trade



ALABAMA

A new coal washery of modern design is being constructed by the Porter Coal Co. at its Porter mine, near Palos, Walker County. This company has expended a large amount recently at this operation in the way of new equipment to increase production and improve preparation. The mine is owned and operated by W. C. Adams and E. J. Rowe, of Birmingham.

COLORADO

Officials of the Bear Canon Coal Co. were exonerated from all blame of the explosion in the Bear Canon mine No. 3, Valloroso, on Jan. 29 last at a hearing held at Walsenburg before the state board of examiners and the state coal mine inspector. In this explosion three men were killed outright and one died of burns at the local hospital a few days later. A number of other miners were burned, a few seriously, by the explosion.

Students taking engineering at the Colorado School of Mines in the future may have the option of taking either metal or coal mining, the school having installed a coal-mining department. A large number of students are taking advantage of the new course, it is said.

The Colorado Fuel & Iron Co.'s report for 1925 shows gross business of $34,537,134, against $39,297,320 in 1924, and net income, after all deductions, of $1,752,427, against $520,285. The net income for 1925, after preferred dividend requirements, was equal to $4.65 a share earned on the $34,235,500 common stock outstanding, against $1.05 a share earned in 1924. J. F. Welborn, president, in his report to stockholders, said the company expended $2,442,732 in 1925 for additions and improvements.

Coal production in Colorado registered a decrease in February from the figures set for the same month last year, according to the monthly report by James Dalrymple, state coal mine inspector. The report showed 749,506 tons produced during February, compared with 1,079,061 tons in January, the total for the two months, 1,832,074 tons, being 322,620 less than was mined for the first two months of 1925. An average of 12,216 men was employed mining coal in Colorado in February, the report showed.

The state Supreme Court has been asked to decide whether the state can compel a man against his own wishes to properly safeguard his own life. The question came up in an appeal from a Colorado Springs district court, where James Dalrymple, state coal mining inspector, lost his fight to compel Fred Sevcik to install safety measures in a small coal mine which Sevcik owns and operates by himself. District Judge Cornforth ruled that in this instance the state law requiring a coal mine to have a certified foreman and ventilation fans was unreasonable and unconstitutional, and issued an order preventing Dalrymple from further interference in Sevcik's mine.

The Rockvale and Fremont mines of the Colorado Fuel & Iron Co. have closed for the season, during which time extensive development work will be carried on with a small force of men. The Coal Creek mine will continue in operation and a large majority of the force from the two other properties will be taken care of at Coal Creek.

ILLINOIS

Judge George W. English of the U. S. District Court in East St. Louis, on March 24 advised the receivers for the Southern Gem Coal Corp. that an amended petition be filed with the court in April so that a sale of all the properties of the corporation may be held. This will permit a marshaling of the assets of the company and the court will then be in a position to pass on the priority of claims. Judge English took this action when requested by the receivers, N. C. McLean, of East St. Louis, and William Wilson, Pinckneyville, to give directions as to further procedure in the case.

Mine No. 1 of the Chicago, Wilmington & Franklin Coal Co., known as the "Old Orient," at West Frankford, resumed operations last week after a suspension of four weeks. This mine employs about 1,000 men. Mine No. 1 of the Bell & Zoller Coal Co., at Zeigler, also resumed operations with about 40 per cent of the 1,100 employees ordered to work. The unexpected reopening of these mines is one of the most encouraging signs of a return to normalcy in these fields in many months.

The last big mine in Grundy County ceased operations March 20 and Coal City no longer has a reason for its title. The Wilmington Company's mine No. 7 will be dismantled. Where a few years ago Coal City and South Wilmington were centers of great coal activity, now there is nothing left but small mountains of slag and slate to recall the industry. One small wagon mine is all that is left in operation in this district. There is plenty of coal in the mine, said the superintendent, Joseph Campbell, but advancing wages and freight rates had given other mining centers insurmountable advantages. The mines here had been in operation for fifty years, in which the shafts of the community produced as much as 1,500 tons daily.

INDIANA

The executive board members of 21 districts of the United Mine Workers of America went into session at national headquarters, Indianapolis, March 22 for the first time in ten weeks. The meeting was delayed by the anthracite strike. The session will continue two weeks. The first few days were devoted to appeals from decisions and routine business within the organization. The Indiana coal trouble likely will be given some official attention, it was said.

Harvey Cartwright, vice-president of district No. 11, United Mine Workers, in a recent trip to Indianapolis reported that more miners were leaving the non-union operated mines in the Evansville field and that the working force of each mine was becoming more depleted. He said everything was peaceful. He admitted, however, that no additional coal operators had signed agreements with the mine workers, the John Bull and Erie Canal mines being the only two which were operating on a union basis.

The Western Indiana Mining Co., of Terre Haute, has filed a preliminary certificate of dissolution.

A three weeks' strike at Atlas No. 1 Mine, near Petersburg, was brought to a close March 15 when the Pike County Coal Co., the owners, agreed to give employees turns at work in the mine. The working force was reduced more than 50 per cent, but the work was divided among the men so that all will get two or three days' work a week when the mine is operating at full capacity. The mine is the largest deep-vein pit in southern Indiana and has a daily output of 2,600 tons.

The American Cannel Coal Co., Cannelton, has reduced its capital stock from $50,000 to $25,000.

KANSAS

Would Coke Kansas Coal.—Dean P. F. Walker, of the engineering school of the University of Kansas, at a meeting with State Teachers College instructors, coal operators and representatives of the Chamber of Commerce in Pittsburg March 19 declared there are great possibilities for coking Kansas coal and urged that a fund be raised for experimental purposes. He warned that shipping coal by barge

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from St. Louis to Kansas City on the Missouri River may take the Kansas City market away from the Kansas mines. A fund of not more than $30,000 would provide for adequate tests, he said. He said that coke now sells in Kansas for $13 or $14 a ton but that it could be produced there at a cost of $5 or $6 a ton and the by-products would be valuable.

Kansas mined 4,813,088 tons of coal in 1925, according to the complete official report of James Sherwood, state mine inspector. Output in the preceding year was 4,491,069 tons. Kansas mine employees in 1925 numbered 9,471, compared with 8,743 in 1924. Fatal accidents numbered eleven, four more than in the preceding year. Non-fatal accidents totaled 704, while in 1924 there were 813. Production by counties was as follows: Crawford (deep), 2,752,984 tons; Crawford (shovel), 338,711; Cherokee (deep), 479,180; Cherokee (shovel), 724,263; Osage, 95,227; Linn, 53,760; Leavenworth, 95,563; Franklin, 1,497; Bourbon, 17,428; Neosho, 4,475; Miscellaneous, 250,000.

KENTUCKY

The Daniel Boone Coal Corporation, of Lennut, Ky., is reported to have taken over the mines and plant of the Kentucky River Coal Co., on Lost Creek, near Heiner.

A tipple is under construction at the new Lee's Switch coal mine, near Henderson. The mine is being sunk toward a 4-ft. seam of coal 220 ft. beneath the surface. Harry Jennings and several other Henderson men are sinking the shaft.

MISSOURI

The Western Coal & Mining Co. hoisted the first coal from its new mine No. 23, near Minden, on March 18, when it made a run of 300 tons. When fully developed the mine will employ 300 men. The seam is from 2 ft. 10 in. to 3 ft. 2 in. thick and is 60 ft. deep. The Western's mine No. 22, near Arma, will be ready for operation by next fall, giving the company six large mines.

There are prospects of another by-product coke plant locating in St. Louis. Definite action is expected on this in the next three months. It probably will be located on the river and will offer rail and water transportation for both coal and coke.

OHIO

The Charter Oak Coal Co. has been formed by 10 miners, who will open a small mine in the Pomeroy field on a co-operative basis. A royalty is to be paid the mine owner.

Acting for Willis J. Richardson, former president of the defunct Richardson Coal Co., of Cincinnati, Attorney Frank Wood has offered the referee in bankruptcy for the U. S. District Court at Cincinnati to compose the indebtedness at 33c. on the dollar. The coal company was thrown into the hands of a receiver last fall. Richardson in February went into bankruptcy, scheduling $24,000 as liabilities and $700 as assets. His attorney says relatives have come to his rescue, making the settlement possible, and asks that his creditors meet and approve of the offer.

Bids will be received April 14 by the Columbus Board of Purchase for coal for city departments as follows: 12,500 tons of Ohio nut, pea and slack for the municipal light plant; 6,700 tons of Ohio nut, pea and slack for the Scioto River pumping station; 2,500 tons of Ohio nut, pea and slack for the garbage disposal plant; 500 tons of West Virginia nut, pea and slack for the coal pulverizers at the garbage reduction plant. H. C. Cain, is secretary of the Board.

PENNSYLVANIA

Former Mayor P. B. Brown, of Pittston, has embarked in the coal business with Thomas Lynott, an experienced rock contractor. They have taken over a plot of ground on the mountain east of Pittston. It is understood that there is a coal seam 11 ft. thick at some portions of the new operation. For the present the coal is being hauled from the property to a breaker in Dunmore and there prepared for market. Later on the mineral will be shipped to Dunmore in railroad cars.

The York Farm Coal Co., which has conducted a mining operation near Pottsville for several years, is now engaged in dismantling its washery there. This action is due to the fact that the huge culm dump formerly connected with the York Farm mine of the Lehigh Valley Coal Co. has been virtually worked out. The washery machinery is being shipped to Herdnon, where it is understood that culm deposits are to be taken from the Susquehanna River.

The Clinton Iron & Steel Co., at Pittsburgh, has resumed operations at its blast furnace on the south side, which had been banked for the past three months. In order to keep this furnace supplied with coke the Snowdon Coke Co., owned by the same interests, has fired up 120 of the 200 ovens put out when the anthracite strike was settled. This company now has 220 ovens in blast.

W. J. Rainey, Inc., have put out 200 ovens at their Allison plant and have closed down their Royal plant altogether for an indefinite period, during which time their plant will be completely electrified.

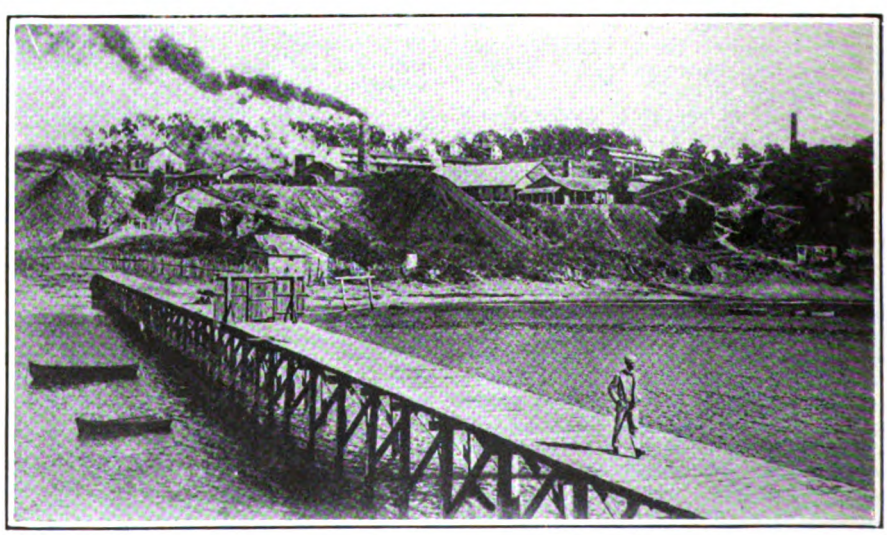
The Oliver & Snyder Steel Co. has put out 100 ovens. The H. C. Frick Coke Co. is putting out additional ovens, as is also the Puritan Coke Co.

David Thomas, a member of local union 1157, United Mine Workers, of Mocanaqua, who was suspended by the local union for ninety-nine years for his alleged part in the framing of a resolution concerning arbitration during the resent hard-coal strike, has been restored to good standing in the union. The executive board decided that the evidence upon which the suspension was based was not sufficient.

The executive board of District 1, United Mine Workers, has approved a plan to have all offices of the district organization with the exception of the legal department, located in Scranton. Attorney Roger J. Dever, who is the general counsel for the union, will retain his office in the Miners Bank Building, Wilkes-Barre. Former sub-district offices located in Wilkes-Barre will be removed to the Coal Exchange Building, Scranton.

The Spring Mountain Colliery, near Jeannesville, has been declared the most efficient of all the Lehigh Valley Coal Co. and Coxe Brothers operations. Company experts studied the records of the collieries for June, July and August last and awarded the efficiency banner to the Spring Mountain plant.

John J. Golby, superintendent of the Consolidation Coal Co. mine at Pine Hill, Somerset County, was instantly killed on March 15, when he was caught in a gas explosion in the mine. His body was badly burned and mutilated. Two other men with him escaped. Gas was detected in the mine a week before and Mr. Golby had entered the mine to



Chilean Coal Mines at Lota, First Operated in 1844

The Lota field is 280 miles, south, as the crow flies from Valparaiso or a little further than Pittsburgh is removed from Philadelphia. It lies near the city of Conception, so much at the water's edge that much of the coal extracted, if not all, comes from under the sea. The volatile matter in the coal runs from 34 to 41, the moisture from 3.6 to 4.7, the ash from 1 to 6.5, and the sulphur 0.2 to 4.8 per cent.

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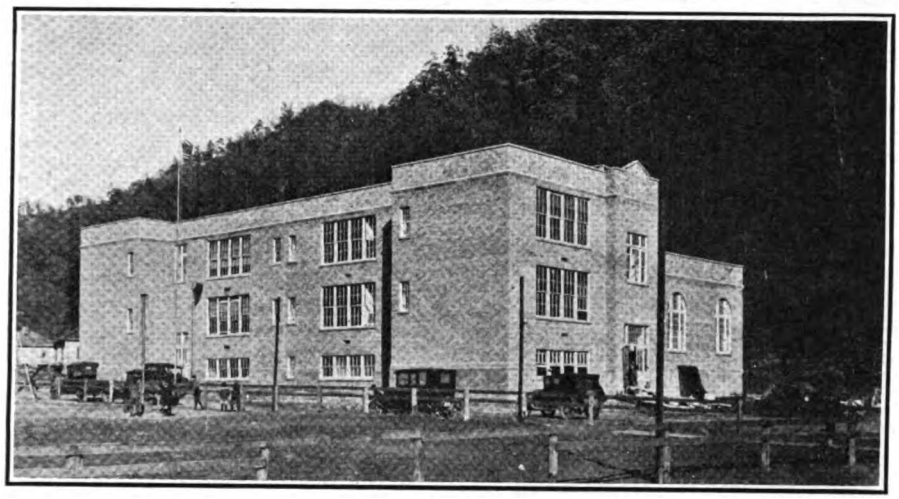

School Building at Caretta, McDowell County, W. Va.

This new building, which stands on property of the Consolidation Coal Co. and cost $80,000, provides space for modern equipment such as auditorium, gymnasium, manual training, and domestic science rooms.

discover the place where the gas was escaping. The body was hurled 500 ft. by the force of the explosion. He was 45 years old. A son, Thomas Golby, risked his life by going into the heading and carrying the body of his father out while a rescue crew pumped oxygen into the mine.

J. E. Kennedy, of the Kennedy-Van Sann Manufacturing & Engineering Co., New York, gave a lecture on Thursday night, March 18, to the members of the Engineers' Society of Northeastern Pennsylvania on "Pulverized Coal." The meeting was held in the auditorium of the Glen Alden Coal Co. building and was presided over by C. R. Seem, president of the society.

Judge Bailey, at Huntingdon, has decided to dismiss the temporary receivers for the Huntingdon & Broad Top Mountain Railroad & Coal Co., according to advices from Philadelphia, but will hold a further hearing on April 16, after which it is expected that action will be taken regarding the question of permanent receivers.

Secretary of Mines J. J. Walsh is expected to fix a date during the coming week for a new series of examinations for qualification of candidates as anthracite mine inspectors. The date probably will be during April. The recent examinations did not qualify men for appointment. There are seven vacancies, a larger number than has existed at one time in many years.

A loss of almost $75,000 was caused recently near Gordon, when fire destroyed the Coal Creek washery of the Hill View Coal Co. This washery was erected a few years ago and was operated at times during the recent strike, but has been shut down since the settlement.

William Lamont, of Bakerton, Cambria County, a member of the state board of mine inspectors, has announced that nineteen men passed the state examination. The tests were given in Pittsburgh. The successful candidates are Silas S. Hall, Connellsville; William G. Kneoper, Philipsburg; John Ira Thomas, Johnstown; J. F. Robey, Uniontown; James D. Walker, Butler; D. W. Wilkinson, Uniontown; Thomas J. Lewis, Punxsutawney; W. L. McCoy, Pittsburgh; F. W. Howarth, Hillcoke; Thomas Anderson, Heilwood; Patrick S. Nairn, Johnstown; William B. Wardrop, Barnesboro; James L. Maise, Uniontown; Thomas A. Stevenson, Conemaugh; William J. McGreagor, Eldersville; William Phillips, Caddy; George Stenheiser, Punxsutawney; Patrick J. Buchanan, Ellsworth, and Alexander Jack, Lilly. Three vacancies exist at present, in the Crafton, Altoona and Philipsburg districts.

WEST VIRGINIA

Plans are being made by Charleston mining men to entertain the southern West Virginia and northeastern Kentucky chapter of the American Institute of Mining and Metallurgical Engineers in Charleston on May 6 and 7. The guests will include Samuel A. Taylor of Pittsburgh, Pa., president and Dr. Thomas T. Read, of New York City, assistant secretary of the national organization. Dr. Read was formerly director of the safety service of the U. S. Bureau of Mines. Probably 200 mining men will attend. A banquet on the night of May 7 at a Charleston Hotel will be one of the features. The chapter has a membership of 200. On the afternoon of the second day the mining men will visit the industrial plants of Charleston. The local committee of arrangements is composed of J. K. Anderson, president of the chapter; C. E. Krebs, secretary of the chapter, and Carl Scholz, vice-president and general manager of the Raleigh-Wyoming Coal Co.

Operators estimate that coal production in southern West Virginia has been curtailed 25 per cent since the anthracite strike ended.

The Colcord Coal Co., of Charleston, is installing equipment at its Montcoal mine, on the C. & O., in Raleigh County, to be completed May 1 at a cost of from $25,000 to $30,000. Screens and rotary dumps are being installed and the tipple is being remodeled. The company also is buying 50 new mine cars.

Affairs of the Otto Marmet Coal Co. were in the federal court of southern West Virginia in Charleston on March 24. Otto Remelin, manager of Raymond City; Charles Strebel and other officials are trying to again obtain possession of the mine at Raymond City, Putnam County. The property was purchased by J. C. McKinley, of Wheeling, whose affairs afterward went into bankruptcy. The company seeks to resume operation at the mine as soon as the legal status of affairs is straightened out. The original company, the Otto Marmet Coal & Mining Co., also is involved in the proceedings.

William N. Cummins, general manager of the Red Jacket Consolidated Coal & Coke Co., reports that the company has completed the reconstruction of its No. 5 tipple. The improvements include a new set of modern shaker screens, picking tables, loading booms and refuse conveyors. At the No. 6 plant a new gathering motor and cutting machine have been installed.

A. J. Thompson will soon open for development a tract of coal land on the Durbin Branch of the Western Maryland Ry. at what was formerly Montes, near Elkins. Tests disclose the presence of a seam of Sewell coal. Development work will be started at an early date under the direction of Orin Kelly, who has been making the tests. It is stated that approximately 250 men will be employed once the new mine is in operation.

Increased profit for 1925 was reported by the American Coal Co., whose annual statement shows a net earning of $433,256, as against $244,001 for 1924. This is equal, after federal taxes, depreciation, depletion, etc., to $8.73 a share earned on outstanding 49,598 shares of $25 par capital stock. It was $4.91 a share in 1924.

In its report for 1925 the **Island Creek Coal Co.** shows a net profit of $2,210,949, after charges and taxes, equivalent, after preferred dividends, to $16.09 per share (par $1) earned on 118,801 shares of common stock. In 1924 the figures were $2,426,569, or $17.91 per share. The net income from coal and other operations was $3,736,620. Administrative and general expenses, miscellaneous interest, depreciation and depletion and federal taxes totaled $1,525,671. Total assets, including cash, $833,117; accounts and notes receivable, $1,683,886, and coal inventory, $73,759, were $22,727,820. Total liabilities were $15,990,163.

CANADA

Coal production of British Columbia in the first two months of the current year totaled only 350,025 gross tons, as compared with 404,467 during the corresponding period of 1925. The falling off has been chiefly in the Vancouver Island mines, which produced only 194,192 tons, as compared with 249,226 tons in the first two months of 1925. The decreased production is due to extraordinarily mild winter. C. E. Villiers, general manager for Canadian Collieries (Dunsmuir), Ltd., says the effect has been particularly noticeable at the Extension colliery, which depends on local demand. The Cumberland collieries, which have an extensive and regular bunkering trade, are not feeling the depression to the same extent.

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Among the Coal Men

Whitefoord R. Cole, newly elected president of the Louisville & Nashville R.R., of Nashville, Tenn., also is a coal man, being connected with mines in the west Kentucky field and at one time was financially active in the affairs of the Dealers Fuel Co., of Nashville, which had an office in St. Louis. **James B. Hill** was elected president of the Nashville, Chattanooga & St. Louis Ry., to fill the vacancy created by the elevation of Whitefoord R. Cole to the presidency of the Louisville & Nashville. Mr. Cole became the head of the Louisville & Nashville following the death of W. L. Mapother. Mr. Hill was assistant to the president of the Nashville, Chattanooga & St. Louis. He began as a clerk.

E. L. May, well known during the past few years on account of his connections with the Levy enterprises of Chicago, is now in the sales department of the Lumaghi Coal Co., of St. Louis, Mo.

Tom Mackie has been elected a director of the Central Coal & Coke Co., Kansas City, Mo., to succeed J. N. Penrod, who died last September. Mr. Penrod's place on the executive committee of the company was taken by Harry T. Abernathy, another director.

M. C. Allen, who formerly owned the store at Middle Fork, Kanawha County, W. Va., has leased the mine of the Middle Fork Block Coal Co. at Middle Fork.

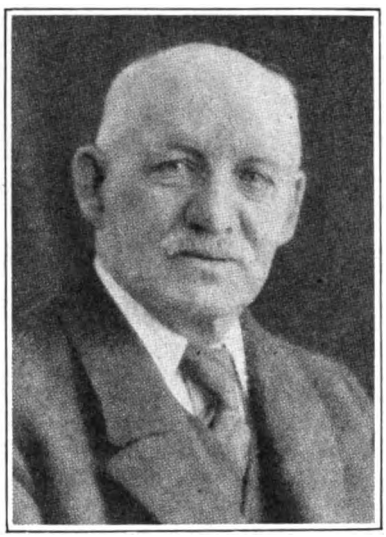
J. J. Tierney, son of the late Col. L. E. Tierney, has been made manager of the Eureka Coal & Coke Co. at Eckman, W. Va., and of the Lynchburg Coal & Coke Co. at Kyle, in McDowell County,

F. R. Wood president of the Temple Fuel Co., of Trinidad, Colo., and Mayor of Trinidad as well as president of the Colorado & New Mexico Coal Operators Association and formerly State Senator, will enter the race in the primary election for the governorship of Colorado.

Vernon G. Leach, an expert on combustion, who formerly was with the Nason Coal Co., is now connected with the Peabody Coal Co., Chicago. He will devote his entire time to the promotion of power-plant economy.

Thomas Kennedy, international secretary-treasurer of the United Mine Workers, has been made a member of the tri-district executive board in the Pennsylvania anthracite field with voice and vote. The action was taken at a recent meeting of the board.

The duties of the position of general superintendent of W. J. Rainey, Inc., vacated recently by the resignation of John Sincock, are being temporarily cared for by **Robert Woods, Jr.**, assistant general superintendent, Uniontown, Pa., and **J. R. Maust**, New York, N. Y., general purchasing agent, who is spending his time in Uniontown at present. No permanent appointment has yet been made.



David Hannah

David Hannah recently was elected president of the South Wales Institute of Engineers, of which he is one of the oldest members, having joined 42 years ago when a student. Born at Mynyddislwyn in 1855, he has been active throughout his career in the South Wales coal field, where he is one of the leading mining engineers. He received his early training with the Powell Duffryn Colliery Co., later becoming acting manager of the Ocean Coal Co. In 1889 he was appointed assistant manager of D. Davis & Sons' Ferndale Collieries, and a year later general manager of all that company's plants at Ferndale and Tylorstown, a position that he retained until his retirement a few years ago. Mr. Hannah is now chairman of the Welsh Navigation Steam Coal Co., Ltd., and a director of D. Davis & Sons, Ltd., and Locket's Merthyr Collieries, Ltd. He also is a member of the South Wales Coal Conciliation Board.

Traffic News

More Ohio Interests Ask Hearing In Lake Rate Case

The Tristate Coal Stripping Association, the Wheeling & Lake Erie Ry., the Ohio Public Utilities Commission, the Attorney General of Ohio and the Eastern Ohio Coal Operators' Association filed petitions with the Interstate Commerce Commission March 23 urging a rehearing in the lake cargo rate case. The eastern Ohio operators' petition said the situation "has seriously injured and impaired the business and social life of the complaining district and caused widespread suffering and distress."

The Ohio Attorney General and Utilities Commission declared the tonnage of coal shipped to lake ports for transshipment had continually decreased from Ohio districts and had correspondingly increased from the Kentucky and West Virginia districts.

In Ohio, it said, thousands of miners were reported out of work, enormous investments were imperilled, millions of dollars had ceased to flow through the usual channels of trade, the commercial life of mining communities, where not already ruined, was stagnant, many operators had become bankrupt and others were "desperately endeavoring to avert that fate.

"Relief from the excessive rates charged on lake coal from the Ohio districts," the petition added, "must be had; otherwise the coal industry, which for many years has been one of Ohio's chief assets, will deteriorate into a comparatively insignificant and unprofitable business enterprise, while the Southern fields will continue to expand."

The eastern Ohio operators presented figures to show that miners' wages in Ohio had decreased from $70,994,928 in 1923 to $31,500,000 last year.

I. C. C. Studies Hard-Coal Rates To Upper New York

A round-table discussion was held by the Interstate Commerce Commission March 16 with representatives of carriers which are proposing readjustments in freight rates on anthracite coal from Pennsylvania to northern New York territory, which generally would result in slight increases, and representatives of communities and other interests opposing the changes. No agreement was reached. As the new schedules are proposed to become effective April 1, the Commission must decide before that date whether it will suspend the new tariffs pending further investigation or permit them to become operative and take up the matter subsequently in the form of complaints.

Complain of Colorado Rates

The Colorado and New Mexico Coal Operators Association has filed with the Colorado Public Utilities Commission a complaint charging Colorado railroads with discriminatory freight rates on coal from the northern Colorado fields on the Rock Island railroad in Colorado west of Limon. The Santa Fe, Burlington, Rock Island, Colorado & Southern, Union Pacific and Denver & Rio Grande Western were the roads named as defendants in the complaint.

Ratify New Central Coke Rate

The New York Public Service Commission has approved a new rate of the New York Central (East) on coke, coke breeze and coke dust, from Troy to stations from Ogdensburg to Rouses Point inclusive, on the Rutland R.R. of $3.20 per net ton, effective April 13, 1926. No joint rate heretofore in effect.

The Pennsylvania R.R. last week asked the Interstate Commerce Commission to deny the petition of the New England Traffic League for a further hearing in the case involving emergency rates on soft coal from West Virginia mines to Northeastern states, which expire April 30. The road's representatives declared the present temporary rates, placed in effect during the mine suspension, were too low and should not be made permanent.

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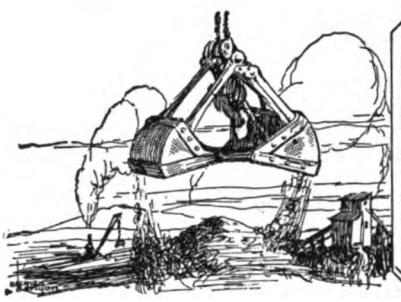
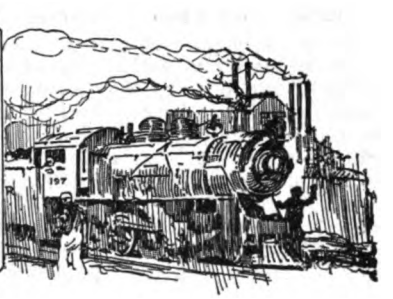


Production And the Market



Market Conditions Colorless as Coal Year Ends; Bituminous Output Declines

Nothing sensational or startling marked the passing of the coal year 1925-26 in either the anthracite or the bituminous markets of the country. Here and there, as on the Missouri River, for example, a brief weather flurry brought a final burst of activity to the domestic trade. Such flurries, however, were outnumbered by the slumps induced by a climbing mercury in other parts of the country. For the most part, the past week revealed merely the accumulation or the intensification of the effects of factors at work for some time.

Bituminous production, which showed an unexpected and still unexplained reversal of form the second week in March, again hit the downgrade during the week ended March 20. Output that week, according to the Bureau of Mines, was 10,273,000 net tons, a decline of 417,000 tons. Production, however, is still ahead of demand. Every mining field has its quota of "no bills" and distress tonnage has its depressing influence upon the movement at many eastern terminals.

Spot prices, on the whole, weakened—particularly in the East and upon eastern and southern coals in the markets of the Middle West. *Coal Age* Index of spot bituminous prices on March 29 stood at 163 and the corresponding price was $1.98. This was a drop of four points and 4c. when compared with March 22. Illinois and Indiana quotations were well maintained. Kentucky and West Virginia prices generally were softer and pool quotations at the Atlantic seaboard again declined.

Outlook for New Year Perplexing

Speculation as to the course the new year will take naturally holds the center of discussion, but no clear course of action has been mapped out. Those producers in union fields who have not lined up non-union connections are resigned to further suspensions of operations until such time as a modification of the Jacksonville scale can be effected. The uncertainty as to when that change will come underlies the deep pessimism in the Pittsburgh district and in the southern Ohio field.

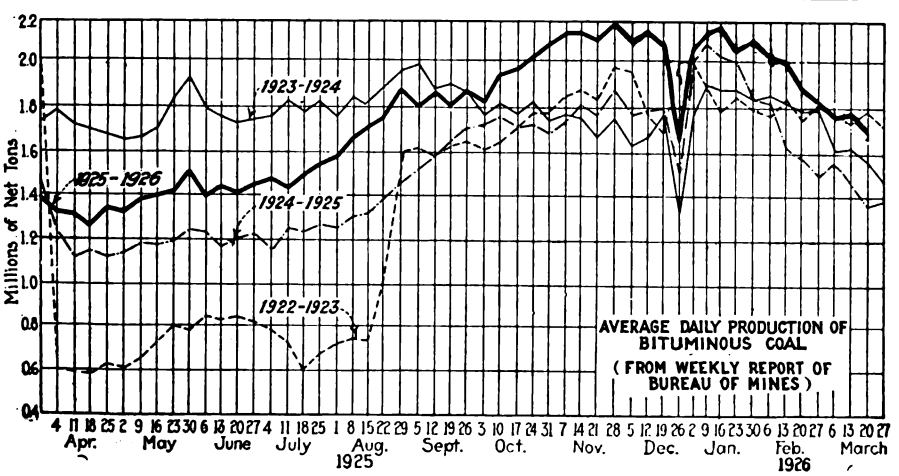
Contracting still is backward. Nevertheless, it is probable that more activity in this connection is being conducted under cover than current reports would indicate. There are certain well-established connections involving the annual movement of large tonnages which may be counted upon to continue undisturbed. At the same time it is recognized that the existing conditions offer little incentive to the buyer to contract—especially if he represents an industry which can afford to gamble with its fuel supply.

Anthracite Output Heavy

Anthracite production continues at a high rate. There are signs, however, that the most pressing demands of the consumer have been met. Company operators are starting to store some of their steam coal output and independents find increasing sales resistance to the movement of No. 1 buckwheat. Even the retail buyers are more discriminating in their purchase of the high-dollar independent domestic.

As forecast in *Coal Age* six weeks ago, it now appears to be well settled that there will be no spring reduction in mine prices of the large sizes. Whether the prices established in February will be used as a basis upon which to build advances during the spring and summer months is a question now troubling some people. Upon this point there has been no official announcement or comment.

The Connellsville coke trade has settled into its regular groove.



Estimates of Production

(Net Tons)

BITUMINOUS

	1925	1926
March 6	9,384,000	10,460,000
March 13 (a)	8,641,000	10,690,000
March 20 (b)	8,283,000	10,273,000
Daily average	1,381,000	1,712,000
Coal yr. to date (c)	459,814,000	526,015,000
Daily av. to date	1,545,000	1,763,000

ANTHRACITE

March 6	1,655,000	1,789,000
March 13	1,656,000	1,966,000
March 20	1,513,000	1,963,000
Coal yr. to date (c)	83,987,000	48,451,000

BEEHIVE COKE

March 13 (a)	243,000	263,000
March 20 (b)	226,000	263,000
Cal. yr. to date (c)	2,895,000	3,573,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

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Middle West Looks to Contracts

The question of steam-coal contracts is the paramount one in the markets of the Middle West at the present time. Producers who still are trying to market their own coal are fighting hard against non-union competition. Some high-grade southern Illinois slack can be had on contract as low as $1.75, and other screenings may go at $1.50 or even $1.25. Railroads are inviting tenders; they probably will be able to buy southern Illinois mine-run at $2.25@$2.50 and Indiana coal at $2@$2.25. Few contracts have actually been closed.

Domestic demand is slow. Interest centers upon the new price announcements to be made this week. Reductions in the Franklin County basis are forecast, with a sliding scale throughout the summer months—a replica of the old anthracite summer discount system. West Virginia and Kentucky shippers are seeking retail storage orders on block at $2@$2.75. Smokeless lump and egg are offered to middlemen as low as $2.50.

More mines in Illinois and Indiana are closing down. The combination of warm weather, non-union competition and the normal spring slump in demand is proving too much for the average producer, who is beset with "no bills" on everything but steam coal. In southern Illinois, operations working are getting two and three days a week. Duquoin and Jackson County are in worse shape; only the strip pits have an even break. Mt. Olive is moving little coal. There has been no change for the better in the Standard district. The St. Louis local market is colorless.

Kentucky Waits for Lake Trade

Weather conditions since the middle of March have robbed domestic demand of life in the Kentucky fields. Producers, therefore, are finding it harder to move prepared sizes and prices in the eastern section of the state have broken. No real revival in demand is expected before the lake shipping season is well under way. Steam business, too, is less active, notwithstanding the fact that the industrial outlook is good. Many purchasing agents are holding to their determination to play the open market instead of renewing expiring contracts.

Eastern Kentucky block is to be had at $1.75@$2.25, with only the best known coals commanding up to $2.50. Two-inch lump, egg and nut are quoted at $1.75@$2, with some sales at $1.60. Mine-run is $1.25@$1.60; screenings, 90c.@$1.10. The prices in the western Kentucky field, except on lump and screenings, were unchanged last week. Lump advanced 10c. and a dime was added to the maximum price on spot screenings.

Hand-to-mouth buying by both retail and industrial consumers has resulted in part-time operations at the docks at the Head of the Lakes. Mild weather has cut household consumption of fuel to such an extent that retailers fear they

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	Mar. 30 1925	Mar. 15 1926	Mar. 22 1926	Mar. 29 1926†
Smokeless lump	Columbus	$3.10	$3.85	$3.35	*$3.00@$3.25*
Smokeless mine run	Columbus	1.90	2.10	2.10	*1.85@ 2.20*
Smokeless screenings	Columbus	1.20	1.15	1.15	1.00@ 1.35
Smokeless lump	Chicago	2.85	3.10	3.10	*2.50@ 2.75*
Smokeless mine run	Chicago	1.75	1.95	1.95	*1.75@ 2.00*
Smokeless lump	Cincinnati	2.85	3.60	3.25	*2.50@ 3.00*
Smokeless mine run	Cincinnati	1.85	2.25	2.25	*2.00@ 2.25*
Smokeless screenings	Cincinnati	1.50	1.35	1.35	1.25@ 1.50
*Smokeless mine run	Boston	4.35	4.45	4.40	*4.15@ 4.35*
Clearfield mine run	Boston	1.95	2.05	2.05	*1.80@ 2.10*
Cambria mine run	Boston	2.30	2.35	2.30	*2.00@ 2.35*
Somerset mine run	Boston	2.10	2.15	2.10	*1.85@ 2.20*
Pool 1 (Navy Standard)	New York	2.65	2.80	2.85	*2.60@ 2.95*
Pool 1 (Navy Standard)	Philadelphia	2.65	2.80	2.80	2.65@ 3.00
Pool 1 (Navy Standard)	Baltimore	2.10	2.10	2.10	*2.00@ 2.10*
Pool 9 (Super. Low Vol.)	New York	2.05	2.25	2.35	*2.15@ 2.50*
Pool 9 (Super. Low Vol.)	Philadelphia	2.00	2.35	2.35	2.20@ 2.50
Pool 9 (Super. Low Vol.)	Baltimore	1.85	2.05	2.00	*1.85@ 1.95*
Pool 10 (H.Gr.Low Vol.)	New York	1.80	1.95	1.95	1.80@ 2.10
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.65	2.05	2.05	1.90@ 2.25
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.75	1.80	1.80	*1.70@ 1.80*
Pool 11 (Low Vol.)	New York	1.55	1.75	1.70	1.55@ 1.90
Pool 11 (Low Vol.)	Philadelphia	1.55	1.80	1.80	1.75@ 1.85
Pool 11 (Low Vol.)	Baltimore	1.50	1.65	1.65	*1.60@ 1.65*
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.50	1.50	1.50	*1.35@ 1.60*
Pool 54-64 (Gas and St.)	Philadelphia	1.45	1.45	1.45	1.35@ 1.55
Pool 54-64 (Gas and St.)	Baltimore	1.70	1.55	1.35	*1.30@ 1.35*
Pittsburgh sc'd gas	Pittsburgh	2.40	2.45	2.45	2.40@ 2.50
Pittsburgh gas mine run	Pittsburgh	2.00	2.05	2.05	2.00@ 2.15
Pittsburgh mine run (St.)	Pittsburgh	1.80	2.00	2.00	2.00
Pittsburgh slack (Gas)	Pittsburgh	1.35	1.45	1.45	1.40@ 1.50
Kanawha lump	Columbus	2.10	2.05	2.10	1.85@ 2.35
Kanawha mine run	Columbus	1.50	1.55	1.55	1.40@ 1.70
Kanawha screenings	Columbus	.95	.70	.85	.75@ .95
W. Va. lump	Cincinnati	2.00	2.15	2.05	*1.75@ 2.00*
W. Va. gas mine run	Cincinnati	1.35	1.50	1.50	*1.30@ 1.50*
W. Va. steam mine run	Cincinnati	1.25	1.35	1.35	1.25@ 1.50
W. Va. screenings	Cincinnati	1.00	1.00	.85	*.75@ 1.00*
Hocking lump	Columbus	2.25	2.50	2.50	*2.25@ 2.50*
Hocking mine run	Columbus	1.45	1.50	1.50	1.35@ 1.70
Hocking screenings	Columbus	1.15	1.05	1.05	1.00@ 1.15
Pitts. No. 8 lump	Cleveland	2.25	2.25	2.25	1.90@ 2.65
Pitts. No. 8 mine run	Cleveland	1.75	1.85	1.85	1.85@ 1.90
Pitts. No. 8 screenings	Cleveland	1.40	1.35	1.35	**1.35@ 1.45**

Midwest	Market Quoted	Mar. 30 1925	Mar. 15 1926	Mar. 22 1926	Mar. 29 1926†
Franklin, Ill. lump	Chicago	$2.60	$3.00	$3.00	$3.00
Franklin, Ill. mine run	Chicago	2.35	2.40	2.40	2.35@ 2.50
Franklin, Ill. screenings	Chicago	1.95	1.85	1.85	1.75@ 2.10
Central, Ill. lump	Chicago	2.35	2.60	2.60	*2.25@ 2.50*
Central, Ill. mine run	Chicago	1.95	2.10	2.10	2.00@ 2.25
Central, Ill. screenings	Chicago	1.90	1.40	1.40	1.35@ 1.50
Ind. 4th Vein lump	Chicago	2.60	2.75	2.75	2.50@ 3.00
Ind. 4th Vein mine run	Chicago	2.10	2.20	2.20	*2.10@ 2.25*
Ind. 4th Vein screenings	Chicago	1.95	1.70	1.70	1.65@ 1.75
Ind. 5th Vein lump	Chicago	2.10	2.15	2.15	2.00@ 2.35
Ind. 5th Vein mine run	Chicago	1.95	1.95	1.95	1.85@ 2.10
Ind. 5th Vein screenings	Chicago	1.70	1.30	1.30	1.25@ 1.35
Mt. Olive lump	St. Louis	2.85	2.75	2.75	2.75
Mt. Olive mine run	St. Louis	2.35	2.15	2.15	2.15
Mt. Olive screenings	St. Louis	1.75	1.40	1.40	1.40
Standard lump	St. Louis	2.35	2.50	2.50	2.50
Standard mine run	St. Louis	1.80	1.80	1.80	1.75@ 1.85
Standard screenings	St. Louis	1.60	1.15	1.15	1.15@ 1.20
West Ky. block	Louisville	1.85	1.85	1.85	1.75@ 2.00
West Ky. mine run	Louisville	1.35	1.35	1.30	1.15@ 1.50
West Ky. screenings	Louisville	1.25	.95	.95	.85@ 1.10
West Ky. block	Chicago	1.85	1.75	1.75	1.65@ 1.85
West Ky. mine run	Chicago	1.30	1.15	1.15	.80@ 1.50
South and Southwest					
Big Seam lump	Birmingham	2.35	2.35	2.35	*1.75@ 2.25*
Big Seam mine run	Birmingham	1.75	1.75	1.75	**1.75@ 2.25**
Big Seam (washed)	Birmingham	1.85	2.10	2.10	**2.00@ 2.50**
S. E. Ky. block	Chicago	2.10	2.60	2.60	*2.00@ 2.75*
S. E. Ky. mine run	Chicago	1.35	1.65	1.65	1.50@ 1.85
S. E. Ky. block	Louisville	2.10	2.35	2.35	*1.75@ 2.25*
S. E. Ky. mine run	Louisville	1.35	1.55	1.55	*1.25@ 1.60*
S. E. Ky. screenings	Louisville	1.05	1.00	1.00	.90@ 1.10
S. E. Ky. block	Cincinnati	2.10	2.25	2.25	*2.00@ 2.25*
S. E. Ky. mine run	Cincinnati	1.30	1.30	1.50	1.25@ 1.75
S. E. Ky. screenings	Cincinnati	1.00	1.00	.90	**.75@ 1.10**
Kansas lump	Kansas City	4.25	4.35	4.35	4.25@ 4.50
Kansas mine run	Kansas City	2.85	2.75	2.85	2.75@ 3.00
Kansas screenings	Kansas City	2.75	2.40	2.50	2.50

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**; declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Mar. 30, 1925 Independent	Mar. 30, 1925 Company	Mar. 22, 1926 Independent	Mar. 22, 1926 Company	Mar. 29, 1926† Independent	Mar. 29, 1926† Company
Broken	New York	$2.34	.....	$8.00@$8.50	.....	$8.25@$9.25	.....	$8.25@$9.25
Broken	Philadelphia	2.39	.....	9.15	$9.00@12.50	9.00@ 9.25	$9.00@12.50	9.00@ 9.25
Egg	New York	2.34	$8.25@$8.50	8.25@ 8.50	10.25@11.25	8.75@ 9.25	*10.25@11.00*	8.75@ 9.25
Egg	Philadelphia	2.39	8.45@ 8.50	8.30@ 8.50	9.25@12.50	9.15@ 9.25	9.25@12.50	9.15@ 9.25
Egg	Chicago*	5.06	8.17@ 8.40	8.08	.....	8.13	.....	8.13
Stove	New York	2.34	8.25@ 8.75	8.50@ 8.90	10.50@11.50	9.25@ 9.50	*10.50@11.00*	9.25@ 9.50
Stove	Philadelphia	2.39	8.85@ 8.90	8.75@ 8.90	9.60@12.50	9.35@ 9.50	9.60@12.50	9.35@ 9.50
Stove	Chicago*	5.06	8.80@ 9.00	8.53@ 8.65	.....	8.33@ 8.58	.....	8.33@ 8.58
Chestnut	New York	2.34	8.25@ 8.75	8.25@ 8.50	10.50@11.50	8.75@ 9.15	*10.25@11.00*	8.75@ 9.15
Chestnut	Philadelphia	2.39	8.45@ 8.50	8.40@ 8.50	9.25@12.50	9.00@ 9.15	9.25@12.50	9.00@ 9.15
Chestnut	Chicago*	5.06	8.61@ 9.00	8.40@ 8.41	.....	8.33@ 8.53	.....	8.33@ 8.53
Pea	New York	2.22	4.25@ 5.00	5.00@ 5.50	7.50@ 8.25	6.00@ 6.35	*6.00@ 7.50*	6.00@ 6.35
Pea	Philadelphia	2.14	5.00@ 5.30	5.25@ 5.30	6.50@ 7.50	6.00@ 6.50	6.50@ 7.50	6.00@ 6.50
Pea	Chicago*	4.79	5.36@ 5.75	5.36@ 5.95	.....	5.65@ 5.80	.....	5.65@ 5.80
Buckwheat No. 1	New York	2.22	2.00@ 2.75	2.50@ 3.00	2.75@ 3.25	3.00@ 3.50	*2.50@ 3.00*	3.00@ 3.50
Buckwheat No. 1	Philadelphia	2.14	2.50	2.50	3.00@ 3.50	3.00	3.00@ 3.50	3.00
Rice	New York	2.22	1.90@ 2.15	2.00	1.85@ 2.25	2.00@ 2.25	1.85@ 2.25	2.00@ 2.25
Rice	Philadelphia	2.14	2.00	2.00	2.25	2.25	2.25	2.25
Barley	New York	2.22	1.35@ 1.50	1.50	1.50@ 1.75	1.60@ 1.75	*1.30@ 1.65*	1.60@ 1.75
Barley	Philadelphia	2.14	1.50	1.50	1.75	1.75	1.75	1.75
Birdseye	New York	2.22	1.40@ 1.60	1.60	1.40@ 1.60	2.00	1.40@ 1.60	2.00

*Net tons, f.o.b. mines †Advances over previous week shown in heavy type; declines in *italics*.

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will be overstocked. Industrial plants see no occasion for worry with ample reserves on the docks, railroad transportation good and the opening of navigation close at hand.

Dock Smokeless Again Slumps

Prepared sizes of smokeless coals were again the only sufferers in price. Lump, egg and nut were officially cut to $7—a reduction of $1 since the middle of March. The end of the anthracite strike and all-rail movement of hard coal to the Twin Cities are advanced in explanation of the weakness afflicting the smokeless list. In the local trade at Duluth and Superior, however, smokeless is still welcome because of the price differential under anthracite. Coke and briquets also are holding their own.

A rising mercury has slowed down demand for all grades of fuel in the Milwaukee market. Anthracite is coming in more freely; no spring reductions in prices, however, will be made. Retail prices at the present time for chute or curb delivery are: Stove, $16.80; nut, $16.65; pea, $14.25; buckwheat, $11.

A cold wave brought a slight flurry of activity to the Southwest trade last week, depleting retail stocks so much that replenishment orders were placed with the shippers. These orders, however, were not heavy enough to take a very noticeable bite out of the surplus of "no bills" which have been clogging Kansas mine tracks for several weeks and did not revive the moribund Oklahoma and Arkansas situation.

Colorado domestic business is still in a demoralized state. Demand is extremely weak and the market is glutted with unsold coal. Retailers are buying only for immediate necessities, hoping for further reductions in storage coal prices. The only size for which there is an active demand in Utah is slack and that demand is due primarily to curtailed operations at the mines. Business on the whole is subnormal.

Smokeless Given Another Blow

Smokeless prices have been given another jolt in the readjustment process in progress at the Cincinnati market. Egg and lump are weak at $2.50@$3. Mine-run, which had been steady at $2.25, now is offered at $2@$2.25. The campaign to bolster up slack prices appears to be making little headway. Retail prices at Cincinnati and throughout the Miami River valley have been cut from $8.50@$9.50 on lump to $7.50. Retail mine-run is down to $5.75@$6, which is the range also quoted on bituminous lump.

Traders have about abandoned hope that high-volatile coals can be moved via the price reduction route. Shrewd shoppers can buy some of the best West Virginia lump at $1.75@$2 and Kentucky at $2@$2.25. Egg is hard to sell at $1.50@$1.75. Mine-run, on the other hand, is steady. Slack has dropped back to 75c.@$1.10.

Shop talk centers around the lake business. One report, apparently well authenticated, says that a large Logan County group has sold its summer output at a $1.50 mine-run basis. Another report states that lake buyers, after a futile attempt to dragoon Kentucky shippers into a contract for slack and 2-in. coal at 80c., have offered 90c. for slack and $1.65 for 2-in. Movement through the Cincinnati gateways is within 300 cars of normal for this year and about 3,000 cars a week ahead of last year.

Ohio Also Looks to Lakes

With domestic trade out of the picture and industrial buying slow because big consumers are well stocked, Ohio producers are wondering what the lake trade will have in store. Outside of the mines with direct dock connections, Ohio expects a smaller share of the lake business than in earlier years because producers cannot meet the prices quoted on lake business in Kentucky and West Virginia. Lump at $1.60 cannot be matched by the Buckeye State.

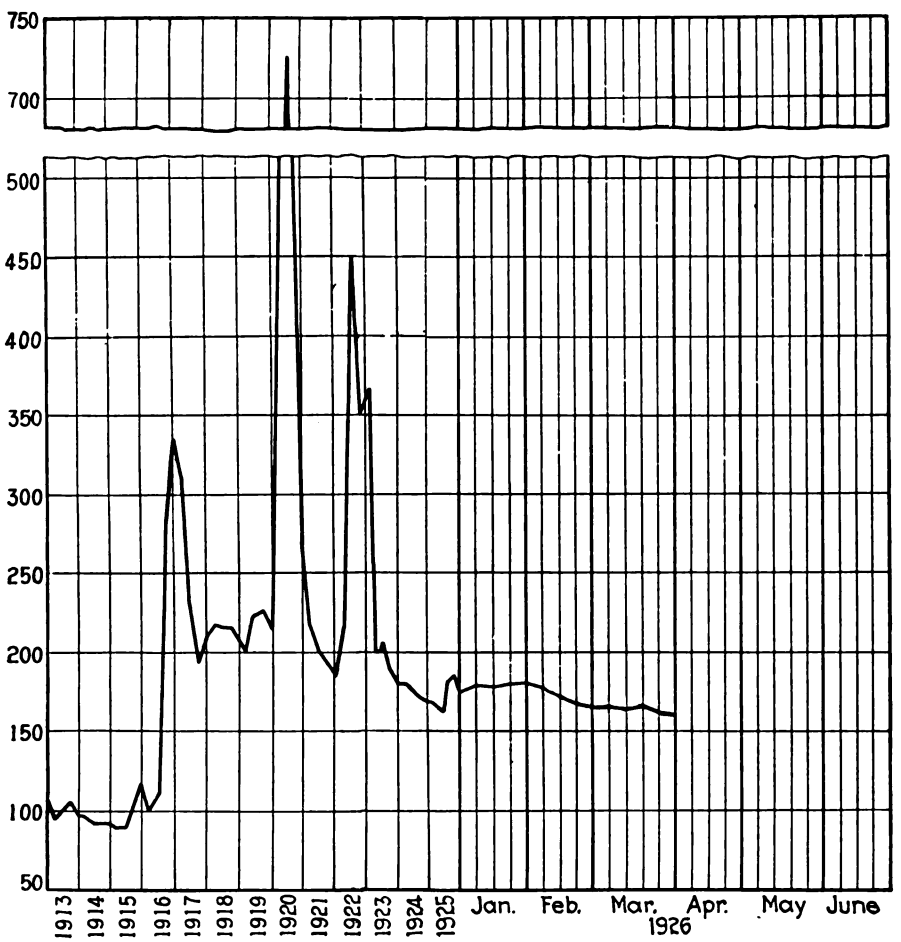
Retail dealers in central Ohio are more anxious to clean up stocks than to place fresh orders. Industrial plants are indifferent on the score of contract renewals. Railroads, however, have invited tenders, but little tonnage has been awarded. Southern Ohio production is still under 20 per cent of capacity. The No. 8 field produced approximately 247,000 tons, or 35 per cent of capacity, during the week ended March 20. Out of 120 mines in the field, only 16 are working full time and 63 operations have been down for a year or more.

Cleveland reports a steady but gradual slowing down in demand, particularly in prepared sizes. This has cut further into the tonnage of free slack and nut-and-slack available. Screenings prices were up 5@10c. last week. On the other hand, there still is considerable distress tonnage of the larger sizes to hold down quotations on mine shipments and sap consumer interest in the market.

"There Is No Joy in——"

The Pittsburgh district is stagnant. Independent operators are pegging along, working a few days a week to keep up on unexpired contracts. Many of these mines plan to close down as soon as these contracts have been completed as the prices offered on renewal make a shutdown the lesser of two evils. Prices show no real change because buyers will not pay more and operators feel they dare not sell for less. A number of Connellsville producers have been trying to break into the steam and gas coal markets, but their success has not been marked.

Central Pennsylvania production still is on the toboggan. Output the week ended March 20 was 15,572 cars, as



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926				1925	1924
	Mar. 29	Mar. 22	Mar. 15	Mar. 8	Mar. 30	Mar. 31
Index	163	167	168	167	161	173
Weighted average price	$1.98	$2.02	$2.03	$2.02	$1.95	$2.09

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average of the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.

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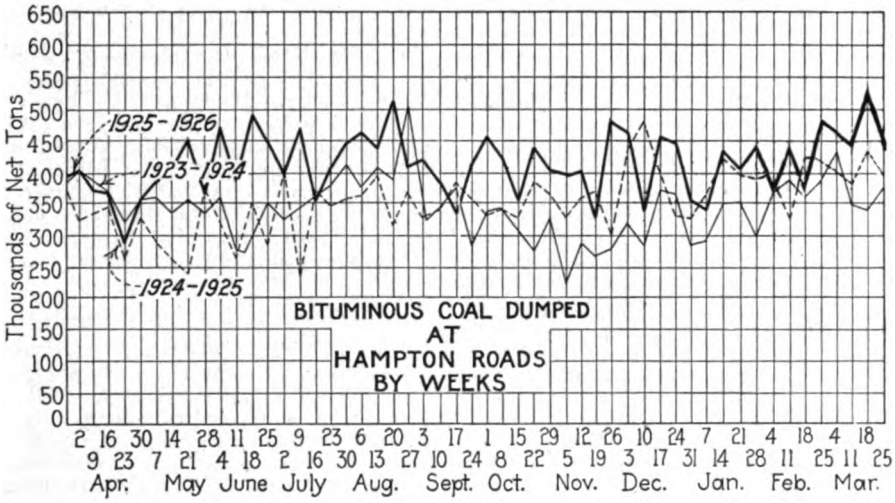


compared with 16,190 cars the week preceding. Only 118 mines are working full time. Railroads are buying up some of the distress coal in the district at bargain figures. Current quotations for shipment are: Pool 1, $2.50@$2.60; pool 71, $2.35@$2.45; pool 9, $2.10@$2.20; pool 10, $1.90@$2; pool 11, $1.70@$1.75; pool 18, $1.65.

Buffalo bituminous trade is a drab affair. Some contracts are in the making, but the prices bring no joy. Spot quotations are unchanged. Slack is the only grade for which there is a real demand. The announcement that there would be no spring reduction in anthracite prices and the possibility of advances later have caused an unfavorable sentimental reaction. Consumer demand for hard coal is slowing up at Toronto, but orders already booked and coming in will keep retail yards busy for some weeks to come.

New England Trade Dull

The New England steam coal market is dull, with no signs of early betterment discernible. Prices are sagging and coal is piling up at the mines and the southern loading piers. Contract customers are well supplied with fuel and spot buyers can find enough distress tonnage to keep them running. Navy Standard was available at $4.15 gross f.o.b. vessels at Norfolk last week. Nut-and-slack and straight slack have been offered at prices as low as any within recent years.

Navy Standard on cars at Boston and Providence was held at $5.75 at the last named point for inland delivery and under $6 at Boston. Open prices to regular customers for retail delivery in Boston is $8.50, but recent bids on the requirements of the Massachusetts state institutions show a fighting basis much lower. One proposal named a delivered price of $5.85 on New River at Charlestown State Prison.

Further reduction in the tonnage of distress coal in the New York bituminous market was effected last week. Some screened sizes in that category were offered at $3.50 alongside and some Kanawha splint at $3.50@$4 alongside. A Shipping Board inquiry for a small tonnage of standard pool 1 coal for bunkering brought a price of $5.78 t.i.b. Contracting for the new season is backward. As the distress tonnage melts, however, spot buying is slowly improving.

Micawber Comes to Philadelphia

In the Philadelphia bituminous market everybody is waiting for something to turn up—not sure what it will be and not at all certain that anything will happen to better the outlook. Tonnage moving in some cases may be satisfactory, but prices realized are not. Contracting is slow. The nearest many industrial consumers are coming to signing on the dotted line is to buy a car or two here and there as trial shipments. Spot prices are unchanged. Bunker trade is holding its own.

In the main, the situation in the Baltimore bituminous market is a duplication of that at New York and Philadelphia. Aside from large consumers such as the public utilities little interest is displayed in contract negotiations. Current spot prices are so near those named in contract tenders, that many plants see no incentive to sign up. Good coals which usually command around $1.85 have been sold as low as $1.50. One recent sale of a large block of steam tonnage was made at a price 20c. per ton under actual mining costs.

The promulgation of April prices on domestic coals in the Birmingham market has been followed by an active contract movement. In fact, some producers already are sold up for the spring and early summer months. The new price basis is as follows: Big Seam lump, $1.75@$2.25; Carbon Hill lump, $2.50; Cahaba lump, $3 50@$4; Black Creek lump, $3.50@$3.75; Corona lump, $2.75; Montevallo-Straven, $4.25; Montevallo-Dogwood, $4.50; Montevallo-Aldrich, $4.75. Egg prices are 25c. less; washed nut, 75c. under the lump quotations.

Better Alabama Coals Hold Up

The better grades of mine-run and washed coals are in fairly active demand. Spot buying of the lower grades is not brisk, but there are no surplus accumulations of tonnage. Spot prices have shown no material change. The St. Louis-San Francisco R.R. has broken the ice in railroad contracting by closing agreements for approximately the same tonnage as last year and at the same prices. Most of this coal will come from Walker County.

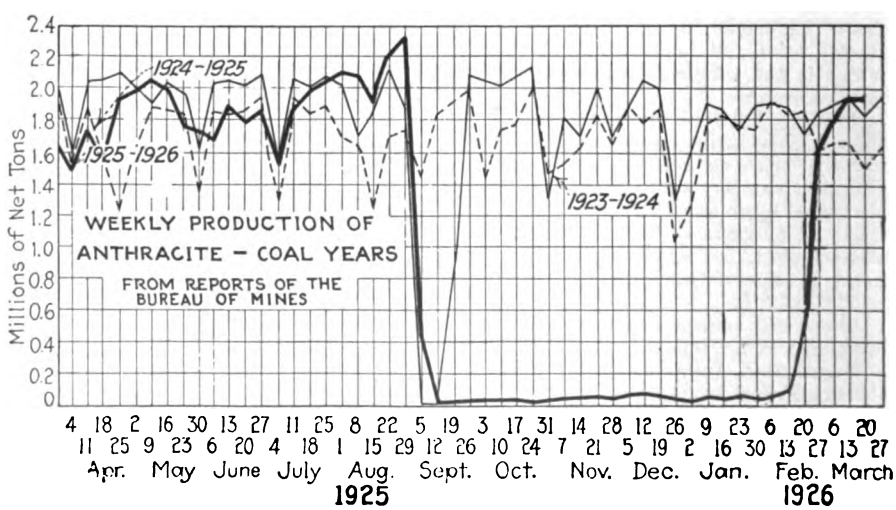
The market for egg and nut coke is not active. Spot quotations range from $5 to $5.50 at the ovens. A number of contracts have been made on foundry coke at $5.50@$6. Spot foundry coke also is in good demand at $6.50.

Assurance that there will be no spring reduction in anthracite mine prices has had a steadying effect upon the New York hard-coal market. But retailers have announced reductions in their prices to the household consumer and their ability to take care of his orders promptly. They are, however, urging that the householder take a combination of sizes. Chestnut coal still tops the market from the standpoint of present popularity, but stove is a close runner-up. Pea also is in good demand, and some householders are looking on No. 1 buckwheat with friendly eyes.

Weather Takes Toll in Philadelphia

Spring temperatures at Philadelphia last week were reflected in a sudden easing off in consumer demand for hard coal. This, however, did not slow up the rate of ordering from the mines, although there was more hesitancy in retail buying of high-dollar coal, and occasional hints that independent egg and stove were not particularly desired.

Steam sizes are coming from the mines faster than the market will absorb them. Producers without storage facilities are working hard to place their surplus production. Some independent contracts have been closed at $2.50 for No. 1 buckwheat, $2 for rice and $1.50 for barley. One of the largest company shippers has named contract prices of $2.75, $2 and $1.60 on those sizes. Certain buyers are reluc-



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Car Loadings and Supply

	Cars Loaded — All Cars	Coal Cars
Week ended.....March 13, 1926....	967,411	188,834
Preceding week..March 6, 1926...	964,681	182,441
Week ended....March 14, 1925...	924,149	149,105

	Surplus Cars — All Cars	Coal Cars	Car Shortages — All Cars	Coal Cars
March 15, 1926	198,854	72,214	.....	.....
March 8, 1926	202,432	72,949	.....	.....
March 14, 1925	295,939	151,828	.....	.....

tant to pay these prices, particularly on No. 1 buckwheat.

Baltimore household consumer demand has weakened with a rising thermometer and the change is welcomed by the Baltimore dealers. Orders on hand, however, will eat up all the coal running to the yards in the city.

Furnace Contracts Closed?

Although no definite announcement has been made, it is understood that the bulk of the furnace coke needed for the second quarter by buyers who draw supplies from the Connellsville region has been closed at $3@$3.25. Some business was signed up at $3.50, mostly renewals. Spot furnace coke is held at $3.25, but inferior fuel can be had for less. Standard spot foundry coke is quotable at $4.50@$5. Some April orders have been placed at $4.75.

Coke production in the Connellsville and Lower Connellsville region the week ended March 20 totaled 190,010 tons, according to the Connellsville *Courier*. The furnace ovens produced 104,600 tons—an increase of 4,200 tons over the preceding week. Merchant oven output, 85,410 tons, was 3,180 tons less than during the week ended March 13.

Seeks Bids on 25,000 Tons

The U. S. Engineer's O ce, 140 Decatur Street, New Orleans, La., will receive bids until April 22 for 25,000 tons of bituminous coal at mine for shipment to various points on the Mississippi River below Vicksburg, Miss. Further information may be obtained upon application to Frank Michinard, 107 University Place, New Orleans, La.

February Exports Increase

United States bituminous exports in February surpassed those of the preceding months, but are well below the average for 1925, according to the Department of Commerce. The total quantity of bituminous shipped abroad during the month amounted to 1,013,158 gross tons, as compared with 993,386 tons in January.

Anthracite exports increased from 6,311 gross tons in January to 37,157 tons in February. Coke exports declined to 67,697 tons.

Exports by countries were as follows:

To	Anthracite, Gr. Tons	Bituminous, Gr. Tons	Coke, Gr. Tons
France	.....	1,256	300
Italy	.....	79,558	.....
Canada	37,061	685,586	65,061
Netherlands	.....	7,698	.....
Norway	.....	.....	300
British Honduras	.....	3	.....
Guatemala	.....	60	2
Honduras	20	101	21
Nicaragua	.....	160	3
Panama	.....	42,199	.....
Salvador	3	3	11
Mexico	68	12,321	302
Bermuda	.....	4,435	.....
Trinidad and Tobago	.....	5,868	5
Other British West Indies	.....	3,447	10
Cuba	.....	63,324	1,626
Dominican Republic	.....	1,094	.....
Dutch West Indies	5	2,774	.....
French West Indies	.....	11,380	.....
Virgin Islands of U. S.	.....	10,310	.....
Argentina	.....	24,203	.....
Brasil	.....	39,647	.....
Colombia	.....	48	7
British Guiana	.....	2,152	.....
Uruguay	.....	6,599	.....
Venezuela	.....	.....	19
Egypt	.....	866	.....
Other French Africa	.....	8,066	.....
Total	37,157	1,013,158	67,697

Russian Shortage Continues

The fuel crisis is still very acute in Russia and is endangering industrial activity. The Supreme Economic Council has taken some special measures to overcome the difficulties. In the Donetz coal district a number of old shafts have been put into operation and new shafts are being dug with the assistance of German firms. Owing to the fact that large sums of capital are required for the exploitation of the coal deposits, ways and means of attracting foreign capital for mining purposes are being discussed.

Coal Bids for New York City Reveal Wide Range

Twenty companies submitted bids on 502,436 tons of anthracite and bituminous coal for the Department of Purchase of the City of New York on March 23. The opening of tenders revealed the following:

For furnishing and delivering 10,000 net tons of mine run bituminous coal to Rikers Island the prices submitted ranged from $4.13 to $4.28 per ton.

For 5,103 tons of No. 1 buckwheat coal above 59th Street, Manhattan, six bids received ranged from $4.81 to $6.28 per ton, while for 6,592 tons of the same kind of coal below 59th Street five bidders made tenders ranging from $4.84 to $6. For 7,760 tons of No. 2 buckwheat coal in Manhattan the prices submitted ranged from $4.44 to $5.20 per ton.

Prices submitted for supplying in Manhattan Borough various tonnages of broken, egg, stove and chestnut coals ranged from $11.99 to $12.59 for broken; $11.88 to $12.50 for egg; $12.49 to $13.22 for stove; $12.48 to $12.59 for chestnut, and $8.94 to $9.20 for pea coal, depending in all instances on delivery points.

In Brooklyn two bids—$4.84 and $5.22—were received for furnishing and delivering 1,673 tons of No. 1 buckwhat coal. For 15,000 tons of mixed coal—11,500 tons No. 2 buckheat and 3,500 tons soft coal—to the Kings County Hospital four bids received ranged from $4.38 to $4.94 per ton.

For furnishing and delivering to boats of the various city departments at various points 9,300 tons of mine-run soft coal there were four bids received ranging from $4.56 to $5.92 per ton. Five bids were received for furnishing and delivering 173,000 tons of No. 1 buckwheat coal in barge lots to various delivery points. These prices ranged from $4 to $4.66 per ton. For 45,600 tons of No. 3 buckwheat coal under the same conditions four bids received ranged from $3.54 to $3.98 per ton, and for supplying 28,500 tons of mine-run soft coal under the same provisions the prices ranged from $4.17 to $4.54.

Coal Produced in Colorado in 1924

(Exclusive of product of wagon mines)

County	Net Tons — Loaded at Mines for Shipment	Sold to Local Trade and Used by Employees	Used at Mines for Steam and Heat	Made Into Coke at Mines	Total Quantity	Value — Total	Value — Average per Ton	Number of Employees (a) — Underground — Miners (b)	Underground — All Others	Surface	Total	Average Number of Days Worked (a)	Average Tons per Man per Day
Archuleta, Jackson, Monroe and Pitkin	63,600	8,657	587	.....	72,844	$177,000	$2.43	45	12	18	75	174	5.58
Boulder	601,015	50,430	32,099	.....	683,544	1,807,000	2.64	584	240	111	935	167	4.37
Delta	58,414	28,911	.....	.....	87,325	251,000	2.87	67	14	14	95	145	6.33
Elbert	.....	2,342	117	.....	2,459	5,000	2.03	6	2	2	10	136	1.81
El Paso	202,800	149,551	11,590	.....	363,941	965,000	2.65	277	65	43	385	203	4.66
Fremont	607,434	77,522	13,344	.....	698,300	2,675,000	3.83	683	262	164	1,109	184	3.42
Garfield	14,048	11,972	400	.....	26,420	63,000	2.38	25	5	3	33	215	3.72
Gunnison	436,754	6,618	25,649	.....	469,021	1,518,000	3.24	395	143	142	680	148	4.64
Huerfano	1,956,870	18,635	15,236	.....	1,990,741	6,952,000	3.49	1,577	540	471	2,588	201	3.83
Jefferson	114,743	4,404	8,235	.....	127,382	268,000	2.10	85	40	19	144	215	4.12
La Plata	50,914	27,046	125	14,051	92,136	282,000	3.06	90	23	22	135	172	3.96
Las Animas	2,874,638	68,078	56,578	119,278	3,118,572	9,838,000	3.15	2,468	940	538	3,946	191	4.13
Mesa	110,118	25,271	100	.....	135,489	342,000	2.52	128	30	32	190	174	3.99
Moffat	.....	6,963	.....	.....	6,963	12,000	1.72	7	3	2	12	145	4.02
Montezuma	1,650	3,834	.....	.....	5,484	23,000	4.19	13	1	1	15	218	1.68
Rio Blanco	.....	3,186	2	.....	3,188	10,000	3.14	8	1	2	11	175	1.66
Routt	850,115	15,035	46,493	.....	911,643	3,116,000	3.42	673	257	222	1,152	70	11.28
Weld	1,569,421	53,084	26,141	.....	1,648,646	3,559,000	2.16	892	400	147	1,439	197	5.82
Totals	9,512,534	561,539	236,696	133,329	(c) 10,444,098	$31,863,000	$3.05	8,023	2,978	1,953	12,954	178	4.52

(a) Note that figures of men employed and days worked do not include mines that operated in 1923, but were idle the entire year 1924; they do include many mines operating for a short time only in 1924. The number of active mines of commercial size in Colorado was 236 in 1923 and 231 in 1924.
(b) Includes also loaders and shotfirers.
(c) Excludes refuse from washing. Statistics compiled by U. S. Bureau of Mines.

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Foreign Market And Export News

Surplus Stocks of Coal Depress Welsh Market; Tyne Inquiries Increasing

London, England, March 16—The Welsh steam coal trade is still very unsettled. Colliery owners are well booked and arrears of delivery are heavy, but the tonnage position is very unsatisfactory. Stocks of coal have accumulated to such an extent that irregular operation of the pits has become the rule instead of the exception.

The collieries are anxious to obtain any prompt business that may be available and in some cases are cutting prices to secure quick shipment, though their order books are well filled and they are not really in a position to accept such bookings. In South Wales the difference between the cost of production and the selling price is now estimated at 3s. 3d. per ton, without reckoning any return on the capital invested in the mines.

The Egyptian State Rys. have invited tenders for 150,000 metric tons of Monmouthshire large coal for May and June delivery. The Palestine Rys. have ordered 32,000 tons of best Admiralty large, and the Portuguese Rys. 21,000 tons of steam smalls for delivery over three months.

The Newcastle market is dull, but there is an increased inquiry for forward business. Very much, however, depends upon the attitude of the government, the operators and the miners towards the coal report, which has now been published. Prices for the most part are steady, though in one or two cases they have been inclined to waver or fall slightly. There is little actual business to report aside from certain European gas works contracts.

Output by British collieries during the week ended March 13, according to a special cable to *Coal Age*, totaled 5,285,000 gross tons, the same as in the preceding week.

Belgian Market Less Active; Outlook Unfavorable

Hopes of an improvement in the industrial coal market in Belgium have not been realized, reports Brussels under date of March 18. The slight advance registered in prices in February has been maintained, but there is nothing in the present outlook to indicate that further increases are possible. Small coals are in the greatest demand. Coking smalls are readily salable at 85 @87 fr. Lean smalls for brick and lime kilns command 67@68 fr., and there is some talk of raising the price to 70 fr.

The domestic market is weak. Stocks on hand are increasing as consumer demand is tapering off.

Syndicate prices on coke are 125 fr. on Belgian and 120 fr. on German coke, but outsiders are selling coke at 110 fr.

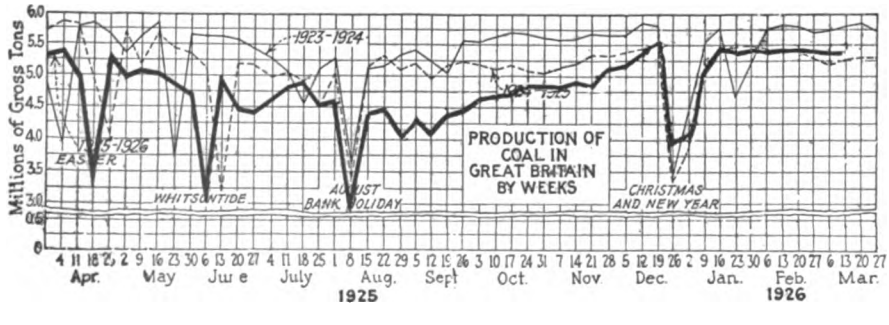
An agreement finally has been reached on first-quarter prices on coal for the Belgium State Rys. These prices, 84@88 fr., represent a uniform advance of 1 fr. per ton over November-December figures. The price on briquets, 100 fr., is an advance of 4 fr. The question of second-quarter prices is now under discussion. One order for 450,000 tons has been allocated, but the price has not been fixed. An order for 150,000 tons of briquets has been placed at 110 fr. The increase over first-quarter prices reflects the higher cost of pitch.

French Industrial Call Strong; Domestic Orders Decline

Paris, France, March 18.—The industrial demand for coal in France continues on a satisfactory basis. Further decline in the value of the franc in foreign exchange has had an adverse effect upon the rate of importation of coal from Great Britain, forcing a heavier load upon the productive capacity of the French collieries.

Buying of domestic coals is easier, but orders still are numerous enough to take care of the sized output from the French mines. Increases of 6@10 fr. in Belgian prices, due to fluctuations in the rate of exchange, also have helped the French operators. An agreement was made last week between French and Belgian interests fixing summer prices on fuel for the Parisian district, but the prices have been withheld.

The first arrivals of Polish coal have made a favorable impression although the appearance of the fuel is against a ready sale. This, however, is offset by the small degradation. The Polish coal is being sold at prices approximating those on French coals of like grade.



Export Clearances, Week Ended March 25, 1926

FROM HAMPTON ROADS

	Tons
For Nova Scotia:	
Nor. Str. Laly, for Halifax	2,055
For Egypt:	
Br. Str. City of Glasgow, for Port Said	1,007
For New Brunswick:	
Br. Schr. Burpee L. Tucker, for St. John	725
Swed. Str. Falco, for St. John	4,195
For Miquelon:	
Nor. Str. Facto, for St. Pierre	1,942
For Brazil:	
Ital. Str. Attualita, for Rio de Janeiro	8,013
Br. Str. Portloe, for Pernambuco	6,012
Br. Str. Antar, for Rio de Janeiro	9,123
For Trinidad:	
Nor. Str. Christian Krogh, for Port of Spain	2,591
For Jamaica:	
Swed. Str. John Lundwall, for Kingston	2,230
Amer. Str. Levisa, for Kingston	2,626
For Chile:	
Nor. Str. Toluma, for Bahia Blanca	3,849
For Italy:	
Fr. Str. Wesserling, for Genoa	6,768
For Cuba:	
Ital. Str. Valprato, for Havana	7,317
Nor. Str. Sydfold, for Manopla	501

FROM BALTIMORE

For Italy:	
Jap. Str. Toguka Maru, for Civitavecchia	7,191
Jug.-S. Str. Federiko Glavic, for Genoa	8,974
For Algeria:	
Ital. Str. Grovanna Florio, for Algiers	6,985
For Argentina:	
Br. Str. Graigwen, for Buenos Aires	5,496
For Venezuela:	
Ger. Str. Curslack, for Tascacas	1,031
For Cuba:	
Ital. Str. Valnoce, for Havana	6,027

FROM PHILADELPHIA

For Cuba:	
Br. Str. Blairadam, for Havana	———
Br. Str. Gen. Lukin, for Havana	———
Du. Str. Kralingen, for Gibara	———

Hampton Roads Coal Dumpings*

(In Gross Tons)

	Mar. 18	Mar. 25
N. & W. Piers, Lamberts Pt.: Tons dumped for week	190,426	152,916
Virginian Piers, Sewalls Pt.: Tons dumped for week	127,159	92,640
C. & O. Piers, Newport News: Tons dumped for week	167,546	144,390

* Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS

	March 20	March 27†
Pool 1, New York	$5.50@$5.75	$5.50@$5.75
Pool 9, New York	5.15@ 5.35	*5.10@ 5.30*
Pool 10, New York	4.75@ 5.10	*4.75@ 5.00*
Pool 11, New York	4.50@ 4.75	4.50@ 4.75
Pool 9, Philadelphia	5.10@ 5.40	5.10@ 5.40
Pool 10, Philadelphia	4.95@ 5.15	4.95@ 5.15
Pool 11, Philadelphia	4.60@ 4.80	4.60@ 4.80
Pool 1, Hamp. Roads	4.50@ 4.60	*4.40@ 4.50*
Pool 2, Hamp. Roads	4.25@ 4.30	*4.20*
Pools 5-6-7, Hamp. Rds.	3.90@ 4.00	*3.90*

BUNKERS

Pool 1, New York	$5.75@$6.00	$5.75@$6.00
Pool 9, New York	5.40@ 5.60	*5.35@ 5.55*
Pool 10, New York	5.00@ 5.35	*5.00@ 5.25*
Pool 11, New York	4.75@ 5.00	4.75@ 5.00
Pool 9, Philadelphia	5.35@ 5.65	5.35@ 5.65
Pool 10, Philadelphia	5.20@ 5.40	5.20@ 5.40
Pool 11, Philadelphia	4.85@ 5.05	4.85@ 5.05
Pool 1, Hamp. Roads	4.60	*4.50*
Pool 2, Hamp. Roads	4.30	4.30
Pools 5-6-7, Hamp Rds.	4.10	*4.00*

Current Quotations, British Coal, f.o.b. Port, Gross Tons

Quotations by Cable to *Coal Age*

Cardiff:	March 20	March 27†
Admiralty, large	23s.6d.@24s.	**24s.6d.**
Steam smalls	12s.	**14s.**
Newcastle:		
Best steams	18s.	18s.
Best gas	20s.	*18s.@20s.*
Best bunkers	16s.	**16s.6d.**

† Advances over privious week shown in **heavy** type; declines in *italics*.

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Coming Meetings

New England Coal Dealers' Association. Annual meeting, State Armory, Worcester, Mass., April 7 and 8. Secretary, E. I. Clark, 141 Milk St., Boston, Mass.

Canadian Retail Coal Association. Annual convention, King Edward Hotel, Toronto, Ont., Can., April 14 and 15. Secretary, B. A. Caspell, Brantford, Can.

American Welding Society. Annual convention, 29 West 39th St., New York City, April 21-23. Secretary, M. M. Kelly, 29 West 39th St., New York City.

California Retail Fuel Dealers Association. Thirteenth annual convention at Del Monte, Calif., April 22-24. Secretary, J. B. Muir, Oakland, Calif.

Mine Inspectors' Institute of America. Annual meeting, Seventh Avenue Hotel, Pittsburgh, Pa., May 11-13. Secretary, G. B. Butterfield, Hartford, Conn.

National Retail Coal Merchants' Association. Ninth annual convention, New Willard Hotel, Washington, D. C., May 17-19. Resident vice-president, Joseph E. O'Toole, Transportation Bldg., Washington, D. C.

Electric Power Club. Convention at The Homestead, Hot Springs, Va., May 24-27. Secretary, S. N. Clarkson, B. F. Keith Bldg., Cleveland, Ohio.

The American Mining Congress. Annual Exposition of Coal Mining Equipment, May 24-28, at Cincinnati, Ohio, in conjunction with the annual meeting of practical operating officials. Assistant secretary, E. R. Coombes, Washington, D. C.

International Geological Congress. The fourteenth congress will be held in Madrid, Spain, commencing May 24, 1926. From May 5 to 22 excursions of interest to the visiting delegates will be arranged. Information concerning the congress can be obtained from the secretary of the organizing committee, Enrique Dupuy de Lome, Plaza de los Mostenses, 2, Madrid, Spain.

Midwest Retail Coal Merchants Association. Annual meeting, May 25 and 26, at Kansas City, Mo. Secretary, James P. Andriano, St. Joseph, Mo.

Western Canada Fuel Association. Annual meeting at Winnipeg, Manitoba, Can., May 27 and 28. Secretary, W. H. Morrison, Winnipeg.

American Wholesale Coal Association. Annual meeting at Toledo, Ohio, June 7-9. Treasurer, R. B. Starek, Union Fuel Bldg., Chicago, Ill.

Association of Iron & Steel Electrical Engineers. Exposition and convention at Hotel Sherman, Chicago, Ill., June 7-10. Secretary, J. F. Kelly, 1007 Empire Bldg., Pittsburgh, Pa.

American Institute of Electrical Engineers. Annual convention, White Sulphur Springs, W. Va., June 21-25. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

American Society for Testing Materials. Convention at Haddon Hall, Atlantic City, N. J., June 21-25. Secretary, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

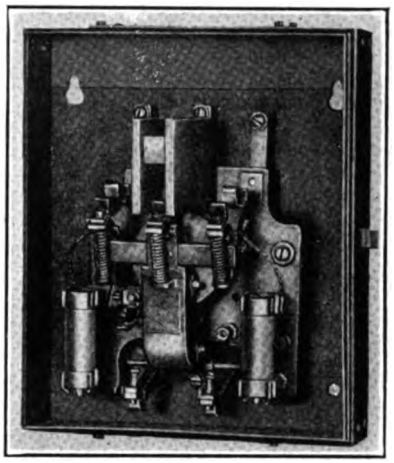
New Equipment

Across-the-Line Starters Made Easily Accessible

In the accompanying illustration may be seen one of the two new across-the-line starters which have been recently developed and are now being placed on the market by the Westinghouse Electric & Mfg. Co. of East Pittsburgh, Pa. These starters are of the reversing and non-reversing types respectively. They are of compact design and have been made easily accessible for installation and wiring. Two slotted hexagonal screws firmly hold the starter unit in place in a sheet steel cabinet. Thus the starter may be removed as a unit by merely withdrawing these screws with an ordinary screw driver, leaving all the room inside the cabinet free for attaching conduit bushings and drawing in the leads.

This starter, consisting of a 3-pole contactor with electrical interlock, is completely inclosed and is operated from a push button station that may be located at any convenient point. It thus provides safe control and eliminates damage which might result from tampering by unauthorized parties or by unskilled handling. In addition to this safety precaution, a floating armature type of 3-pole contactor is employed which provides smooth and positive contact. This is quiet in operation and the tips are kept clean by the rolling and wiping action of their closure.

Where operating conditions necessitate the protection of the starter against an accumulation of chips or other foreign matter, a door interlock may be had that makes it impossible to start the motor unless the cabinet door is firmly closed. The non-reversing starters, class 11-160, are applicable for many machine drives where dirt and dust is encountered, such as in textile mills, on machine tools, wood-working machinery, conveyors, blowers, pumps, tipple machinery and the like. The reversing type, class 11-165, embodies the same sturdy and safe construction and the same essential operating characteristics as the non-reversing type, but in addition the mechanical interlock above referred to, making it impossible for the contactors to be closed unless the door is shut. This type has its obvious advantages which need no further comment.



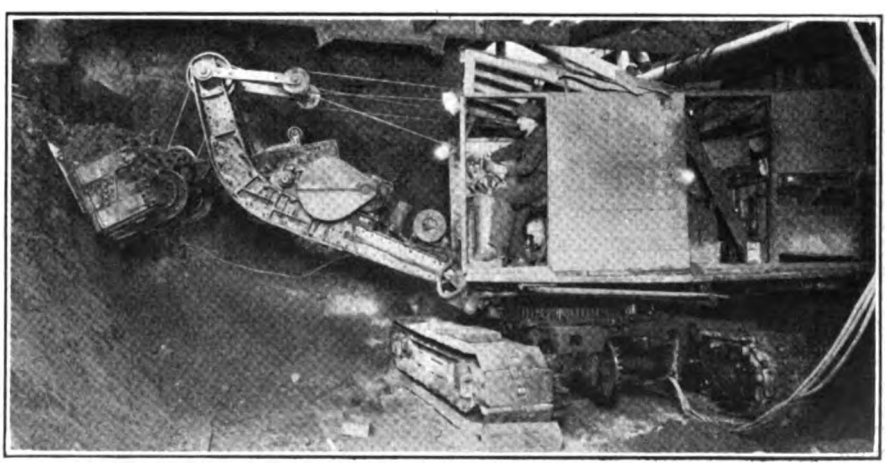
Starter and Cabinet

Removal of two screws permits the contactor to be removed from its steel cabinet, thus leaving the whole inside of the cabinet free for the insertion and installation of the wiring. An electrical interlock with the door may be installed rendering it impossible to close the contacts unless the door has likewise been previously shut.

Burrowing Power Shovel

In the accompanying illustration may be seen a power shovel that is particularly adapted to low headroom such as is encountered in coal mines. This is a Marion standard type No. 21 machine fitted with a bow-shaped boom. It is built by the Marion Steam Shovel Co. of Marion, Ohio.

This machine is obviously a tunneler and has been operated underground in as little as 11 ft. of headroom. It is pointed out by the builder that because



Surface Shovel Evolves into Underground Unit

Subway and other tunnel contracting work is causing a rapid change in the upstanding steam shovel. It is learning to stoop. This one also crawls. It will work in a place only 11 ft. high and with non-combustible cab should prove fitted for thick coal beds.

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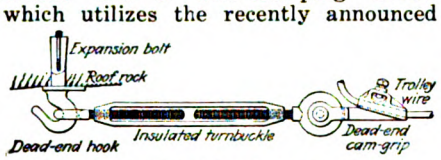
of its short boom and dipper stick and the consequent shortness of its swing, it loads cars with great rapidity. The shovel in the illustration is owned by the Oakdale Contracting Co. of Brooklyn, N. Y., and is being used in subway construction. Electric shovels of this type, however should be useful in loading coal in mines where sufficient headroom is afforded.

Dead-End Assembly Saves Trolley Wire

To fill the need for a simple, yet substantial and complete device for terminating trolley lines, the Ohio Brass Co., of Mansfield, Ohio, has placed on the market parts for a new dead-end assembly.

This device consists of a heavy malleable-iron hook which can be affixed to the standard overhead hanger or expansion bolt, an insulated turnbuckle and a wire-clamping device which utilizes the recently announced



Simple Dead-End Assembly

Simplicity is the key note of this device. It consists of a hook fitted with an expansion bolt that may be anchored in the roof, an insulated turnbuckle and a trolley-wire grip.

cam-type grip. This latter is of particular value in the assembly as it eliminates all the waste of wire usually entailed where dead ends are formed by bending or looping trolley wire around some rigid support.

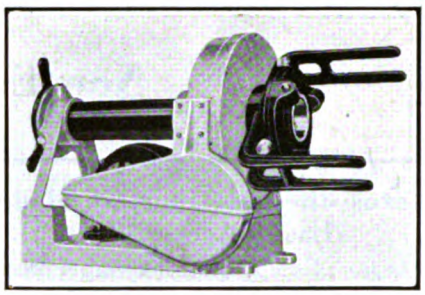
This new dead-end assembly is equally useful for permanent and temporary installations. It can be removed with ease and used over and over as the line is extended. A material saving in time and labor is said to result from the employment of this handy device.

Portable Power Pipe Threader

Threading pipe by hand is always a more or less laborious operation depending somewhat on the size of the pipe. In any case it is slow. To obviate this difficulty the Oster Mfg. Co., of Cleveland, Ohio, has recently developed and placed on the market the new light weight model, power drive pipe threader shown in the accompanying illustration.

As may be seen, the body of this machine is made almost exclusively of aluminum allow which is not only stronger and more durable than the cast-iron formerly used, but is much lighter. The new machine weighs only 150 lb. and is therefore a really portable unit in its entirety.

Motive power for this machine is furnished by a ½-hp. reversible universal motor which automatically speeds up on the smaller sizes of pipe yet maintains the necessary speed on the larger sizes. This gives the outfit a greater productive capacity than would otherwise be the case. This motor can be run from any 110 or 115-volt lighting circuit either direct or single phase alternating current, of any frequency. Its reversibility makes it possible to



Threads Pipe with Ordinary Die

This machine is driven by a small, reversible universal motor. It will thread pipe of all sizes up to 2 in. or by the aid of an attachment up to 6 in. It may also be used to make up fittings and couplings.

use almost any die stock in connection with the machine.

This machine has the capacity to drive any die stock or pipe cutter up to 2 in., but with a special auxiliary drive shaft (which can be furnished) geared die stocks or cutters up to 6-in. may be handled. In addition to this, the machine may be used to screw up fittings as a pipe wrench can be held by its driving arms and rotated the same as a pipe die.

The pipe to be threaded is held stationary in a three-jawed, self-centering chuck and the pipe tools are turned by the driving arms. Self-centering universal guides in the rear of the machine assist the chuck in centering long lengths of pipe. An idea of the compactness of this device may be gained from the fact that it is only 18⅛ in. high, 14½ in. wide and 30⅛ in. long.

Splicer with Cam-Grip Holds Trolley Wire Tight

A cam-grip splicer for securing the ends of trolley wires and based on a new principle is a recent development of the Ohio Brass Co., of Mansfield, Ohio. The operation of this splicer depends upon the action of a serrated cam on the trolley wire rather than on the direct pressure of set screws. The cam or dog is of hardened steel carrying milled teeth. It is confined in a pocket in the body of the splicer and is held down against the trolley wire by means of a single heavy hardened steel set screw.

The eccentric action of this cam comes into play when the wire is pulled, so that the greater the tension on the wire, the stronger becomes the grip. The strength is not dependent on the force used in tightening the set screw but upon the wedging action of the dog when the wire is in tension.

The wires enter cored holes in the body casting and the lips are formed by a V-shaped opening in the underrun, ground to a taper toward the ends of the splicer. No peening of the lips is necessary as the opening is made for a snug fit around the wire. The cam forces the wire down against the bottom of the opening with the result that there is said to be an easy transition of the trolley wheel onto and off of the splicer.



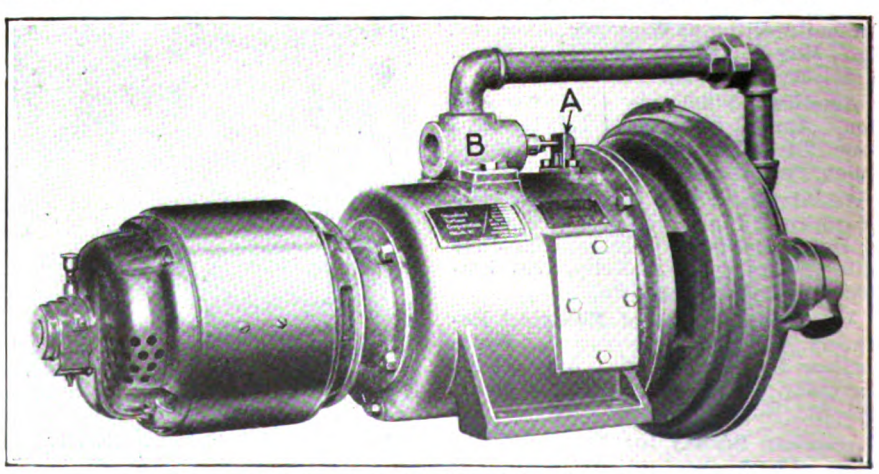
Steel Teeth Bite Into Copper Wire with Bulldog Grip

In this splicer the cap screws do not bear on the trolley wire direct but through rocking cams provided with milled teeth. The greater the tension pulling the two wires apart the firmer the grip of these cams.

An Emergency Lighting Unit

A turbo-generator set in sizes from ½ to 10 kw., designed especially for use as an emergency lighting unit for the power station, is a recent development of the Standard Turbine Corporation, Scio, N. Y. The unit is arranged to start automatically when for some reason the regular light supply on the station fails, automatic starting being accomplished by means of an electrically operated shutoff valve in the turbine steam line.

The set is similar in construction to the regular line of small lighting sets built by this company except for the governor, which is of special design and which operates in the oil space of the bearing pedestal. The steam governing valve *B* is fastened directly to the top of the turbine and connects with the governor through the lever *A*. The generator is made an integral part of the turbine, which tends to reduce the over-all size for a given capacity.



Emergency Lighting Unit Designed for Automatic Starting

Starts automatically when regular light supply of station fails, the automatic starting being accomplished by an electrically operated shutoff in the turbine steam line.

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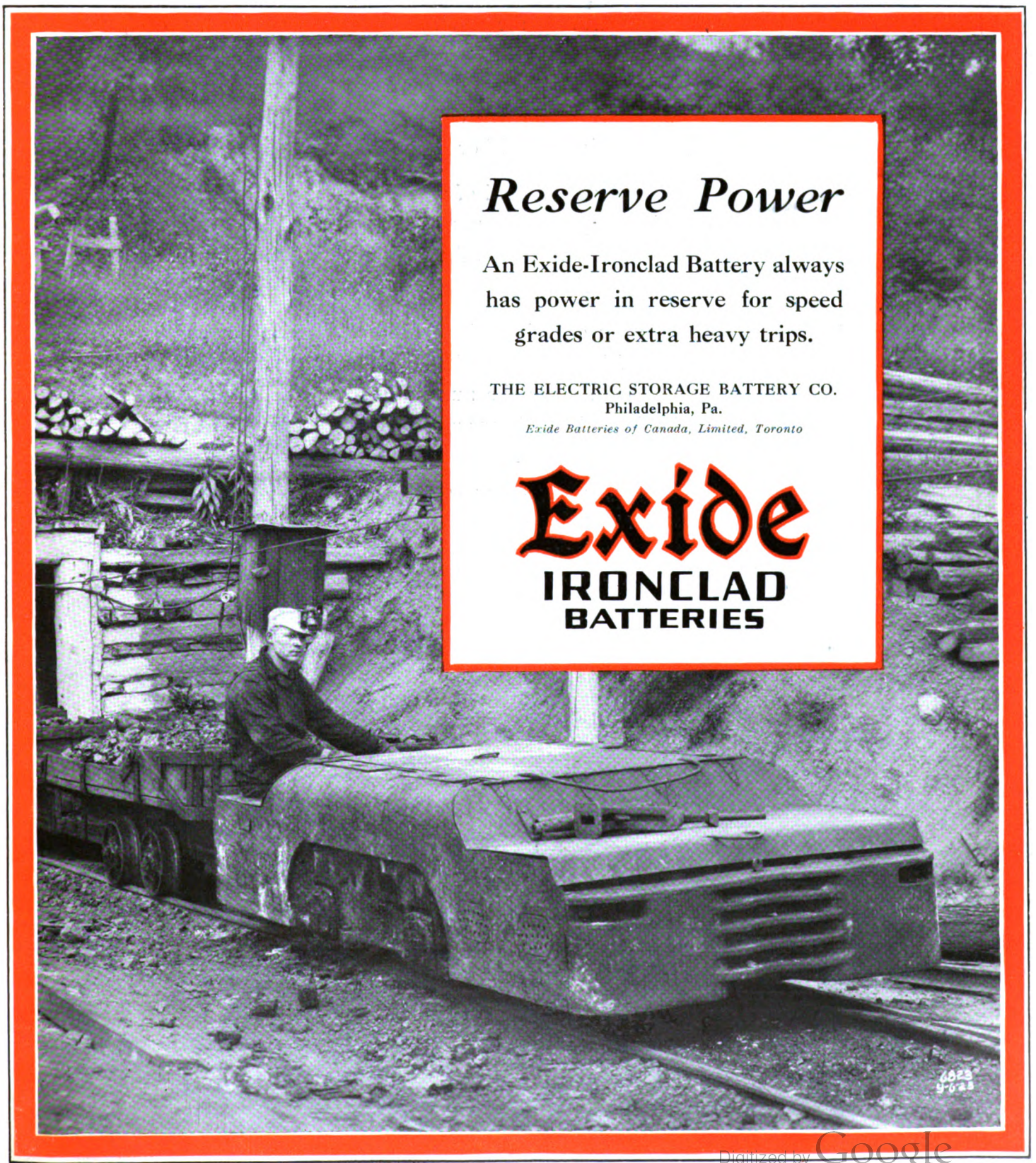
Results of Investigation of Minister Stein Explosion, Page 498

APR 10 192

COAL AGE

The World's Accepted Authority on Coal Mining

McGraw-Hill Publishing Company, Inc. **April 8, 1926** Price Twenty Cents per Copy



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Use—Not *Years*—Measures Value



Time, occasionally, may be a measure of quality. The age of a picture—the youth of an egg—are both indexes to desirability and value.

But in measuring the service of a mine car wheel, time is a misleading standard. One mine may demand of a car more service in five months than another will require in five years. To ask, "How *long* will wheels last?" is as illogical a question as, "How high is up?" or "How long is a piece of string?"

The only true standard of wheel service is the use it will give —which may most accurately be measured in ton miles: the weight on the wheels × the length of the haul in miles × the number of trips.

Computing on this basis is simple. Determine the average length of haul; the number of trips per year the cars make loaded with coal; the number made loaded with slate and rock; the weight of car and load in each case; and the weight of the car empty. Then work out these 3 formulas:

Number trips coal-loaded x length of haul x total weight.
Number trips rock-loaded x length of haul x total weight.
Number trips empty x length of haul x total weight.*
(**This number will be equal to the sum of the first two.*)

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 29 — New York, April 8, 1926 — *Number* 14

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Are Coal-Washing Plans Laid So as to Afford Maximum Profit? 493
BY THOMAS FRASER.

Flame Safety Lamps Are Safe If Handled Properly 497

Explosion in Minister Stein Mine, Germany, Caused by Shot in "Non-Gaseous" Part of Mine 498
BY RAOUL TOUWAIDE.

Two Horses Escape Death in Runaway 500

White House Favors Early Action; Jacobstein Would Encourage Mergers to Settle Coal Industry's Troubles 508

Deadlock Again Looms in Britain's Coal Situation Subsidy To Industry Causes Deficit in Nation's Finances 511

Five Union Mines Close Near Pittsburgh Unable to Pay Jacksonville Scale 509
Lewis Deplores Ohio's Plight But Denies Help 509
Wants Public to Know What Industry Will Do to Insure Steady Coal 510
John Fritz Medal Awarded to E. D. Adams 510
New Orient Shuts Down; Will Be Developed Further 510
Hudson Coal Co. Reorganizes Operating Staff 510
Agrees to Semi-Monthly Pay; Close Mines 511
Four Pursglove Mines Halt in Morgantown Field 511
Pittsburgh Coal Co. Ready to Open Tenth Mine 511
Co-operation Necessary to Success of Mining Machines 511
Form New Union District in Upper West Virginia; To Fight Open-Shop Mines 512
U. S. Chamber of Commerce Initiates Action to Abate Uneconomic Trade Practices and Abuses 512
Government Needs Engineers 512

Editorials 491
Viewpoints of Our Readers 501
Underground Operation 502
Practical Pointers 504
Book Reviews 506
News Items from Field and Trade 513
Traffic 516
Weekly Review and the Market 517
Foreign Market and Exports News 522
New Equipment 523

Advancing to Seat of A Mine Fire

It would be easy enough to recover a mine after a mine fire if you were sure the fire was out, so entirely out that the admission of air could not fan the embers into flame and start another explosion. But the approach to the seat of a fire is always made in doubt as to whether it is asleep or dead.

At Horning there was the usual uncertainty, but the fire was found to be out. However, a good plan of campaign was arranged and everything was prepared for the advance. Had fire lurked ahead, the precautions might have saved many lives. A description by Mr. Brosky of the recovery will appear next week with an account of the damage done by the explosion and of the protection afforded by the rock dust along the roads and in barriers.

Where Will We Get Our Timber?

Instead of wondering, many firms are planting. They have the idle land and they may as well put it under timber. Next week Mr. Alford will describe the status of the forestation movement in coal mining.

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Trolley Tension Tightens it!



New O-B Trolley Splicer with Cam Type Grip

WITH this new device, O-B engineers have greatly simplified and at the same time improved current practice in trolley splicing.

Instead of depending on the direct pressure of a set screw on one little spot in the wire, the set screws are themselves used merely to hold cam-shaped dogs in place. Each dog has milled teeth which are in contact along the top of the wire. When tension is applied, the dog is pulled under the set screw bringing into play the cam or wedging effect as the diameter increases. The teeth bite further into the wire and the pressure is increased until a grip is attained which cannot be broken or worked loose.

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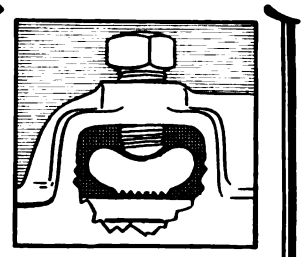
A cored hole extends straight through the body casting. Trolley wires to be spliced are butted; the splicer is slipped onto either one and pulled as far along as needed to clear and receive the other end. The splicer is then centered and set screws tightened with a small wrench or pliers. No bending or other damage is done to the wire.

These new O-B Splicers are accurately made in sizes to insure snug fit for the several wire gauges customarily used. No peening of the lips is required because the pressure of the cam forces the wire tightly into the V-shaped opening in the underrun. Note the smooth underrun provided.



Details of cam grip

Dogs and set screws are made of hardened steel. Note the length of contact, with milled teeth against the wire.

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PORCELAIN INSULATORS LINE MATERIALS RAIL BONDS CAR EQUIPMENT MINING MATERIALS VALVES

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COAL AGE

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 29 NEW YORK, APRIL 8, 1926 Number 14

Assuring Fan Operation

IN ALL coal-mining equipment, taken by and large, reliability is of greater importance than economy. Getting the greatest return from the fuel burned or from the power purchased is an excellent objective to keep in view and strive to attain, but in most instances it cannot be subordinated to reliability. For shutdowns and interruptions wreak havoc on production and production costs out of all proportion to their own magnitude. The indirect losses sustained from such suspensions are far greater than their direct expense.

Where the safety of the men employed is at stake, also, continuity of service is doubly essential. Thus it is highly important that the fan be kept in operation even though power may go off the line for more or less extended intervals. To this end auxiliary units, such as gasoline engines either belted to the fan through a clutch or direct-connected to a generator of sufficient capacity to drive both fan and man hoist at reduced speeds, are frequently installed. If steam must be generated to heat water for the washhouse, it is common practice, also, to employ steam engines as standbys on these two pieces of equipment.

Where storage-battery locomotives or power tanks are extensively used their batteries may be made to serve the purpose of standby power to excellent advantage. In such mines some batteries are on charge at practically all times. In order to utilize the energy stored in such accumulators it is only necessary to run a suitable line from the charging station (which is usually located near the shaft bottom or mine mouth) to the fan house and provide there a motor of the proper type and capacity. This source of power may be similarly employed for shop or repair operations on idle or off days as well as for a standby. At several mines this source of power is now being utilized for either or both of these purposes.

Stop the Repeaters

UNDER THE general subject of tracks, there appears in the Union Pacific Coal Co.'s code of standards the following paragraph:

"A record of all derailments shall be kept by the mine foreman giving date, cause, and location. Drivers and motormen must give their reports of such happenings to the mine foremen daily."

This expresses a principle which is one of the important factors underlying the high-production and low-maintenance cost records per unit of equipment at many mines. It applies to all classes of equipment.

Generally speaking the mining machinery of today is wonderfully rugged, considering the limitations of size and weight, and gives excellent service if properly lubricated and not unnecessarily abused. The problem is to differentiate between normal wear, which takes place in any machine even if properly maintained, and trouble due to preventable causes.

A record of failures forms a stairway leading to the bottom of the trouble. Every failure has a cause, and the causes are not as numerous as might be expected. In eliminating troubles which show up frequently, some companies go so far as to redesign parts of equipment which are deemed too light or not suited to the specific local conditions encountered. Usually this is necessary only in the more advanced stages of development. An improvement of installation, operating, repair or lubrication methods can be countered upon to eliminate most of the "preventable" troubles. But before a physician can treat human ills intelligently he must correctly diagnose the case. His training in diagnosis is based on records which the medical profession have been compiling for years. It is much the same in the treatment of failures of equipment. The procedure should be based on a careful and frequent analysis of operating records. Usually there is little excuse for enduring repeated troubles from a common cause.

"No Backward Step"

ORGANIZED LABOR in the coal fields, like organized labor in industry generally, came out of the World War stronger than it ever had been before in the history of the labor movement in the United States. Why that was so, need not be discussed; it is water long since gone over the dam. Among the various union groups were some that recognized the force of economic competition and willingly or unwillingly met capital on the basis of the changed conditions brought about by the post-armistice depression and, later, by the collapse of the 1920 boom.

The United Mine Workers was not among those that trimmed their demands to the unfavorable winds of depression. Under the dynamic, belligerent leadership of a new president, the executives of that organization rallied to the battle cry of "no backward step." Let wages fall elsewhere; the United Mine Workers would stand firm against all demands for a reduction and so save the country from an economic smash-up! Adhering to that resolution, the miners' union has insisted and still insists upon the continued maintenance of the highest basic wage scale ever granted it.

In 1918 the United Mine Workers controlled approximately seventy-two per cent of the bituminous tonnage produced. In 1925 less than thirty-five per cent of the output was mined under the union scale. Entire districts have been swept into the non-union column; many others have become so pockmarked with open-shop operations that the union no longer is the dominant factor in those fields. Mine after mine has closed down in the strongly organized districts, and the beginning of the present month swelled the roster of the idle union operations.

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Nor is that all the picture. In the Appalachian Region, where the close proximity of union and non-union mines has intensified the competition between the two groups, the drift from union to non-union production through the exploitation of non-union acreage by operators originally identified only with the union fields has been going on for some time. This development has come to be the accepted means by which the union operator can retain his hold upon his business. The practice, indeed, has become so common that it has ceased to excite comment.

This movement, however, is no longer confined to the fringes of the Central Competitive Field. It has penetrated into the very heart of that great union stronghold. Less than a month ago it was announced that the Peabody Coal Co. had taken over the distribution of the output of a group of non-union western Kentucky mines in territory in which it might normally be expected to push the product of its own Illinois mines. And there are other Illinois and Indiana producers who have maintained friendly relations with the union over a long period of years who are taking similar action to protect themselves.

The lesson ought to be plain enough to convince even the officers of the United Mine Workers that their attempts to hold an untenable position can lead only to further disaster. "No backward step" has a vigorous ring, but the successful leader frequently retreats in order that he may advance. Has the United Mine Workers such leadership or must the real interests of its members be sacrificed in idolatrous worship of a deluding phrase?

Safety in Longwall

A LONGWALL MINE is less likely than any other to be closed by creep. Modified longwall and the slabbing methods also afford a similar assurance of mine safety. All of which does not mean that there will be no difficulty in maintaining the longwall face, especially when the first attempt is made to obtain a break. Perhaps the mine most likely to close up suddenly is the room-and-pillar mine with a 50 per cent recovery. When rooms are started and pillars not drawn or if the drawing of pillars is delayed, a squeeze over a large area is almost sure to start. In Illinois squeezes have repeatedly ridden over big barrier pillars. Unless the roof is broken the mine is in danger. The 100 per cent extraction of longwall, especially where there is no packwalling or the 90 per cent extraction of slabbing, assure complete caving if the panels are sufficiently long and wide, but the room-and-pillar method with its low recovery invites the loss of a mine in a night.

Congratulations!

A NEW ARRANGEMENT has been made for the preparation and distribution of monthly statistics of the exports of coal and coke which will place the figures in the hands of the public about two weeks earlier than has been the case in the past. Heretofore the delay in issuing this data has been the subject of criticism ranging from the profane to the ribald. After all, a good part of the value of statistics lies in their timeliness. It has hardly been flattering to our pride in American efficiency to compare the delays blocking the publication of our export figures—small as they may be—with the speed displayed by some other countries. The Minerals Section of the Bureau of Foreign and Domestic Commerce at Washington is to be congratulated on the speeding up process which makes these figures more news and less ancient history.

Minister Stein Explosion

AFTER MUCH careful experimentation and inquiry the authorities in Germany have reported on the disaster at the Minister Stein Colliery. We print in this issue an interesting article on the subject by Raoul Touwaide. Yet, though the study made was long and arduous, one cannot be assured that the conclusions of the investigators were correct.

In this mine which was kept free of gas by an unusually large air circulation, it is not surprising that an explosion occurred after a fall of rock had shut off the ventilation. The explosion may have been due to any one of many causes. Possibly the shot to which the explosion is attributed may have been the cause, but only because the gas flooded from the Ida back into the Otto seam or because the Otto seam itself made enough gas that, when the air current was shut off, the air almost immediately became gas-laden. These probabilities seem far more likely than the assumption of the authorities that the "depression" caused by the shot drew gas out of cavities which gas was ignited by the burning parts of the cartridge when they were expelled from the hole. If the cavities of the Otto seam contained methane in such quantity, the seam was surely not non-gaseous in any proper sense of that word.

The evidence that a shot caused the explosion is also dubious. It is stated that a shot was fired about the time at which the accident occurred and that the place at which it was fired was little damaged. It is argued that the damage is usually at a minumum at the point of ignition, but so it might be at the point at which the blast dies down. So this assumption may also be without warrant.

It has been noted that where explosions are known to have started, as in the face of the experimental mine at Bruceton, Pa., it is often found that large piles of planking have been projected against the face and that there has been much violence. These facts have been explained by showing that the explosion often gains in pressure as the wave advances and then throws back waves toward areas of lower pressure, with resultant lifting of material only partly ejected or wholly undisturbed by the main explosive wave. The investigators assume that there was an increase in violence as the explosion extended but apparently are unwilling to admit that this would probably, but by no means inevitably, have resulted in a return wave that would have made a place, that had largely escaped before, a point where much energy was later displayed.

We have learned from Mr. Touwaide that the shot was stemmed, but it would seem that, if it was the cause of the explosion, the shot either blew *out* or else blew *down* the material so easily as to release the burning contents into the roadway. That may be a danger with a shallow shot, the stemming may be too short or the environing walls may be too weak to prevent the issuance of flame before combustion is completed.

But if some things seem uncertain, the value of rock-dust barriers was clearly demonstrated as also the ineffectual protection afforded by water. The proof was so clear than the German authorities, who have hitherto been skeptical, seem to be so no longer.

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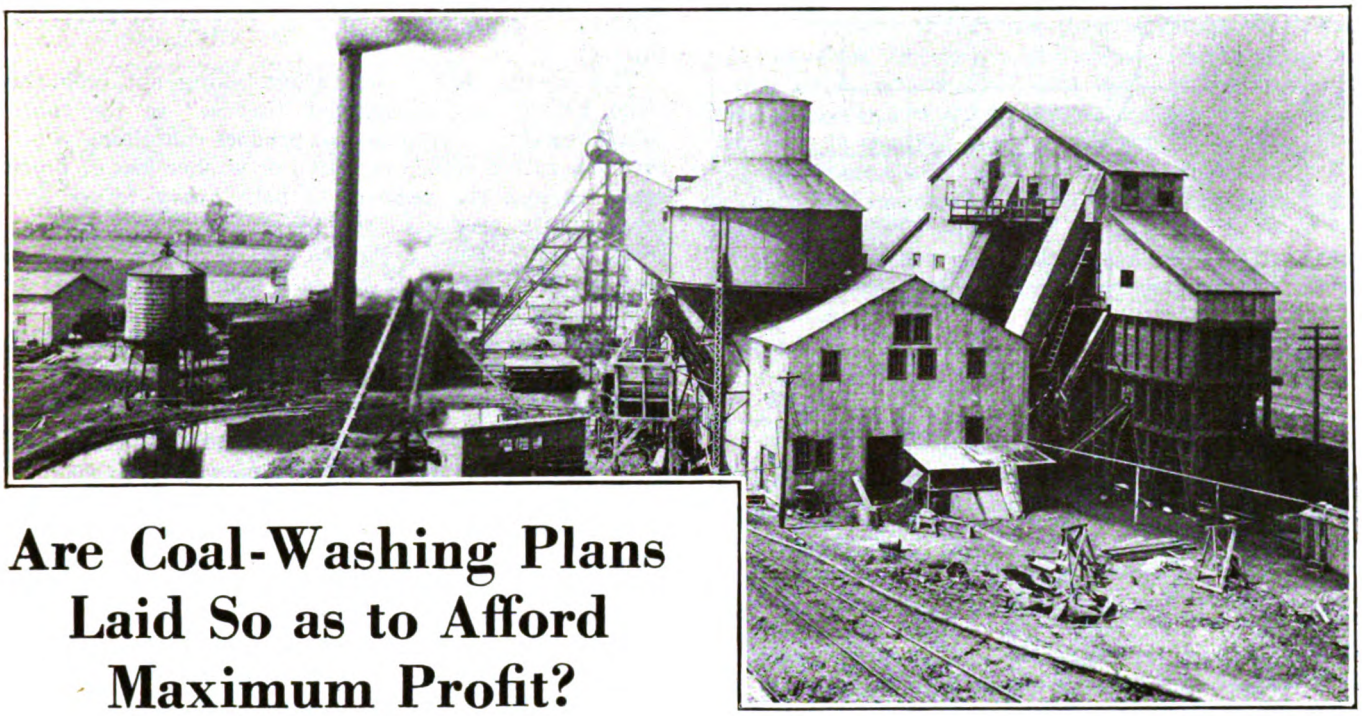

Courtesy, Link-Belt Co.

Are Coal-Washing Plans Laid So as to Afford Maximum Profit?

Rarely Pays to Remove Middlings as Quality of Coal Is But Little Improved—Clean Coal, However, Keeps Mine Working Steadily—Review of Typical Washery Machinery

By Thomas Fraser
Assistant Professor of Mining,
University of West Virginia

IN THE STUDY of the washery problem the important consideration is to produce such coal as will afford the most profitable return. When coal is washed, so as to remove both bone and slate it usually happens that the analysis is but little bettered by the removal of the bone and a large quantity of coal is thrown away, whereas the removal of slate only will reduce the percentage of ash considerably without wasting any large quantity of the product.

The usual method of disposing of the fine coal (screenings or slack) is to place it on the market in the raw state as a cheap stoker fuel. If the coal seam contains friable impurities, the fine coal is dirtier than the larger sizes and, in many cases, use of mechanical loaders will increase the proportion of dirt in the fines. To produce a desirable grade of small coal under these conditions, the coal must be cleaned by machinery. The proper size at which to make the division between hand picking and mechanical cleaning will vary with individual conditions; but, inasmuch as the nut coal is the most difficult and expensive size to hand-pick and the easiest size to clean mechanically, it generally will be advisable to include the nut coal (2x3 in. or smaller) in the washer feed if a washery is being installed for the smaller coal. This would be the most economical procedure except where the nut coal is comparatively clean and requires only a superficial treatment.

In the extensive Appalachian and Eastern Interior coal regions washeries have been generally regarded until recently as novel appurtenances only to be found at steel-company mines. Although some plants for the preparation of commercial coal have been operated, they are uncommon. However, in the past three years there has been a marked increase of general interest in coal preparation, attended by moderate activity in actual cleaning-plant construction.

The cleaning plant and process best suited for the preparation of coal for the general market may be expected to differ materially from those designed to produce metallurgical fuel. The important considerations which influence the operation of commercial plants are: (1) Market conditions usually prohibit crushing to prepare coal for treatment. (2) Removal of heavy refuse alone usually results in a satisfactory product. (3) Only a small enhancement in selling price is available to cover operating cost and shrinkage. A simpler and cheaper plant generally can be used to prepare a general-purpose fuel than to prepare metallurgical fuel because the complete removal of bone coal and light middling products is unnecessary and usually undesirable. The essential requirements of a plant for this purpose are (1) low plant cost, (2) low operating cost, (3) simplicity of operation, control and repair, (4) minimum loss of coal in refuse, (5) applicability to a wide range of sizes.

KEEPING SHRINKAGE LOSS LOW

Inasmuch as the increased selling price obtainable for cleaned coal is often small, it is regarded as essential to keep the cost of cleaning and the washer loss or shrinkage down to the absolute minimum although, because of the ready salability of cleaned coal, it may often pay to operate a cleaning plant at an apparent loss; this bringing about, indirectly, a much greater

Headpiece shows tipple and washery of Consolidated Coal Co., Mine No. 7, Staunton, Ill.

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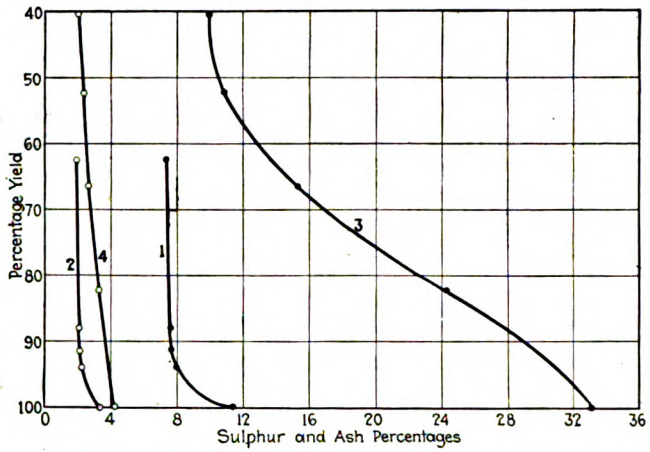


Fig. 1—Curves Show Relation of Ash to Yield

Where the curves are almost horizontal any cutting of sulphur or ash percentages is achieved without much upward progress on the curve and therefore without any marked change in the percentage yield. But where the curves are nearly vertical one can make hardly any progress horizontally without a great change vertically and a big loss in yield. Consequently it is not well to leave the curved tips of the graphs and it is well, indeed, to avoid rising too high on them.

saving through larger sales and steadier operation. Low washer loss is especially important, as every ton of material discarded as refuse decreases the tonnage shipped. Plants should usually be adjusted to take out only the clean rock and heavy bone.

Light bone and mixed particles contain a large proportion of combustible material and rejection of these products as refuse means some loss of fuel; furthermore, because of its low-ash content, removal of bone coal is an expensive ash-reducing measure as a large rejection is necessary to obtain a relatively small decrease in ash in the cleaned coal. In any case, only enough of this bone coal and middling should be rejected to produce a cleaned product of the desired grade. Any type of washer can be adjusted over a certain range of separations; the greater the cleaning effect desired, the greater must be the quantity of material rejected as refuse.

This condition is illustrated by Table I giving the results obtained by washing a sample of high-ash Pittsburgh coal. For experimental purposes several

Table I—Results of Washing a High-Ash Pittsburgh Coal Sample

Product	Per Cent of Feed		Per Cent of Ash		Per Cent Sulphur	
	Direct	Cumulative	Direct	Cumulative	Direct	Cumulative
Raw coal	100.0	....	11.4	....	3.46	....
No. 1 washed coal	62.5	62.5	7.4	7.4	1.97	1.97
No. 2 washed coal	25.5	88.0	8.1	7.6	2.43	2.10
No. 3 washed coal	3.4	91.4	10.5	7.7	3.52	2.15
Middlings	2.6	94.0	37.0	8.0	6.80	2.28
Refuse	6.0	100.0	65.6	11.4	21.80	3.41

products were made; No. 1 clean coal; heavy high-ash refuse, and intermediate products consisting mainly of bone coal and mixed pieces, part coal and part dirt. It should be possible to adjust a commercial plant to make a separation between any two contiguous products shown in the table or at any point on the curves 1 and 2 of Fig. 1, which show the washing results graphically.

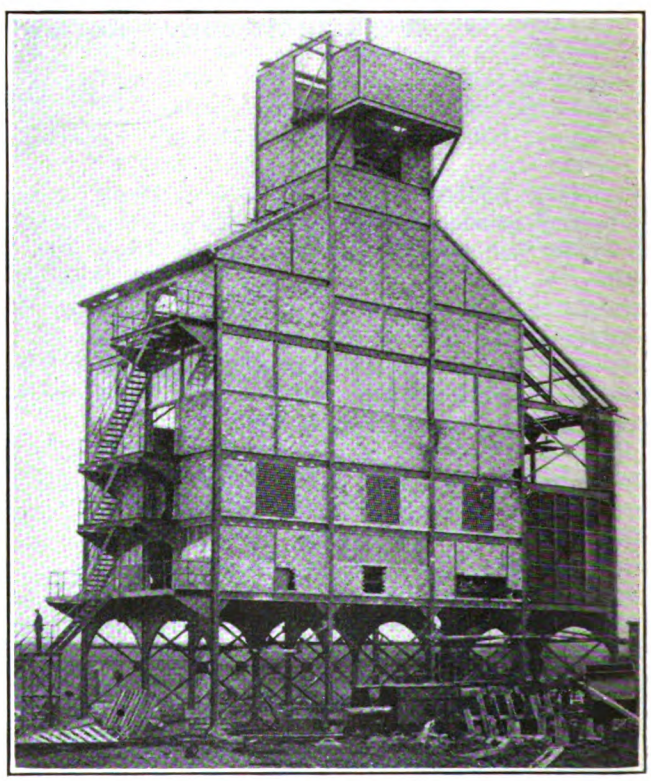
The figures in the second column, headed "Cumulative per Cent of Feed," gives total percentage of combined clean products above the individual products in question: for example, 94 per cent is the combined yield of washed coal and middling products if all are combined as one prepared product; similarly, the cumulative per cent ash (8) is the average ash content of this combined product and the cumulative per cent sulphur (2.28) is the average sulphur content of the combined product.

This means that a separation taking out only the clean heavy rock, designated "Refuse" in the table, would result in a cleaned-coal product containing 8 per cent ash with a refuse rejection or washer loss of 6 per cent, whereas the removal of both heavy refuse and intermediate products (middlings and No. 3 washed coal) would produce a cleaned coal of 7.6 per cent ash with a washer loss of 12 per cent. Thus the removal of 6 per cent of heavy slate reduced the ash content of the coal from 11.4 to 8 per cent whereas the removal of an additional 6 per cent of middlings gave a further reduction of only 8 to 7.6 per cent.

If Power Is Generated Can Wash Cleaner

As indicated by the straightening curves of Fig. 1, the further the ash-reducing process is carried the greater rejection is required to accomplish a given ash reduction. In preparing coal for the general market, rejection of light bone, which amounts to making the separation in the upper portion of the curves, is unprofitable, unless some special use can be made of this part of the reject by crushing and rewashing or by using it at the mine as a low-grade fuel.

In case the larger sizes of coal (lump and egg) are hand-picked and the smaller sizes are cleaned mechanically, coal mixed with or adhering to the rock picked



Courtesy American Coal Cleaning Corp.

Fig. 2—Wardley Plant of John Bowes & Partners, Newcastle-on-Tyne, England

Built by the Birtley Iron Co., Birtley, Durham, England, under American licenses. It has six pneumatic coal separators. The roof is glass and the walls of brick and steel. The three louvers are for the incoming air to the fans. The separators are on the floor above. The louvered extension at the end of the building contains the dust-extraction system.

out of the lump and egg can be reclaimed by crushing and washing with the nut and screenings. In this case, the larger sizes can be cleaned more thoroughly, because the coal loss in the pickings is ultimately recovered.

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Although the question might arise as to whether this practice would affect detrimentally the average quality of the cleaned coal product, the washer may generally be expected to remove practically all the extraneous free impurities in the feed, reducing it to a more or less uniform base ash content a little above the inherent ash.

This would depend, however, upon the nature of the picking-belt material introduced. If a large proportion of bone coal were directed into the washery feed in this manner, a deleterious effect on the quality of washed coal might be expected, whereas, if the picking-belt refuse were made up of shale and pyrite fragments with coal attached, the washer could be expected to clean this as completely as the raw coal after crushing sufficiently to free the coal from the rock.

Results of a pneumatic-table test on high-ash refuse material containing a comparatively small quantity of merchantable coal are shown in Table II and curves 3 and 4 of Fig. 1. In this test the material discharging from the cleaning table was separated into ten graded products by means of separate narrow chutes attached to the discharge side of the table and each leading to a separate receptacle. This is similar to the method of testing explained in detail in a previous paper.*

Table II—Recleaning Test and Refuse Material Using Pneumatic Table

Product	Per Cent of Feed		Per Cent of Ash		Per Cent Sulphur	
	Direct	Cumulative	Direct	Cumulative	Direct	Cumulative
Raw material	100.0	100.0	35.5	....	4.28	....
Product						
No. 1	2.0	2.0	10.1	10.1	2.50	2.50
No. 2	5.1	7.1	8.5	9.0	1.98	2.12
No. 3	5.3	12.4	9.3	9.1	2.06	2.10
No. 4	7.1	19.5	9.4	9.2	2.16	2.12
No. 5	8.8	28.3	10.1	9.5	2.07	2.11
No. 6	11.9	40.2	11.2	10.0	2.20	2.13
No. 7	12.2	52.4	13.2	10.8	2.51	2.23
No. 8	14.1	66.5	32.1	15.3	4.45	2.69
No. 9	15.8	82.3	66.8	24.3	5.80	3.29
No. 10	17.7	100.0	73.5	33.1	8.85	4.28

Although the raw material fed to the table contained about three times as much dirt as the bulk of raw coal normally treated in this particular washery, the cleaner products, Nos. 1, 2, 3, 4 and 5, averaged only a little higher in ash and sulphur than the average washed coal produced at the plant, and the comparatively small quantity of such coal recoverable from refuse materials would have little effect on the average quality of the washed coal.

In addition to being undesirable in most commercial operations, the removal of light bone coal and middlings is difficult, requiring such expedients as close sizing, fine crushing and retreatment. Hence the operation which aims at removal of only the heavy refuse can be performed in a much simpler and cheaper plant than is required to obtain the maximum cleaning effect.

FOUR MAIN WASHING METHODS

The coal-cleaning processes that appear best adapted to this particular service are (1) pneumatic-table treatment applied to wider combinations of sizes, (2) single-compartment, large-capacity jigs (either pan- or piston-type) treating unsized coal, (3) rising current or cone washers, (4) trough washers.

Pneumatic tables, though they require separation of the feed into sized products before treatment and thus lack the simplicity of operation that characterizes the jig and cone plants, have so many other advantages that they compensate for the expense of sizing. Furthermore, it is being found that these machines will separate coal from dirt in a wider range of sizes than was at first advocated. Specific data on the maximum range of sizes that can be effectively treated are not available —at least in the literature of this subject. This, obviously, is greatly dependent upon the kind of service to be performed, particularly upon the disposition of bone and light middling products.

For preparation of an easily cleaned coal or one from which only the heavy refuse need be removed, as is commonly the condition in commercial coal preparation, the pneumatic table should treat satisfactorily a comparatively wide range of sizes in one operation. This process, if simplified by combination of sizes treated to reduce excessive screening, is an economical means of cleaning commercial coal because it eliminates drying, thawing and water-clarifying problems incident to the operation of wet plants.

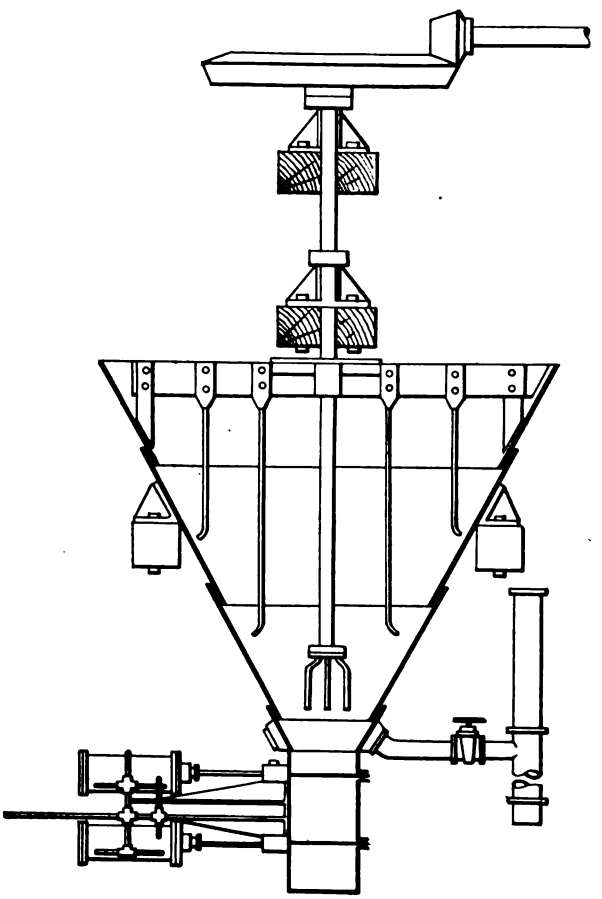

Fig. 3—Cone Washer with Hindered Settlement

Constantly rising water from the main on the right and the motion of the revolving arms enables the coal to keep afloat. The trident at the bottom keeps the bottom stirred up and free to respond to the pressure of the water. Two gates trap the slate at the bottom of the cone. This is the Robinson-Ramsay type of washer.

The wet coal-washing tables under favorable conditions will handle coal up to ¾-in. round-hole size, and if this is the largest size to be cleaned mechanically, a table plant may be used to treat the unsized raw coal. The outstanding advantage of table operation is ease of control and adjustment of the separation; the operation takes place on the table deck in plain view of the operator.

For dry-cleaning nut coal, the spiral separator is effective and inexpensive in operation. Although developed and manufactured in America, these machines

* Fraser, T.; Yancey, H. F. Interpretation of results of coal washing tests, Transactions American Institute of Mining and Metallurgical Engineers, Vol. 69 (1923), pp. 447-469.

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for bituminous coal are used more extensively in Great Britain. They are especially adapted for removing flat shale and slate but are not so effective in removing bony materials that break like the coal. Separation depends upon differences in specific gravity, coefficient of friction, and shape of particles, between coal and rock. Sinnatt and Mitton give the following sizes as suitable for spiral treatment; 4x6 in.; 2½x4 in.; 1½x2½ in.; ¾x1½ in.; ¼x¾ in.

LARGE COAL DOES NOT FREEZE

Where water is available and the possibility that the coal may freeze can be overlooked, jig plants of simple design are a cheap and effective means of cleaning small coal for market. Jigs and rising-current cone washers have the great advantage, for this particular service, that they will handle larger coal than some of the other processes, and unless the coal is extremely bony and hard to wash, will treat a wide range of sizes. Nut coal up to 4-inch round-hole size has been treated in both jig- and cone-type machines, and unassorted raw coal ranging from this size down to dust may often be treated in one operation with sufficient cleaning effect to produce an entirely satisfactory commercial fuel. This depends upon the kind of impurities present and the quantity of impurities in the fines. Just how completely the very fine material is cleaned in such an operation is problematical.

A thorough study of jig performance on a rather bony Pennsylvania coal, treated at 0x1¼ in. size, indicated that particles from ¼ in. to 1¼ in. in size were well cleaned. Hancock has shown that, in a single-compartment jig treatment of Alabama coals up to 3-in. size, the material finer than ⅛ in. is not appreciably improved. In most cases the dust and very fine coal, even if not benefited by the washery operation, is sufficiently small in quantity that it will not greatly effect the average quality of the washed coal. It should therefore, wherever possible, be screened out of the raw coal before it goes to the washers and mixed in the dry raw state with the washed coal. This minimizes the coal-drying and sludge-handling difficulties and greatly simplifies the washery operation.

For simple low-cost operation, Stewart and Shannon Washeries of the pan-jig type have been very successful. They are easy to operate and repair, have few complicated parts that cause protracted delays in case of breakdown, and are built in large capacity units, usually for treating unsized coal; the water circulating system is very simple.

The Montgomery pan jig will pump its own water and some of the other jigs of this type will operate in a tank of water without outside circulation. Machines of this kind, with a settling tank and slow-moving perforated bucket elevator for draining and loading the washed coal, form a cleaning unit of low installation and operation cost and yet well suited to the service required at many commercial mines where marketing difficulties are being experienced because of the high ash in the small coal.

Large-capacity single-compartment piston jigs are also adaptable to this service. While machines of this type are a little larger and occupy more floor space than pan jigs of the same capacity because of the addition of a separate plunger compartment, this difference is of little moment. Some operators consider that the piston jig can be adjusted to make a little closer separation than the pan jig. Plants of this kind would enable the mine operator, by a small capital outlay, to meet the present demand for cleaner coal and to take care of increased impurities in machine-loaded coal.

The jig usually installed for this service is the movable sieve or pan type. The plants are comparatively simple and compact. The small coal from the main tipple shaker is elevated to a small raw-coal storage bin from which it feeds by gravity to the jig. The washed coal and water overflow into an adjacent settling tank, from which the water is pumped back to the jig for reuse, and the coal is raised by a perforated bucket elevator to the washed coal bin over the shipping tracks.

COST OF PLANT AND OPERATION

A simple single-compartment jig plant of this general type can be erected for $40 to $60 per ton of daily capacity and operated for 5 to 10c. per ton of coal handled.

The Robinson cone washer is well adapted to use in a plant similar to that just described, replacing the jig as the cleaning unit. This washer is simply a large inverted cone through which a continuous current of water rises and overflows the perimeter of the cone. Raw coal fed into the cone at the center is agitated by the vertical stirring rods and assorted by the rising water current; the velocity of the water current is so



Fig. 4

Charbonnage de Besringen

Hoist, tipple and washer. The plant is located in North Belgium near the Dutch border. The Rheolaveur system of washing is installed.

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adjusted as to carry the light coal up and over the sides of the cone into the collecting launder while the heavier refuse sinks through the water and is trapped out through the double-gate, cylindrical refuse chamber at the bottom. This washer has the advantage of large capacity low operating and maintenance cost, and ability to treat a wide range of sizes in one operation. Robinson plants have been widely used in England and in the Alabama field, where they were the first style of coal cleaner to be widely introduced (1890-1910). Though they have been replaced in many coking coal plants by more elaborate systems of treatment, they are still extensively used for preparation of commercial coal where hair-splitting nicety is unnecessary.

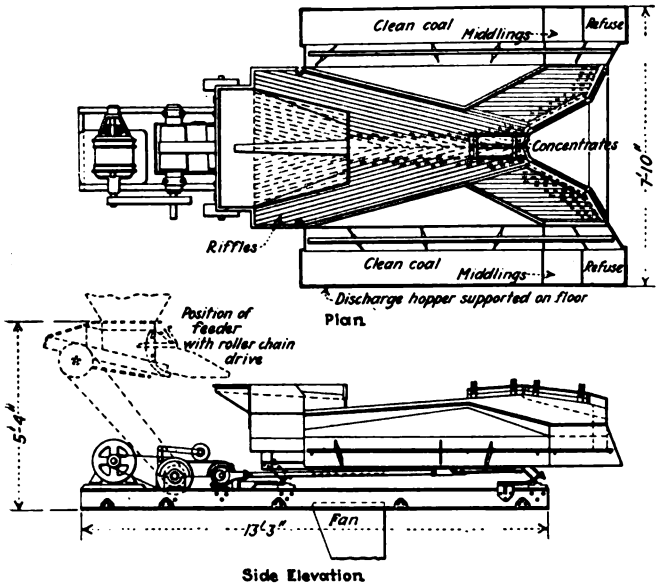


Fig. 5—Pneumatic Coal Separator of Y-Type

Increases the range of sizes treated by 100 per cent. In old types the coal is separated from its impurities on a single, pervious, riffled deck, the impurities being collected at one side. In the new types the refuse is collected in the central portion of the deck and the coal discharged on both sides.

Other washers that appear attractive for this particular kind of service are the Rhéolaveur and the sand-flotation process. The former is a Belgian invention which has been widely adopted in France, Belgium and England. It is an adaptation of the old trough washer and has its inherent advantages of large capacity, extreme simplicity, and absence of moving parts. The new feature, peculiar to the Rhéolaveur, is the use of small rising current classifiers as refuse traps. The classifiers form a continuous automatic means of refuse removal, assort and rewash the refuse material, and furnish additional wash water to the main horizontal classifying stream in the trough. The sand-flotation process separates coal and dirt of any size or range of sizes by float-and-sink action in an agitated water-and-sand pulp. By virtue of its large capacity and wide range of sizes treated, a sand-flotation plant, as it is now commonly used in anthracite preparation practice, is comparatively simple and inexpensive.

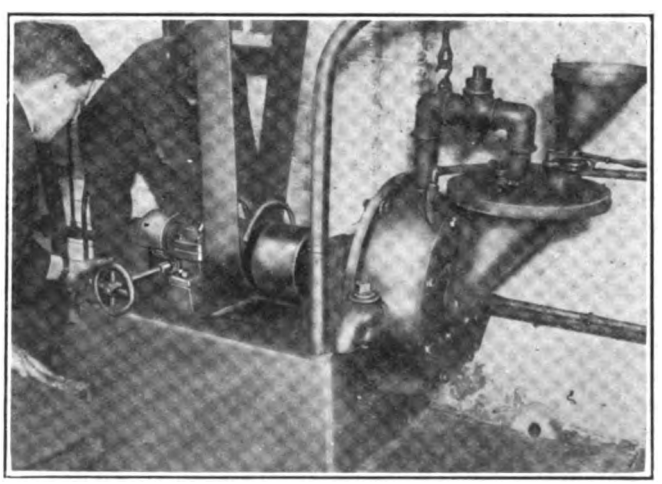
Plants of the kind herein described are best adapted to the preparation for market of coal of the type commonly found in our important coal fields. The simplest device for application of the hydraulic or pneumatic stratification principle will make a separation sufficiently complete for most cases. Therefore, the important differences in machines are matters of mechanical simplicity, sturdiness, cost and capacity.

Flame Safety Lamps Are Safe If Handled Properly

A caution as to the misuse of flame safety lamps in coal mines and a warning against the dangers of using mixed lights in such mines are given by the U. S. Bureau of Mines, in Miners Circular 29 by L. C. Ilsley, electrical engineer. The circular, obtainable on request, points out the dangers of misuse of such lamps. However, the bureau has made hundreds of laboratory tests of flame safety lamps and has never been able to get a failure of a properly designed, double-gauze, bonneted lamp, even in the most explosive mixture of gas and with strong air currents striking the lamp in any of several directions. This shows that when rightly made and rightly used the flame safety lamp is thoroughly reliable.

By tests made at the Pittsburgh experiment station the Bureau has found that some kinds of flame safety lamps are safer than others. For example: A single-gauze lamp without a bonnet is safe only in slow-moving air currents; a small-size lamp is not as safe as one of standard size; and a lamp without a bonnet is not as safe as one with a bonnet. The Bureau believes that lamps with internal relighters and magnetic locks are the safest; in fact, it has not approved and probably will not approve a key-locked lamp. The reason for this is obvious.

A flame safety lamp is the simplest device yet developed for quickly determining the approximate percentage of gas (methane) in a mine atmosphere. The Burrell gas detector under skillful handling is more accurate for small percentages, but it requires more skill and more time for a test. In fact, a fire boss could not cover the same ground with the Burrell gas detector that he covers with a flame safety lamp.



"Oil from Coal" at Birmingham University

Experiments in the Bergius method of liquefying coal in a high-pressure bomb, are being conducted at the Mining Research Department at the university in Birmingham, England. The coal is pulverized into the finest powder and is then mixed with hydrogen and passes into a bomb which raises a pressure of 7,000 lb. per square inch. Oil is produced without residue. This photograph shows the colloid mill which pulverizes the coal before it is passed into the bomb. Two assistants of the Department are adjusting the grinders inside the drum.

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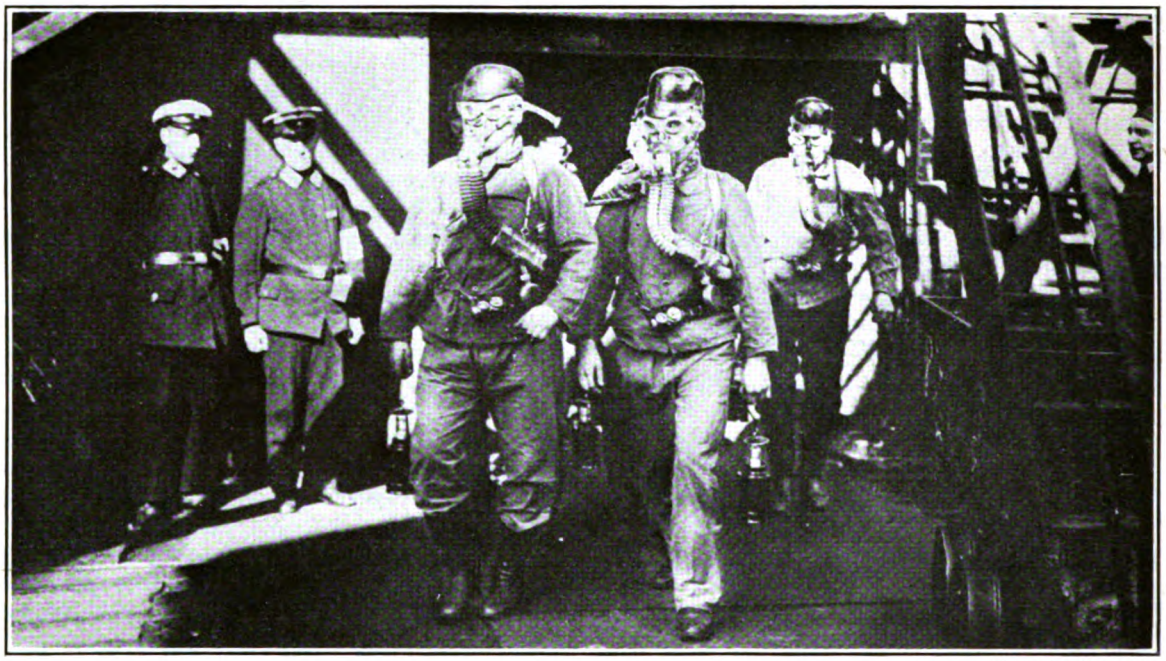

Explosion in Minister Stein Mine, Germany, Caused By Shot in "Non-Gaseous" Part of Mine

After Fall of Rock Which Cut Off Ventilation an Explosion Occurred That Killed All the Men in the Live Workings—Immediate Cause Believed to Have Been a Small Rock Shot

By Raoul Touwaide
General Secretary
Ressaix Coal Co., Ressaix, Belgium

ACCORDING to a governmental inquiry set on foot by the Chancellor of the German Republic, the terrible accident at the No. 3 shaft of the Minister Stein mine, in the Ruhr district of Germany, Feb. 11, 1925, occurred in a gallery where no traces of gas had ever been found and where there were no old workings around that could, in any way, have released firedamp. A pocket of gas, a single cartridge shot in the rib of the road near the roof and a fall which shut off the air current are declared to have been the causes of the disaster. The explosion occurred at 8 p.m. Of the 145 men in the mine at the time, only nine escaped.


Raoul Touwaide

The Minister Stein mine is owned by the Gelsenkirchen Bergwerkes Aktien Gesellschaft, which controls much of the output of the Ruhr district. There are four shafts, and the No. 3 shaft, at which the disaster occurred, lies about a mile and a half to the south of the area that was operated from the main shaft, No. 1. As a rule the seams worked are regular, though pitching, and no faults disturb the workings. Four seams were being extracted which starting from the uppermost were Ida, Otto, Rudolf and President. Two others were being prepared for operation.

The shaft is circular with a section of 260 sq.ft. and is lined with cast iron. It has three levels, one the main return-air level, 852 ft. below the surface, and two intake levels at 1,050 and 1,280 ft. respectively. All these levels were connected by blind or inside shafts. The illustration shows these coal beds with their thickness. The beds pitch at any angle from 20 to 25 deg. There is only one shaft, and this is divided into two compartments to a depth of 852 ft., that is down to the return airway. One of these, which was connected with a fan, served as an air shaft. About 66,500 cu.ft. of air per minute were circulated through the mine. This is about 458 cu.ft. per person.

The fresh air coming in through the 1,050-ft. level went up the first blind shaft and ventilated all the sections between the upper and second level. Another split of fresh air went through the 1,280-ft. level and passed

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over the developments in the Rudolf and Wilhelm beds, the remainder of it reinforcing the draft in the Otto and Rudolf seams in the upper sections of the mine.

The mine was gaseous, but owing to the excellent ventilation no traces of gas could be found in the ordinary daily inspection. It was known to be dusty, and water sprinkling and spraying were practiced. A few rock-dust barriers were provided. The management had decided to build more barriers and intended to rock-dust all entries, roads and airways. This program had been partly executed, and a milling plant had been erected and had started operation a few days before the disaster. The mine was operated with closed lights.

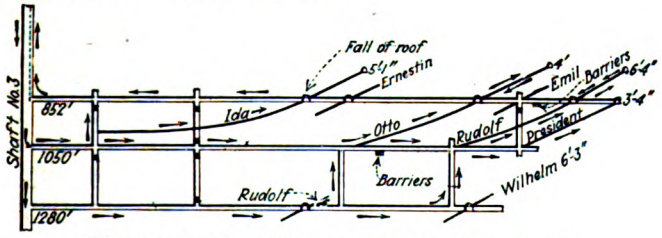
The explosion originated in the Otto seam, starting in the West road, above the 852-ft. level. It went through all the workings of this seam and of the Ida. The other workings of the Rudolf and President seams were spared, the explosion being stopped on both the first and second level by rock-dust barriers of the Taffanel type but slightly modified. However, all the men in those sections were killed by afterdamp, the ventilation being reversed by a roof fall which cut the communication between the shaft and the airway.

MEN AT FOOT OF SHAFT ESCAPE

On the noon shift of the day of the disaster, 145 men entered the mine, five of them to work near the shaft. A few minutes before 8 p.m., the top cager telephoned to the assistant manager that he had received a call from the 1,280-ft. level, where a few men had arrived at the shaft, declaring that they had heard a dull sound coming from the workings and that the ventilation had been disturbed. They wanted to be hoisted. Permission was immediately granted, and rescue teams were summoned.

The first rescue car arrived at 8.30 p.m., and five minutes later another twenty men were on the ground with complete apparatus. In less than four hours, 150 rescue men fully equipped, some of whom had come a distance of 20 miles, arrived at the shaft. On exploration it was found that the President and Rudolf beds had not been ravaged by the explosion but that all the men in these seams had died of carbon-monoxide poisoning. Other teams went through several rock headings and found eight men still breathing. They were brought to the shaft immediately and treated with pure oxygen but only four of them could be revived.

In all 129 men were killed outright by the explosion, seven were asphyxiated by gases, and nine men, four of whom worked near the shaft, came out alive. It should be added that above the 852-ft. level the gases were stagnant at the time of the rescue work, making exploration difficult. All over the mine many and heavy falls of roof hindered the work of the rescuers, making it, moreover very hazardous.



Where the Use of Rock Dust Justified Itself

Unfortunately, though the barriers kept the explosion from killing by violence the men who were in the Rudolf and President workings, the carbon monoxide that the explosion generated effectually did what the force of the explosion could not do. Many men would have been saved if they had taken with them small self-rescuing apparatus for use in such an emergency.

The fall that caused the disaster occurred where the roads of the Ida workings crossed the 852-ft. level. It cut the mine off from the shaft on the main airway. Examination proved that the explosion started in the West road of the Otto and that it was caused by the firing of a shot. This shot consisted of only one cartridge which had been bored in the rib of the roadway near the roof.

The inquiry proved that no traces of gas had ever been found in the gallery, and there were no old workings around that could in any way have released gas. After several tests in the Derne gallery the following report was issued: "In the roads of the Otto seam there were pockets of gas in cavities of the roof. Under ordinary conditions it was impossible to detect these. When the shot was fired, the gas was drained out of them by the resulting depression."



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Crowd Waiting at the Mine Gates

Investigation seemed to give the company officials a "clean bill of health." Only the rock-dusting appears to have been inadequate, and the law did not require that the mine be thus protected. What little rock dust had been provided did good work, and Government officials expect to require rockdusting.

It was proved by a series of tests that, though a common charge of explosive by the force of the explosion destroys itself in the shothole and also all parts of the detonator, the paper envelope of the cartridge, etc., the firing of a single cartridge does not develop sufficient heat to destroy instantly all the combustible parts of the detonator. These are expelled still burning from the shothole and can easily set fire to gas. All the experts came to this conclusion.

Later on it was proved by means of an interferometer —an instrument that detects gas by the deflection of rays of light in the presence of gas—that gas pockets could be detected 30 ft. away from the point where the gas had been fired. The formation of these pockets of gas was demonstrated by successively stopping and restarting the ventilation, a condition that the opening of doors might cause many times daily during the coal-getting shift.

The explosion was believed to be due not to the presence of gas in a dangerous percentage where the shot was fired and ignited by the shot itself, but to the suction of gas in the road as a consequence of the depres-

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sion caused by the shot and the ignition of the gas by the burning particles of the detonator seal.

The place where the explosion started was believed to have been conclusively fixed by the following observations: (1) On the body of the fireboss in charge of this road was found a book reporting the firing of a single cartridge at the time of the explosion. (2) Near the exploded shot were found the bodies of the men by which it had been fired. (3) The mechanical effects of destruction were at a minimum at this point. It has always been noticed in explosions that the damage is least where the explosion starts. Further away combustion is in evidence and, as the distance increases, the effects become worse and worse.

IDA SEAM IS VERY WET

In this explosion, it is believed the explosion went through the workings of the Otto and Ida seams, then through the Otto seam between the first and second level and from this level down to the 1,280-ft. level. The Ida seam was naturally very wet. Water constantly streamed along the faces. This, however, had no effect whatever on the explosion. A series of tests recently made in the Derne gallery have proved that, in a road completely wet, 2.14 oz. of dust per cubic yard were enough to render the air susceptible to an explosion.

In the direction of the other seams, the Rudolf, Ernestin and President, the explosion was extinguished both on the first and second levels. Here the rock-dust barriers had operated and quenched the flames. On the other side of the barriers, evidences of high temperature such as coke on props could be found but no flames passed the extinguishing cloud of rock dust that was caused by their destruction. Thus, though water had no effect whatsoever, the bar proved successful.

Barriers of the kind used, however, work only if the speed of the explosive waves is sufficiently high. An empty barrier placed a small distance from the starting point of the explosion was not destroyed, although the planks of which it was constructed were burned. This proves that rock-dust barriers alone will not afford complete immunity and that entries, aircourses, manways and rock entries should be rock-dusted.

The Dortmund Obergamt declares that the disaster will oblige the Control Commission to require rock dusting, in order that the first effects of an underground explosion may be counteracted by the neutralization of the coal dust. He adds that this rule is to be made obligatory on all the mines of the Ruhr district. He adds that "it is, moreover, necessary to forbid blasting in all gaseous sections of a mine and to make a careful study of the precautions to be taken to protect, from the action of toxic gases, men who are not directly injured by the explosion."

From this disaster many useful conclusions can be drawn. (1) Barriers are insufficient to protect a mine against a coal-dust explosion. All entries, haulageways, aircourses, in a word the entire mine, should be rock-dusted. (2) Water sprinkling and spraying systems should be abandoned, for explosions may extend long distances over roads completely wetted. (3) Rescue teams should always try to restore the normal ventilation before making any change in the direction of the air current. Had this been done many men in the Rudolf and President seams would have been brought out alive. (4) All-service gas masks if carried by the men would have given them an opportunity to escape, for the men in the Rudolf and President seams might well have reached respirable air had they been thus equipped. (5) The firing of a single cartridge is a real danger, for as proved by the Derne gallery tests the burning particles of the detonator may be thrown out of the hole thus setting fire to an explosible mixture of air and gas. (6) All cavities in which gas can accumulate should be filled, because, in case of a depression from blasting, these gases may escape into the roadway. (7) Rescue teams using pure oxygen to resuscitate victims are at a disadvantage. It was unfortunate that the rescuers in the Minister Stein explosion did not have carbogen, that is oxygen mixed with carbon dioxide, available to administer to those who were asphyxiated.

Two Horses Escape Death in Runaway

An accompanying illustration shows the top works of the Independent Coal & Coke Co.'s mine at Kenilworth, near Helper, Utah. Until 1925, when a long rock tunnel was completed, it was necessary to pull coal up from the mine to the outcrop shown high on the face of the hill in the picture and then to lower each trip nearly half a mile down a 40 per cent grade shown in the upper left of the photograph to the tipple at the



Runaway Trips Did Circus Stunts Here

right. The strain on cables sometimes proved too much and it was customary for runaways to roar down, crash through the end of the high tipple, describe a long arc through the air over the railroad and alight in a heap.

Old timers at the mines like to tell stories about what happened during some of these acrobatics by runaways. On one occasion a man drove a team of horses and wagon up near the company store and stopped the team, by chance, exactly in the spot which was bound to receive a 10-car trip of flying loads. The man went in the store. No sooner had he entered than the well-known roar sounded down the mountainside.

"Yay! There she comes," shouted somebody in the store, whereupon every one present rushed out on the porch to enjoy the show. They were horror stricken when they saw the team standing unconcernedly in the danger spot switching their tails at bothersome flies. But it was too late to do anything. The trip burst out the end of the tipple, sailed through the air and piled up with a great clatter submerging the team and wagon. When the men pulled the stack of coal and cars apart to find the mangled remains of a good pair of horses, both animals got up from their short incarceration within a prison of cars that had been built protectingly about them with a terrifying suddenness, and walked off, still switching their tails at the same flies. The tellers of this tale insist that the flies were identical.

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Viewpoints of Our Readers

How Long Shall We Endure "April Fool Prices?"

It is quite unfortunate that the operators can't get together sooner and announce what anthracite prices will be, at least a week or ten days before April 1. As it is now, some of the companies send out circulars announcing their Spring prices "until further notice" while others *tell* their dealers what the prices will *probably* be and there seems to be nothing definite or permanent about the information which comes to the dealer.

For this reason he cannot prepare his advertisements for the newspapers or circulars for mailing out to his trade until the last minute, with the result that he always gets a rush job and usually a poor one. Last year we had to have an entire new circular printed up because of conditions which changed almost over night, costing us between five and six hundred dollars.

Dealers in a nearby section already had their Spring prices out in the mail when it was discovered that these had been based upon a false rumor and were too low. A frantic effort had to be made to get out a second circular contradicting the first and by the time the whole affair was closed the retail coal merchant looked nothing short of stupid and foolish to the trade he was trying to serve.

CANNOT QUOTE PRICE

Similarly last year, on April 1, we were unable to tell our customers what the prices would be, and had to accept orders with blind prices. The telephone rang all day long from nearby and fairly distant dealers, all 'phoning each other excitedly asking everyone else whether they knew what the Spring prices were going to be. There seemed to be absolutely no definite information in the retail trade. It was as if the companies did not feel that their own distributors were worthy of confidence and of receiving any advance information upon this subject so vital to the whole trade. In several localities "April Fool Prices" were published by dealers who had later to retract them.

One of the most serious phases of this recent policy of late price announcements has been that the retailer has been utterly unable to formulate his advertising and selling campaigns beforehand. These are not something which can be developed and printed over night. They require a lot of careful thought and study, with the result that last year for instance, the month of April was well under way before the retail dealer was able to launch his advertising matter effectively. This simply means that the retail consumer market responded that much later to these sales impulses and put the whole industry back in the important problem of moving coal during the Spring and Summer.

The operators ought certainly to take a definite stand upon prices *earlier*, so that the retailer can tell his consumer trade the facts and the new prices sooner as well as shoot his advertising promptly on April 1, when it is expected and most effective. This policy of procrastination in the announcement of prices, is costing us all time and money in the selling and moving of anthracite.

HIRAM BLAUVELT,
Vice-President.
Comfort Coal-Lumber Company,
Hackensack, N. J.

Failed to Establish Sinking Fund for New Batteries

In reference to what you say to the replacement of battery locomotives by reel-and-cable equipment in the editorial entitled "The Battery Locomotive" appearing in the issue of Feb. 11, would say that I believe investigation will show that in the few, not many, cases where battery locomotives have been changed to reel and cable this was due not to unsatisfactory or expensive operation but to failure to provide a sinking fund with which to pay for the renewal of the battery. The money that should have been put aside for battery renewals was diverted to lowering operating costs or taken as profit.

Had the coal business not been through such a long term of depression with its attendant financial distress, I do not think any wise coal operator would consider changing a battery locomotive to reel and cable unless he was unfortunately the victim of a misapplication such as too small a battery or locomotive.

WHEN INDUSTRY IMPROVES

I feel today that, if and when the present deplorable condition of the coal-mining industry is relieved and there is money enough available to operate coal mines in the best and most economical way, the storage-battery locomotive will stand out more than ever as one of the most desirable pieces of equipment that can be installed.

For this reason I feel that the editorial is misleading and unwise and will tend to hold back improvements in coal gathering and haulage. The opinion stated coming from such a source as *Coal Age* must and does carry lots of weight.

LOCOMOTIVE BUILDER.

Gas Mask Does Not Provide Oxygen for Breathing

In the Feb. 18 issue of *Coal Age*, p. 263, Dr. R. R. Sayers is quoted as saying in effect, "If necessary the gas mask may be used in poisonous atmospheres or in those deficient in oxygen."

I am under the impression that gas masks are for use only in normal air contaminated with small percentages of poisonous gases and that oxygen-breathing apparatus should be used in case of oxygen deficiencies and large percentages of poisonous gas. When wearing a gas mask one should carry a lighted flame safety lamp which is in perfect condition and if the safety lamp is extinguished it is a warning that the mask may not give the desired protection.

RESCUE FOREMAN.

Battery Power and Safety

Had the editor who wrote the remarks on "The Battery Locomotive" in the issue of *Coal Age* of Feb. 11 paused to think of the unprecedented number of mine accidents that have occurred since Jan. 1 of this year, either from gas or coal dust in suspension, and the danger to life and property ever present through exposed wires and the ones from the trolley, I do not see how he could do otherwise than advocate greater safety. Yet he commends equipment that he must know would add to the danger.

BATTERY LOCOMOTIVE MANUFACTURER.

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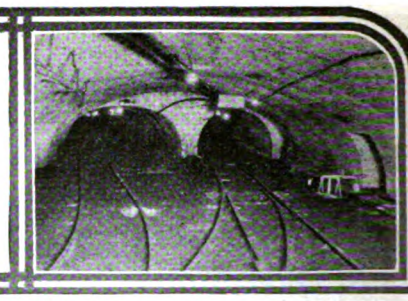
Underground Operation



Trying Out a Seam of Doubtful Value By Slopes to the Working Seam

Fearing That Roof in Upper Bed Would Be Bad, Plans Were Made to Chute Coal Temporarily From Upper to Lower Seam — Now Drift Mine Will Be Started

By J. H. Edwards
Huntington, W. Va.

Coal in an upper seam is rarely chuted to a lower measure as a means of bringing it to the tipple, at least in West Virginia, but this is being done at a mine in the southern part of the state. Here the upper seam is 48 in. thick and lies 65 ft. above the main producing bed. At this operation, coal has been mined from the lower bed for years, but it was not until recently that the upper seam was opened. Now about 200 tons per day is being produced from this upper seam, dumped in a rock chute and reloaded into cars for transmission to the tipple.

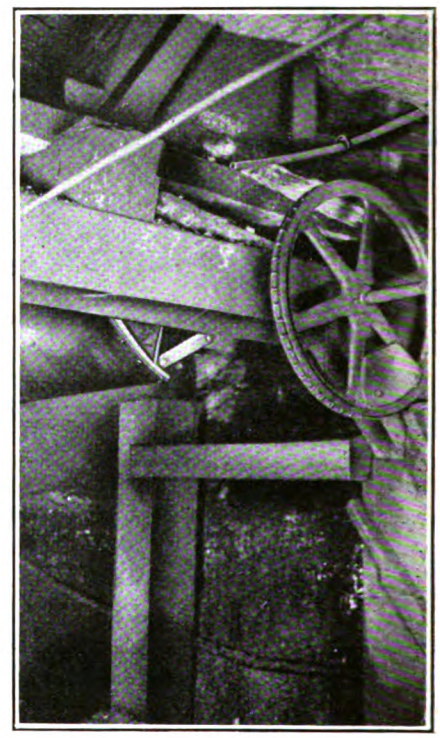
This upper bed is known to have, generally, a rather bad roof, so it was not advisable to spend much money in the initial development. The opening was accomplished by driving two rock slopes, a few hundred feet apart, up from the lower seam.

One slope, which is equipped with track, is used for handling material and as an intake airway. This mounts to an angle of 30 deg. and is of 5x10-ft. section. The other slope, which is driven at 45 deg., is 5x8 ft. and is used as a coal chute and return airway. The chute proper is a 3x3-ft. wooden box.

UNDERCUT GATE CONTROLS COAL

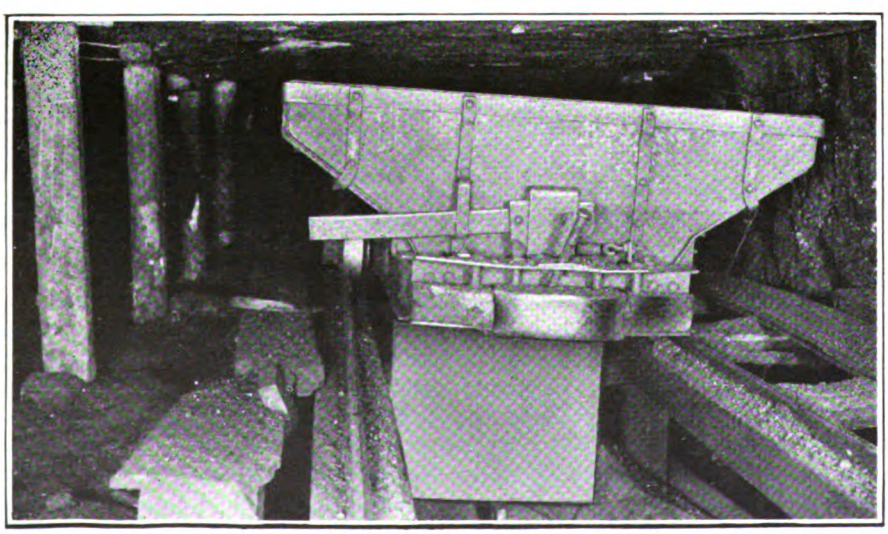
The opening at the bottom is controlled by an undercut gate mounted above the track in a haulage entry of the lower seam. A trip of empties is loaded, in short order, without uncoupling. The motorman remains on the locomotive in order to spot the cars under the chute and the brakeman manipulates the gate.

The car dump at the top of the chute is nothing but a pit or hopper between the rails. In this upper seam automatic drop-bottom mine cars are used.



Undercut Gate at Foot of Slope

Above the gate frame can be seen the bottom of the wooden chute which takes up a part of the area of the slope. The remaining area is used as a return airway. After an opening is driven to the outside the slope will no longer be necessary as an airway, so will be utilized entirely as a chute and storage bin.



Drop-Bottom Car Discharging at Top of Chute

The coal averages 48 in. in thickness, and the top was found to be much better than is usual for that seam. The use of automatic drop-bottom mine cars made it possible to utilize simple dumping equipment. The hole between the rails is the only indication that this is the dumping point for the mine.

As yet there is no direct opening to the surface. Power for operating the cutting machines and for charging the storage-battery locomotives is brought up the material slope from a connection on the trolley wire of the lower mine. The slope is not equipped with a hoist. Instead, a locomotive is used to pull the material car.

At present the output of the upper seam is handled, seemingly, with an absolute minimum of investment. But the coal has been found to be of good quality and has good top, so the management is proceeding with the idea of a more permanent installation.

An airway will be driven to the surface, after which the entire area of the slope, now containing the

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Brakeman Loading a Trip of Empties

From this point at the foot of the chute the coal is hauled to the surface in the same manner as is the output from the lower, or principal, producing seam. The chute acts also as a storage bin so that a whole trip of empties can be loaded in a few minutes by the motor crew.

wooden chute, can be used for coal. It is likely that an electric hoist will be installed at the other slope for handling machinery and supplies.

For Rougher Levels Why Use Slow Precision Level?

In the British coal field, especially in the northern (Scottish) area, where the dip of the strata is irregular and steep, the ascertainment underground of the variations in level from the government or "ordnance" datum presents many difficulties. On level roadways and moderately inclined planes, the dumpy level and rigid staff is generally used.

Where the inclination exceeds 10 deg., the roads are quite generally leveled by the use of the straightedge and spirit level. On inclinations above 40 deg. the altitudes are taken trigonometrically with the theodolite (or non-reversing transit).

It is surprising that where the variations such as on a "level" haulageway are only a few feet in a hundred, a dumpy level is used, and yet where the variations are greater, one finds a primitive and rough straightedge instrument employed. Work with the straightedge where the instrument is not properly designed is bristling with inaccuracies. Realizing such possibilities in this class of work, I designed a straightedge and staff some time ago and put it to use, and the results have been good. The measuring rod or staff is similar in size to the inner portion of a surface leveling rod of the old box type and is made in lengths of 3 ft., 4 ft. and 5 ft. respectively. The base of the rod is pointed and shod with a piece of case-hardened steel. Using a pointed end instead of one that is rectangular makes for correctness as there is no chance that the level to be taken will be that of first the front and then back of the rod.

If used in wet or dirty roadways, the ordinary calibrated staff in time becomes obliterated. For this reason among others, the zero reading on the staff is at a distance from the bottom corresponding to the top of the straightedge, which is generally about 6 in. deep.

The straightedge is made from well-seasoned wood in such suitable lengths as 6 ft. and 10 ft. The top and bottom are machined truly parallel and of an exactly determined length. To facilitate maintaining it of that length, the straightedge is cut short and end pieces with the grain of the wood at right angles to the length are fastened to the ends, these being smoothed till the correct length is attained. To insure that the measuring rod is at all times at right angles to the end of the straightedge, a small triangular piece of wood is placed at one end of the latter which increases the contact surface to about 9 in. On this end as shown in the sketch, a pointer is placed which is designed to swing from its projecting position when not in use. Screws capable of being adjusted to correspond with zero on the measuring rod are also provided. The opposite end of the straightedge where in contact with the rail, has also a case-hardened piece of steel inserted. The leveling tube used is of ordinary adjustable design and is fitted with a graduated tube. This may be placed either on top or mounted on an adjustable carrier on the side convenient to the person reading the staff. In use the points to be observed are: (1) That the point *B* is definitely marked and that the straightedge is placed properly thereon. (2) That the level is laid if on top, parallel to the straightedge, and not in any way at an angle thereto. (3) That the staff is plumb in both directions.

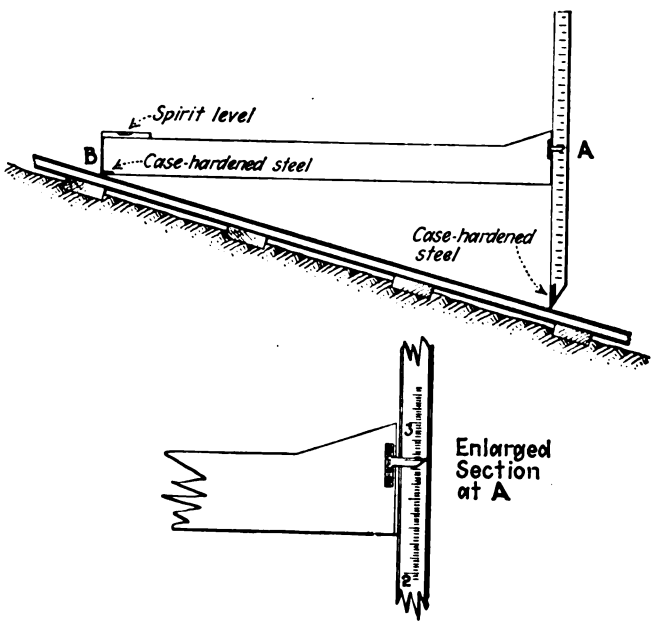
In the hands of capable assistants, quick work can be done with this straightedge and on inclined planes the results will compare favorably with any other method of taking levels.

P. W. BROWN.

View Park,
Cowdenbeath, Scotland.

Straightedge Outpaces Dumpy Level

With a straightedge like this, rapid work can be done. The steel point gives definiteness to the point being leveled. The rail at the back of a rod may be some tenths of an inch lower than in front, and the assistant may not always sense the importance of watching this discrepancy, thus vitiating the results.



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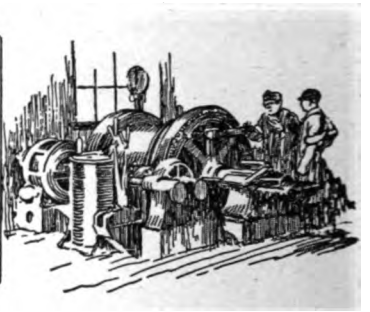
Practical Pointers For Electrical And Mechanical Men



Slate Dump Handles Cars of Several Types

At Ehrenfeld, Pa., the Pennsylvania Coal & Coke Corporation was confronted with the problem of providing a slate dump which would accommodate several types and sizes of cars from two mines. The slate cars are pulled up an incline to a point where they are dumped into a bin which is emptied by a motor-driven self-dumping larry.

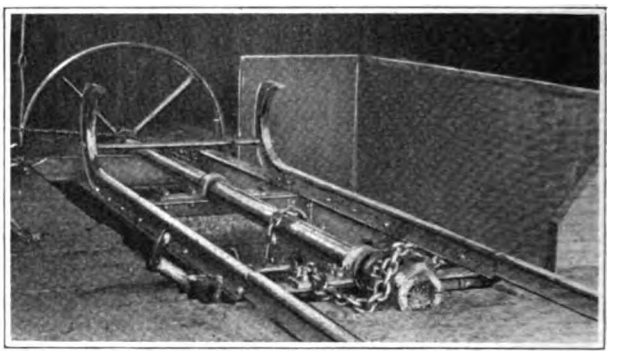
The accompanying illustrations show the rather novel slate dump. This was built in the company shop at Gallitzin. The cars handled with it are of two wheel bases, 24-in. and 30-in. and are of various lengths and body shapes. The dump is of the side-tipping, gravity type, counterbalanced by suitable weights.

One end of the car is held by stationary horns engaging the forward wheels and the other by a chain which is looped over the bumper. The chain is tightened by rotating a shaft fitted with a ratchet handle. This shaft is located so that the chain pulls the cars forward against the horns and at the same time holds the back end down to the track.

At the forward end of the dump is a brake wheel for controlling the tipping, and for stopping or holding the dump in any desired position. The unbalance for the self-dumping action is obtained by having the main shaft set ¾ in. off center.

In Normal Position

Cars of two different wheel bases and of various lengths and body shapes are handled by this slate dump which was made in the central repair shop of the company.



At first thought it might appear that the time required for placing the chain over the bumper, tightening, unloosening, and removing, would prove a serious objection to the dump. This, however, is not so. The tightening device is geared so that it requires but a few seconds to apply and tighten the chain. After the dump tips a few degrees it begins to raise a counter-balance which brings it back to the upright position.

Superintendent S. W. Blakeslee states that the dump is entirely satisfactory for the service and that its action is not influenced by the design or size of the slate car handled.

Flue Trouble Reduced by Continuous Blowing

Only the power-plant engineer who has had to "fight" boilers using hard, untreated water can appreciate what it means to be entirely rid, or practically relieved, of trouble from that source. The installation of a high-grade water-treating plant is, of course, the commonly advocated solution, but the money for such equipment is not always forthcoming. The use of boiler compounds, which require little or no initial investment, can be a great help in reducing the trouble from boiler scale.

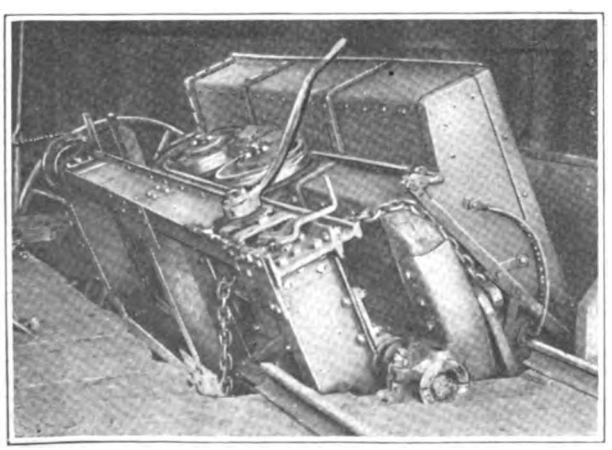
Other methods of reducing the deposition of scale are by skimming and blowing down. In many instances, however, these are used solely for the prevention of foaming. At a certain power plant in Ohio, skimmers were installed with this intention, but they also greatly reduced the deposition of scale.

Experience at the Mulga (Ala.) mine of the Woodward Iron Co. proved that continuous blowing down of a boiler also can limit materially the quantity of scale deposited. The illustration shows one of the four continuous blowoffs in use on a battery of 400-hp. vertical water-tube boilers.

No Scale Accumulated

Ninety days after the installation an inspection revealed that little or no scale had accumulated in the boilers, and in the operation there had been no indication of foaming. No boiler compound was used. According to the master mechanic, J. L. Franklin, before the installation, even when using a compound ⅛ in. or more scale would form.

It was the practice, formerly, to blow down the boilers six times in



How Car Is Held

When the chain which is looped over the bumper is tightened, the car is forced against the horns and held to the track. The lever, with the handle showing above the car, operates the chain-tightening rachet.

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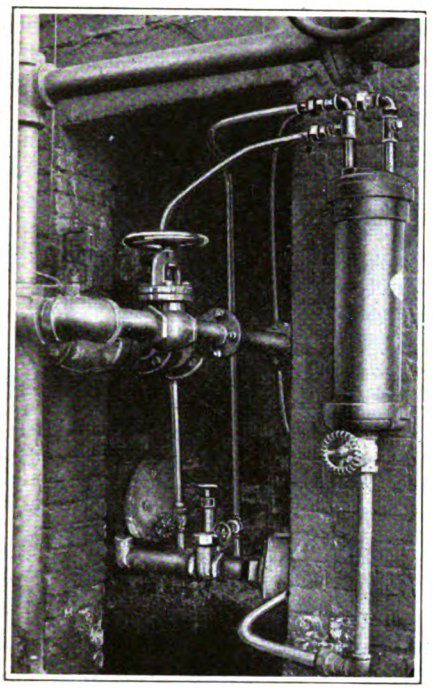


Installation on 400-hp. Boiler

The body of the continuous blowoff is at the right. The installation is made by connecting four small lines to the regular blowoff line. The quantity of water drained continuously from the boiler is determined by the size of the special orifice used.

24 hrs., but even then scale caused the failure of from 10 to 20 flues per month in the four boilers. At the time that the photograph was made, the continuous blowoffs had been in use ten months with a record of no flue failures.

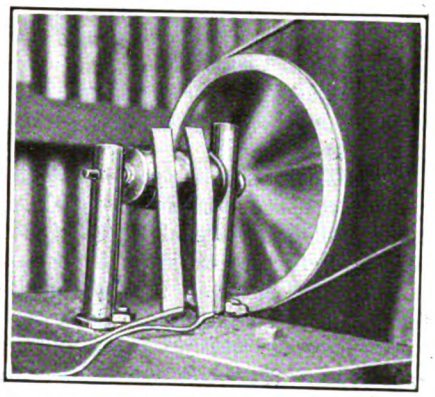
E. D. Clark, general superintendent, explained that the results in the Mulga boiler plant have been so gratifying that the company has decided to equip all of their railroad locomotives in the same way.

Improvised Flasher Gives Years of Service

Ten years ago an explosion occurred at No. 1 mine of the Roden Coal Co. at Marvel, Ala. It is said that the fan may have stopped and thus been one of the contributing causes of the explosion. This fan, which is motor-driven, is located about 1,000 ft. from the hoist house where the starting compensator is installed. In order that there would never again be a chance for the fan to stop without showing a visible indication at the hoist house, a flashing mechanism was installed.

This flasher, which is still in use, is shown in the accompanying photograph. It consists of a part of an old controller drum with a sewing machine pully mounted on the shaft. The drive is by a round leather belt from the fan shaft. Bearings for the contact drum are holes drilled through the short pieces of pipe which form the pedestals. The drum turns at 100 r.p.m. and flashes the signal light once in each revolution.

Until a year or two ago the connections of the flasher were such as to open the circuit through the lamps. A periodic clicking in the village radio receivers was traced to this flasher, so that connections were changed in a way which eliminated the annoyance. An extra lamp was added in the circuit, in series with the main signal lamp, and the flasher connections changed so as to short circuit the extra lamp. The periodic changes in resistance of the circuit causes the desired flicker of the signal lamp.



Flasher Is Driven from Fan Shaft

This device has been operating for ten years. The contact drum is one removed from an old controller. The pulley came from a scrapped sewing machine. Interference to radio receivers caused connections to be changed so as to avoid breaking the signal circuit.

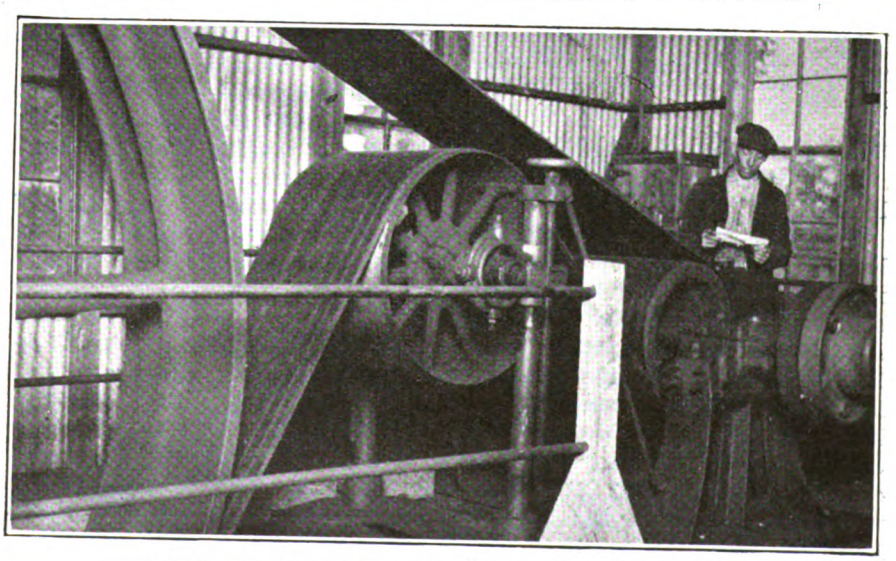
Many fans are placed where the noise of their motion is not readily audible to the men in the power house. Consequently they would not take notice if the fans should stop. A flashing light, on the other hand, is a warning that can hardly be overlooked.

An Idler Pulley Should Be of Large Diameter

In a number of instances short-center belt drives have proved successful on mine fans, generators, air compressors and so on. In some cases, however, such drives have been found unsatisfactory. Short belt life and trouble with idler bearings were mentioned as objections in several instances.

Usually such troubles can be traced to the fact that an idler pulley of insufficient diameter was selected. This causes a severe reverse bend in the belt and makes the idler pulley operate at a high speed. Vibration, and lubrication troubles attendant with high speed, cause the bearing trouble.

An example of a well selected idler pulley is shown in the accompanying illustration. This is on the drive of a 150-kva. alternator which until a few years ago was used regularly, but now serves as a reserve to purchased power at the plant of the Roden Coal Co., Marvel, Ala. Although the alternator pulley is but of 22-in. diameter, the idler pulley is 30-in. This is a contrast to many cases where idler pulleys are used which are considerably smaller than the small pulley of the drive.



With Big Idler, Less Vibration and Belt Curvature

The drive of an alternator at the Marvel mine of the Roden Coal Co. A 30-in. diameter idler is interposed between the steam engine and a 150-kva. alternator equipped with a 22-in. pulley. Often the success of an idler drive depends on the diameter of the idler. The larger the better, so long as the small pulley has sufficient belt contact.

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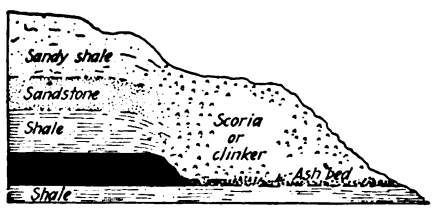
Book Reviews

Outcrop Fires and Glaciation Make North Dakota Mining Troublous

Some of the matters which are taken for granted in Eastern coal fields are not all to be regarded as certainties in dealing with the North Dakota coal fields. This is due to the character of the Tertiary beds in which the lignites of that state are found. In common with the coals of most Western regions, aridity has made the beds subject to spontaneous or other combustion along the outcrops. Few of the thicker beds have wholly escaped burning.

Some were doubtless set on fire by man, others may have caught fire from prairie conflagrations, but it would seem that spontaneous combustion has been the chief cause. The burning of the coal beds has doubtless been going on for thousands or tens of thousands of years, ever since the erosion of the overlying strata brought them near the surface or exposed them in bluffs or buttes.



Lignite Burned at Crop

The scoria may be 60 ft. thick where the coal is 35 or 40 ft. in thickness. One can be almost sure that the base of the cinder pile is at the bottom of the bed, but how far in the hill the operator must go before the lignite will be found unburned is uncertain. Whole townships of the thickest lignite, centuries ago perhaps, passed away in smoke.

As an example the Bowman coal bed of Bowman and Slope counties may be cited, this thick 35-ft. coal bed having been burned over many townships so that its former extent is known largely by the clinker it has formed. Lignite beds, however, less than 4 ft. thick do not burn, except under unusually favorable conditions. A 10- or 12-ft. coal bed will often give clinker beds 20 to 30 ft. thick.

If the overburden is very porous, slow combustion may have proceeded beneath 20 or 30 ft. of cover, resulting in pits or depressions on the surface. Clinker from a lignite bed 10 ft. thick may attain a thickness of 30 ft. and from a 35- or 40-ft. bed may be 50 or 60 ft. thick with much fused or slag-like material. Masses of such clinker of 10 to 20 tons weight are not uncommon.

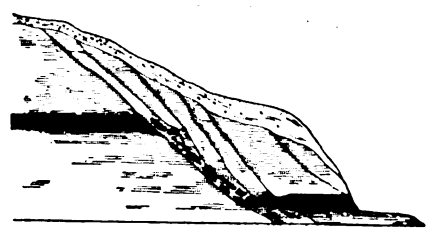
Big Landslides Annoy

This is not all, where the beds have been deeply eroded the face of the bed has occasionally slumped down. This may lower, almost unaffected, a large area of the bed and there is a risk that the man who opens a mine in the slumped fringe of the coal area may work in it for a while and then find the bed has disappeared.

Investigation will prove that the rest of the bed which has not been disturbed lies several feet higher requiring for its exploitation a new opening and needing somewhat different surface works from those that were planned and provided in the expectation that the whole deposit was lying at the level at which the slumped fringe was found. So caution is necessary when opening an outcropping bed.

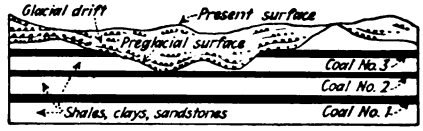
There is also trouble from glaciation. Of the 28,000 square miles of workable lignite beds—there are 32,000 square miles in all—about 15,000 are covered more or less by glacial materials deposited during the epoch of continental glaciation, the debris ranging from fine silt to large boulders.

This glaciation, taking place in beds imperfectly consolidated, has created much erosion, the depth of which is not determinable on the surface as is the erosion of contemporary rivers and streams. The glaciated material has filled up the channels it has created, and the surface of the ground may show little of the damage that has been done. When, however, the beds are worked, the glaciated materials are encountered, the signal for caution being the softening of the coal. If this warning is not heeded the drift may be tapped, and then trouble will be encountered in handling the large quantities of water the drift contains.



Where the Outcrop Slumps

When the lignite is eroded, and also the measures under it, a large slip, slump or fault occurs and the bed is thrown down. Expensive surface equipment should not be built until drill records show the exact position of the coal.



Glacier Has Destroyed Lignite

On approaching the drift the coal gets soft and if mining is continued large quantities of water stored in glacial drift will pour in.

But the operator is not without advantages. Royalties are low. The Federal Government and the Northern Pacific R.R. will lease lignite for 5c. per ton or some slightly higher figure. (Under the present law there is no way in which state or school lands may be leased). The beds also are quite level and subject apparently only to the difficulties mentioned.

Stripping Cover Not Heavy

Furthermore in removing cover for strip mining there is little difficulty in digging the overburden as it is not so hard in these Tertiary as in the Carboniferous rocks. This overburden is in many places not heavy. In 1924 about one-half the lignite mined was excavated by stripping and the average cover did not exceed 3.5 times the seam thickness, ranging as it did from two to five times the cover, whereas in the United States in general the cover is 6.04 times the seam thickness, in Illinois it is 3.86 times and in Oklahoma 10 times the thickness of the coal. There are several hundred millions of tons of lignite in North Dakota such that the ratio of overburden to coal does not exceed three.

The general complaint that lignite weathers is offset by a large size of the lumps which can be obtained by proper mining. If this lignite is stored so that air is largely excluded as in cellars, concrete or brick bins or in root cellars when neither the summer's sun nor wind can dry it out, it will slack somewhat but not

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enough to do otherwise than bring it to a size that is best suited for burning. Excessively large lumps are not desirable for furnace firing.

The percentage of moisture in the lignite in a number of samples as received at the laboratory of the School of Mines of the University of North Dakota ran from 25.34 to 43.47 per cent, with probably higher values at the mine, the volatile matter ran from 22.97 to 30.34, the fixed carbon from 24.39 to 34.11, the ash including sulphur from 2.90 to 20.68, the sulphur from 0.09 to 14.03 and the thermal capacity from 5,516 to 7,130 B.t.u.

The statements made are based on an interesting report, Bulletin No. 4 of the North Dakota Geological Survey, produced in co-operation with the School of Mines, College of Engineering, University of North Dakota, containing 228 pp. with 21 plates and 18 illustrations.

Industrial Museums Needed In the United States

No country perhaps has done more to promote industry than the United States, yet few have done less in their museums to make record of their achievements. There are few places in the United States where historic machinery can be sent for public exhibition, and even there when it arrives it will be housed with collections of an entirely different type.

The reviewer wonders if the coal industry would be considered so sleeping and unprogressive if in some national museum, where it could be seen without dirt and discomfort, were placed some of the wonderful mechanisms by which coal is mined, loaded, conveyed, transported, hoisted, sized, cleaned and prepared for market.

Critics Might Learn

Those learned critics who believe coal mining to be an ancient art without any modern development might be apprised of the actual facts or at least their children might be. The present generation is almost beyond conviction. The public might also note that nearly every modern development from rails to pumps, from steam engines to locomotives took their initial steps in the darkness of the mines or within shadow of its heapstead.

A book of 117 pages measuring 6x9½ in. has been published by the Macmillan Co. on "The Industrial Museum" the price of which is $3. The author, Charles R. Richards, director of the American Association of Museums, has toured Europe for the General Education Board of the National Society of Vocational Education to see the excellent work of the European museums of industry. He finds much to praise and much to condemn. Beginning as the United States would from the ground up and not being confronted for a while with the need of expansion, it might build better museums as to housing, arrangement and convenience, but perhaps it would be long acquiring the historic machines which the European museums exhibit. If we are going to rival their treasures we must make a beginning; or rust, moth, decay and the depreciations incident to age will destroy many valuable opportunities.

It is well said that in early ages industry was performed in the open. Today it is hidden behind closed doors. The public has only a hint of what is going on. But nevertheless, people in general are quite inquisitive. Any one can note that fact on passing an excavation, the building of a roadway or the construction of a building or a railroad. It must be admitted, however, that the public though inquiring is not any too well informed. We have done marvels without such exhibitions. What may we do if we have them! The spirit of progress will be greatly aroused when we view them.

Industry Behind Closed Doors

Mr. Richards' analysis in this volume is keen. We can scarcely avoid quotation. His treatment of the subject is adequate and the illustrations in full-page plates are excellent. We can only hope that what he is striving for will be accomplished for all the larger cities, thus preserving our past, accelerating our future and creating a knowledge of what we are, each in his own sphere, performing. All industry is related and an industrial museum will keep each part of industry in step with the best and most available in the rest. It is well worthy of note that the ventilation engineers were in wonderment when the mining engineers at the recent meeting of the American Institute of Mining & Metallurgical Engineers descanted on a certain article as the last word on the ventilating art. The science of ventilation has for many years had little attention from mining men and the mastery of the subject now lies with the heating and ventilating engineer.

Recording Watt-Meter of Human Progress

Some fifty of the learned societies for the study of science, politics and industry have combined to prepare a record of 1925, entitled "The American Year Book." About 270 men and women have contributed, over ninety of whom have had a part in more than one section. This annual was first published in 1909 but in 1919, under the unfavorable circumstances following the war, was discontinued. This year with a splendid co-operation from the learned societies it is issued once more. It contains eight parts—Historical, American Government, Governmental Functions, Economics & Business, Social Conditions & Aims, Science Principles & Application, The Humanities, Chronology & Necrology. The publisher is the Macmillan Co., 60 Fifth Ave., New York City, and the price is $7.50.

Chemistry's Industrial Side

A two-volumed book entitled "Industrial Chemistry" has appeared with Allen Rogers, supervisor of the Industrial Chemical Engineering Course and Head of the Department of Industrial Chemistry at Pratt Institute, Brooklyn, N. Y., as editor. The first volume is said to be devoted to inorganic chemistry, and it seems somewhat odd to find 22 pages on "Fuel and Power Generation" and finally fertilizers of an organic character under that head. As regards the first, it may be said that, in the use of coal, oil and wood, we use the materials as if they were inorganic and rather wish we had pure carbon and pure hydrogen to deal with. The second book is marked "Organic" and covers in 136 pages city gas, industrial gases, coal tar and its distillation products. The two volumes which contain in aggregate 1,267 pages measuring 6 x 9½ in. are published by D. Van Nostrand Co., of 8 Warren St., New York City. The book sells for $12.00 net.

Publications Received

Possibilities for the Commercial Utilization of Peat, by W. W. Odell and O. P. Hood. Bureau of Mines, Washington, D. C. Price, 35c. Bulletin 253. Pp. 160; 6x9 in.; illustrated.

Report of the Massachusetts Special Commission on the Necessaries of Life. The Commonwealth of Massachusetts, State House, Boston, Mass. House No. 1250, January, 1926. Pp. 187; 6x9 in.; tables and diagrams. Numerous references to coal are included.

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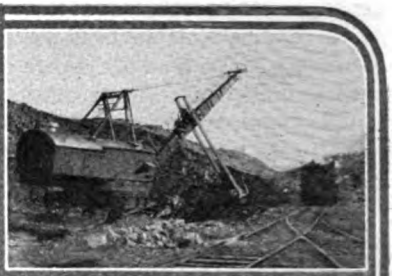
News Of the Industry



White House Favors Early Action; Jacobstein Would Encourage Mergers To Settle Coal Industry's Troubles

The campaign to induce Congress to enact some form of coal legislation at the present session is gaining ground. Although most Washington observers—including some who favor action—feel that Congress will adjourn without formally considering any specific proposals to make the coal industry the subject of federal regulation, interest in the question has been growing since the House committee on interstate and foreign commerce began hearings on March 30.

Before the hearings actually commenced it was common talk in Washington that the threat of coal legislation was as dead as the anthracite strike. Even after the hearings were announced there were some who dismissed them as a gesture made to soothe the members of Congress who had presented half a hundred bills during the time the hard-coal mines were idle. Last week, however, the flat statement was made that the committee intended to report out a bill. Still later the hands of proponents of legislation were strengthened by the announcement that the White House favored action before Congress adjourns.

Precedent received a severe jolt the first day the committee met. Reversing the usual practice of having witnesses direct their remarks to the provisions of specific bills before the committee, Chairman James S. Parker, Republican, of New York, asked the witnesses to discuss the theory justifying legislative action and the economic necessity for coal-trade regulation.

President Desires Action

President Coolidge, it may be stated, is of the opinion that it is very desirable to have Congress take action at this session. Whether the President's message to Congress last December is to be construed as a blanket indorsement of all of the recommendations of the United States Coal Commission and a suggestion that those recommendations be enacted into law is a question upon which the views of the White House are not known. Spokesmen for the President will go no further at the present time than to say that two points are to be considered essential:

(1) To enact legislation enabling the President to appoint a mediation board in the face of an actual or a threatened strike.

(2) To set up machinery for coal administration in the case of a shortage.

Only two witnesses were heard by the committee last week—Representative Allen Treadway, of Massachusetts, whose testimony was covered in the preceding issue of *Coal Age*, and Representative Meyer Jacobstein, Democrat, of Rochester, N. Y. According to the latter, the basic troubles in the anthracite industry go deeper than a recurring deadlock between capital and labor. The fundamental deadlock is economic. Ownership and location are highly concentrated; labor is a monopoly.

Scores High-Cost Mines

Thirty to thirty-five per cent of the output, said Congressman Jacobstein, is mined at high costs and low profits; 50 per cent at low costs and high profits. The bulk of the high-profit coal was controlled by the major producers, who, he said, restricted their output in order that a market might be found for the high-cost coal. In that way the industry was using the high-cost mines to keep up prices and to keep down wages.

The witness admitted that the big companies named mine prices lower than those charged by the independents, but argued that the difference was made up in transportation earnings of affiliated railroads and in profits accruing to separately established selling agencies. Congressman Walter H. Newton, Republican, Minnesota, wanted to know whether increased production by the big companies would not drive the independents out of business and create a complete monopoly. The witness conceded that that would be true, but added that such a development would bring "the monopoly" out into the open and, if the monopolistic powers were employed against the public, compel strict regulation.

Later in his testimony it was brought out that one of the remedies Mr. Jacobstein had in mind to put the whole coal industry on a proper basis was a modification of the Sherman anti-trust law which would encourage consolidations and combinations. He would combine strong companies with weak ones in somewhat the same manner proposed for railroads in the Transportation Act of 1920. To enjoy relief from the Sherman law, however, the industry would be compelled to assent to federal licensing and control.

Representative Ashton C. Shallenberger, Republican, Nebraska, inquired whether the existence of high- and low-cost operations was not common to all industry. The witness agreed, with the reservation that only in coal was production restricted to foster the high-cost operations. He declined to admit, when questioned by Mr. Newton, that labor was in anywise responsible for restricted output.

Part of the trouble with labor, he contended, was due to the belief of the worker that labor was not receiving its share of the profits. The actual investment in anthracite, he stated, approximated $450,000,000; book values approximated $620,000,000 and the valuation placed on the properties by coal company engineers exceeded $900,000,000. Labor wanted to know upon what basis profits were to be figured.

Urges Publicity of Facts

Turning to the question of remedies for conditions which he asserted the people insisted must be changed, Mr. Jacobstein proposed, first, compulsory fact-finding and publicity to prevent exorbitant prices and compel fair wages. Such publicity, he said, should include figures on actual costs of production, sales realization, profits, wage rates, transportation charges, interest on investments, capital structure and interlocking directorates. He also would require reports from wholesalers because middlemen were sometimes "a screen" behind which the producers concealed their real earnings.

Mr. Jacobstein critized the failure of the operators to make the usual spring reductions this year. He said they had assured the public they were opposing increased wage demands so that prices might be held down, but that the failure to make the spring cuts meant an average increase of 30c. per ton to the consumer. The recent hard-coal agreement, he added, could in no sense be considered a permanent

Water Works Switches From Oil to Coal

The Kansas City Water Works, which has been using oil as fuel for about six years, recently closed a contract to install pulverized coal-burning equipment and expects to save $30,000 a year by using southern Kansas coal as fuel instead of oil. About 90 tons of coal will be consumed daily.

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solution of the difficulties in the anthracite region.

In his discussion of the bituminous situation the witness began by contrasting the diffusion of interests and the wide area underlain with soft coal with the concentration of control and deposits in the anthracite field. Quoting Secretary Hoover's charge that the bituminous industry was "one of the worst functioning" in the United States, he declared that it was overdeveloped and overmanned, carrying an excess of 200,000 workers who demanded high daily wages to compensate them for broken running time.

The shift from union to non-union production, he observed, is menacing the existence of the United Mine Workers and forecasts serious disturbances when the Jacksonville agreement expires next March. Unless Congress acts now, it may reassemble next March too late to prevent a strike which would interfere with interstate commerce. The industry, he thought, was woefully backward in the use of machinery.

Representative Adam M. Wyant, Republican, Pennsylvania, wanted to know how overproduction affected prices. The witness conceded it led to bad breaks. He was not, he explained, arguing for legislation which would deny profits. Mr. Shallenberger interjected that present prices were high. Mr. Jacobstein retorted that prices should be higher than in prewar days because in those days the industry did not make a fair profit. Representative John G. Cooper, Republican, Ohio, mentioned the losses in output in the Central Competitive Field. The witness thought there was a more economic use of labor in the non-union fields, viz., lower daily rates and higher weekly earnings. Mr. Wyant insisted freight rates had something to do with the shift.

Opposes Government Ownership

Mr. Jacobstein was questioned closely on his theory that coal should be regulated because it was a quasi-public utility. Representative Schuyler Merritt, Republican, Connecticut, asserted the witness' proposal to limit the opening of new mines would take away property values in undeveloped acreage. To follow a "do nothing" policy, answered the witness, means to imitate the ostrich. Mr. Jacobstein declared he was opposed to both government ownership and to price-fixing.

He modified his position on price-fixing, however, when questioned by Representative Sam Rayburn, Democrat, Texas. Mr. Rayburn did not think Congress would modify the Sherman law unless a great public benefit would flow from such action. If the government controlled production, wouldn't price-fixing and other forms of control follow? Mr. Jacobstein answered that he was not afraid of price regulation in a natural limited monopoly. Control, he admitted, would have to extend to the selling agencies. Such control was better than the present anarchy, which is unfair both to operators and workers.

"When you control production," asked Mr. Rayburn, "won't you have to assure the producer a reasonable profit?"

"Yes."

"Then, wouldn't you have to touch prices and distribution?"

"Eventually we might have to."

"Could we write anything into the law to insure continuous production?"

"No, and I would not if I could because the public will not support the idea of compulsory labor."

Despite this admission, Mr. Jacobstein believed legislation would help prevent strikes because with all the facts known he did not believe labor could hold out for an unfair settlement. A statement by Representative George Huddleston, Democrat, Alabama, that it was just a question of time before there would be a tremendous convulsion in the non-union fields was seized by the witness as another proof that legislation was needed.

Hearings were resumed Tuesday morning with Representative Robert Luce, of Waltham, Mass., on the stand. He urged that standards of quality be set up to apply to all shipments of domestic sizes of anthracite. He expressed the opinion that it would be entirely practicable to require that a certificate be attached to each bill of lading indicating the size of the coal and certifying that the non-combustible content of the coal is not above a certain specified percentage. He would vest supervision of coal shipments in the Bureau of Mines.

It is expected that the hearings, which were resumed on April 6 after an adjournment from April 2, will last another ten days. Following testimony by Congressmen, representatives of the operators, the wholesalers, the retailers and the American Federation of Labor will be heard. It is understood that Secretary Hoover also has been invited to appear.



Keystone View Co.

Representative Meyer Jacobstein

Turner Urges Rock-Dusting

Director Turner of the U. S. Bureau of Mines has issued a statement advocating rock-dusting of bituminous coal mines to prevent explosions. "More than 90 per cent of bituminous mines in the country have not yet adopted rock-dusting," he said.

Five Union Mines Close Near Pittsburgh, Unable To Pay Jacksonville Scale

Coming almost simultaneously, the action of a number of coal interests in the Pittsburgh district working on the Jacksonville scale in closing down their mines recently is construed as a final abandonment of the attempt to operate at the higher rate in competition with Southern fields and other companies working on the 1917 rate in this district.

Mines in the Pittsburgh district that have shut down, all of which operated on the Jacksonville scale, follow:

Scott mine of the Montour Collieries Co., at Imperial.

Hazel mine of the Chartiers Creek Coal Co., near Canonsburg.

Bulger mine of the Bulger Block Coal Co., near McDonald.

Two mines of the Carnegie Coal Co. —the McDonald and Atlas, the latter at Atlasburg.

The Carnegie Coal Co. has started operations at a small mine, the Cedar Grove, near McDonald, to offset the other two closed.

Among the so-called independent commercial operations the Pittsburgh Terminal Coal Corp. is about the only sizable concern that continues to work on the Jacksonville scale.

Lewis Deplores Ohio's Plight But Denies Help

The special committee of operators, representing a great majority of mines in the southeastern Ohio field, recently appointed to confer with John L. Lewis, president of the United Mine Workers, which reported at a mass meeting of operators at Nelsonville, Ohio, April 1, held out no hope of a solution of the difficulties in the field being gained through concessions by the United Mine Workers. The committee, which consisted of Walter Wolf, Nelsonville-Murray Coal Co., Nelsonville; C. C. Sharp, Big Bailey Coal Co., Nelsonville; P. C. Morris, New York Coal Co., Columbus; N. D. Monserrat, Monserrat Bros., Columbus; O. C. Newton, Sunday Creek Coal Co., Columbus; G. S. Jones, Ohio Collieries Co., Toledo, and Dr. T. R. Biddle, Poston Consolidated Coal Co., Athens, reported obtaining practically no satisfaction from the conference with the union miners' chief.

The committee quoted Lewis as admitting that he did not know how to relieve the mining industry in the southeastern Ohio field. Lewis asserted that he could not see how the miners could work on any scale in competition with non-union fields. He agreed that conditions were deplorable but that he had nothing to offer. He frankly admitted that he felt extremely sorry for the plight of the miners, but could see no way out of it at this time.

After hearing this report the operators proposed a tentative plan to take the case to the miners direct. The committee which conferred with Lewis was directed to confer with committees of other districts in the state on a plan looking to the adoption of a scale to be substituted for the Jacksonville agreement.

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Wants Public to Know What Industry Will Do To Insure Steady Coal

By Paul Wooton
Washington Correspondent of *Coal Age*

To learn what the industry itself is doing to insure the public a continuous supply of coal is one of the principal objectives of Representative James S. Parker, of New York, in the investigation which he is directing in Congress. Mr. Parker is chairman of the Interstate and Foreign Commerce Committee of the House of Representatives. It has been his observation that heretofore the attitude of both operators and miners toward proposed legislation has been purely negative.

Mr. Parker believes the country wants to know, and is entitled to know, exactly what the industry proposes to do toward guaranteeing a steady supply of this necessity of life. He points out that other businesses manage to settle their troubles without plunging whole sections of the country into famine.

Before recommending legislation Chairman Parker feels that an opportunity should be given the industry to make such constructive suggestions as it has to propose.

"I have given no small amount of thought to the best way of approach to the coal problem," Mr. Parker said in discussing the situation with this correspondent. "At most of the coal hearings during the past several Congresses a bill has been set up and industry has been invited to attack that particular measure. I feel that perhaps a better way would be to start out, as we have done, with no preconceived plan and ask those in the industry what constructive suggestions they have to offer. We have begun by hearing the members of Congress who have proposed coal legislation. Full opportunity will be given any other representatives of the public who desire to be heard. Then we hope to hear what measures of assurance the operators and the miners are willing to give that there will be adequate supplies of coal at all times.

Would Encourage Self-Reform

"It is my opinion that business should be encouraged to reform itself. There can be little question that there is need for reform in the coal industry. There must be some way to adjust differences without going to war every two years. Whether this is done by removing the causes of controversy before they become acute, as the steel industry seems to do with some success, or whether it is done by special machinery for conciliation, such as the railroads are proposing to employ, is of little concern to the public. The people are not particular as to the method so long as a way is found to maintain production."

Mr. Parker is anxious to correct any impression that may have been gained from certain statements in the newspapers that the committee has no serious intention of reporting a bill. "These reports show a strange conception of members of Congress. They are too busy to spend days and weeks listening to witnesses if there is no intention of taking action. We expect to listen patiently to any who are qualified to represent the different points of view. Then we will weigh the evidence and agree on a bill which we will recommend to the House."

While Chairman Parker would not attempt to lay down a detailed plan for the conduct of the hearings, it seems probable that operators representative of all the principal districts will be invited to appear. They will be asked what assurances they can give of maintaining a continuous supply of coal and what steps they propose taking to prevent biennial strikes. Similar questions probably will be asked of representatives of the United Mine Workers.



© Harris & Ewing
Representative James S. Parker

John Fritz Medal Awarded To E. D. Adams

The John Fritz gold medal was bestowed on Edward Dean Adams with appropriate exercises at the Engineering Societies Building, New York City, March 30. The award was made for great achievements as "engineer, financier, scientist, whose vision, courage and industry made possible the birth at Niagara Falls of hydro-electric power." Dr. Frank B. Jewett, past president of the American Institute of Electrical Engineers and now chairman of the John Fritz medal board of award, presided.

Addresses were made by James M. Beck, former Solicitor General of the United States, and Dr. A. E. Kennelly, of Harvard University. Major Fred J. Miller, past president of the American Society of Mechanical Engineers, made the presentation. Mr. Adams responded in an interesting address in which he traced the development of the Niagara Falls Power Co. from its inception to the present time.

At a dinner given to Mr. Adams prior to the presentation exercises short speeches were made by W. H. Onken, Jr., editor of *Electrical World;* L. B. Stillwell, chairman of the Engineering Foundation, and Prof. C. F. Scott, of Yale University.

New Orient Shuts Down; Will Be Developed Further

Following the series of mine shutdowns in the southern Illinois coal fields recently, New Orient, at West Frankfort, Ill., the largest mine in the world, suspended operation indefinitely March 29. The closing of this mine placed eleven hundred men out of work. The Chicago, Wilmington & Franklin Coal Co., which owns the mine, plans to continue development work during the summer, using about three hundred men in driving entries and getting the mine to capacity production stage by next fall.

Normally the mine employs fourteen hundred men. The world's hoisting record of 12,825 tons in one day is held by the "New Orient" and officials say the mine is capable of producing fifteen thousands tons daily and providing employment for eighteen hundred men.

New Orient has been producing coal since Dec. 1, 1922, this being the first suspension.

Hudson Coal Co. Reorganizes Operating Staff

Reorganization of the operating division of the Hudson Coal Co. took place at a recent meeting of colliery superintendents and foremen conducted in the main office at Scranton, Pa., according to reliable reports. A series of resignations, promotions and transfers resulted.

Company executives declined to discuss the changes but it is understood that the changes will be as follows:

Samuel Oakley, superintendent of the Marvine colliery—resigned.

Karl Hughes, superintendent of Clinton colliery, Vandling — promoted to superintendency at Marvine.

Thomas Steele, superintendent of the Dickson colliery—resigned.

Seth Reese, assistant superintendent of Marvine colliery—promoted to superintendency at Dickson.

James F. Loftus, foreman at Eddy Creek colliery—promoted to assistant superintendent under Superintendent L. H. Weichel at Olyphant.

Harry Williams, foreman at Baltimore colliery, Wilkes-Barre—promoted to assistant superintendent under Mr. Weichel.

Mr. Oakley, who resigns the superintendency of the Marvine operation, has been in the employ of the Hudson firm forty years, rising in the ranks from coal cutter to the post of superintendent.

Mr. Hughes, successor to Mr. Oakley, has been in continuous service with the Hudson firm for years, serving for a time as chief colliery engineer at the Powderly colliery, in Mayfield. Later he worked as superintendent at the Vandling operation.

Previous to his appointment as superintendent at the Dickson colliery, Thomas Steele supervised operations at Legitt's Creek company plants.

Mr. Loftus and Mr. Williams, who have been advanced to positions of assistant superintendents under Mr. Weichel, will have under their jurisdiction the Olyphant, Eddy Creek, Miles Slope and Grassy Island operations.

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Deadlock Again Looms in Britain's Coal Situation; Subsidy to Industry Causes Deficit in Nation's Finances

No decisive action looking to an agreement respecting the Royal Coal Commission reported resulted from the conferences of mine owners and employes held in London last week. Both joint and separate sessions were held, and it was hoped that some important conclusions might follow. The points at issue, however, are being referred to the district organizations.

The operators have given the miners a detailed statement of their attitude toward the recommendations of the committee which recently suggested measures to revive the declining British coal industry.

On the vital question of wages the owners propose immediate national negotiations to settle general principles, which are to be incorporated in a new agreement to include a ratio between profits and wages, but which will leave the determination of the minimum percentage payable on basis of rates in each district to the district associations.

This means in effect that the owners refuse to consider the fixation of a national minimum wage and insist on wages being the concern of the districts themselves.

Say Operators Want Wages Cut

"This," says a statement issued by the Miners' Federation, "has constituted an almost insurmountable obstacle to an amicable settlement." The miners also contend that the operators made it evident that they intend to demand heavy reductions of wages.

"In the absence of definite proposals for a minimum percentage," they declare, "we have to assume that the position of the owners is as stated by them last July. Consequential wage reductions would vary from 1s. a day in best to over 5s. in the worst districts."

A. J. Cook, secretary of the Miners' Federation, declared in a speech April 2, that it is quite clear the owners were using the present position to declare war on the mining community and would lock out their employees to enforce their proposals.

Premier Baldwin divided his time during the Easter holidays between London and his country seat, so that he could easily be reached should the coal situation develop alarming symptoms.

Objections to continuing the coal subsidy granted last August as a temporary measure continue to be vigorously voiced. In governmental circles it is felt that the coal crises must be solved by the mine owners and miners on a strictly economic basis, without relying on further subsidy in any form whatsoever.

In this connection it is pointed out that the British coal trade has been subsidized in one way or another, during the last ten years, to the tune of about $300,000,000 out of the taxpayers' pockets.

The subsidy added £19,000,000 to Great Britain's national expenditures during the financial year ended March 31, and caused a deficit of £14,038,120. The official figures indicate that otherwise there would have been a surplus of nearly £5,000,000.

Agree to Semi-Monthly Pay; Close Mines

Although the Elm Grove Mining Co. agreed to pay its miners twice a month instead of once a month, as the company had proposed, after a strike of about 2,500 miners in the northern West Virginia panhandle and eastern Ohio, which lasted about a week, the United Mine Workers was confronted on March 31 with the startling news that the company would close down its mines for an indefinite period.

A report is current to the effect that refusal of the union miners at the plants of the Connellsville By-Product Coal Co. and at seven other mines of the Paisley interests to accept a reduction of 20 per cent from the Jacksonville scale as proposed by the company, was responsible for the shutdown. It is further stated that general manager Arkwright announced, that the company could no longer pay the present union wage scale.

The Paisley interests have been among the few in the Morgantown field that have retained an agreement with the union and made it possible in part to preserve a union organization in the Scott's Run section, the only section of northern West Virginia where any considerable number of union mines are operating.

Six other mines in this district, operated by the Lorain Coal & Dock Co., the Barton Mining Co., the United States Coal Co. and the Massillon-Belmont Coal Co., also closed down, throwing 1,730 men out of work.

Four Pursglove Mines Halt In Morgantown Field

Four mines of the Cleveland-Morgantown Coal Co., near Morgantown, W. Va., owned by the Pursglove interests, Cleveland, suspended work indefinitely April 2. This left only one operating company employing union labor continuing operations in the Morgantown field.

Expiration of existing contracts, the weak condition of the market and inability to pay the Jacksonville wage scale were assigned by company representatives as the reasons for the suspensions.

No comment on the closings was forthcoming from United Mine Workers officials. R. M. Williams, in charge of the Morgantown region, said the union was continuing its unionization activities among the men employed in open-shop mines in the district.

The only remaining union operations in Monongalia County now are the mines of the Gilbert-Davis interests.

Pittsburgh Coal Co. Ready To Open Tenth Mine

The Pittsburgh Coal Co. plans to reopen Ocean No. 5 mine, at Smithfield, Pa., within the next week. This will be the tenth mine of the company to work on the 1917 scale in the Pittsburgh district. The mine has been closed since Feb. 14, 1925. About 100 men are expected to go to work at the new operation when it opens.

There are now 15 mines working on the 1917 scale in the Pittsburgh district, a check-up of activities in the district reveals. Five mines are being operated by the Bethlehem Mines Corporation, subsidiary of the Bethlehem Steel Corp., and one by the Pittsburgh & Erie Coal Co. at Braznell.

Co-operation Necessary to Success of Mining Machines

In order to get the maximum out of a mining machine there must be close co-operation between employer and employee and an organization back of the machine, said Sam Mavor recently in the second of a series of six lectures on "Some Problems in the Mining Industry," given under the auspices of the department of mining of the University of Sheffield, England. As increasing the length of the shift was out of the question, the only solution of the problem of cutting production cost, said he, was increased application of machines in mining.

Until recently, Mr. Mavor said, mining machines had not been resorted to in British mines until all other means of making the seam pay had failed, and as a consequence such machines worked under a handicap and oftentimes failed. Increased facilities for the transportation of coal from the face were necessary, he thought.

Conveyors had fallen into disrepute because the early models had not been brought to a high degree of mechanical perfection and often worked under unfavorable conditions. Their value is now realized, however, and some of the newer mines are being laid out for the use of conveyors. Mr. Mavor stressed the importance of an unfailing supply of mine cars to handle the coal from the conveyors. In some cases haulage efficiency was raised by increasing the size of the mine cars from 10 cwt. to 20 cwt. The coal should be loaded onto the cars as soon as possible in order to eliminate expensive long conveyors.

In conclusion Mr. Mavor advised the mining students to specialize in some one line and become expert in that line. The value of the expert in the mining industry, said he, was just being realized. The mining industry was the last of the major industries to take up scientific control and management. It was very important, he said, to lay out the mine scientifically. It is in this work that the expert will be most needed.

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Form New Union District In Upper West Virginia; To Fight Open-Shop Mines

District No. 17 of the United Mine Workers, in West Virginia, has been split up by the international union and a new district, embracing the twelve and one-half counties in northern West Virginia, now known as No. 31, has been formed. The change will become effective May 1. The action was taken in Indianapolis, March 26, but was not made public until April 3. The change was deemed necessary because of the geographical location of northern West Virginia, according to Van A. Bittner, international representative in charge.

In announcing the establishment of the new district representatives of the international union—Percy Tetlow, John O'Leary, A. R. Watkins, and Van A. Bittner—state that "the affairs of District 31 will be in complete charge of the international union until the organization in this field is thoroughly established."

Operators are of the opinion that while the union may wage a more determined campaign to recruit its forces in northern West Virginia, such evidently being the purpose of the establishment of a new district, the organization is confronted with a great many difficulties in view of the existing economic situation which caused nearly all the mines that had been operating under the Jacksonville agreement to suspend operations because they could no longer operate under the higher wage scale, even though friendly with the union. Under the circumstances, therefore, it is not believed that it will be possible to get producers who have been operating non-union mines to become parties to any agreement that will preclude a continuance of operation in competition with other mines in West Virginia or in other states.

Barnum on Self-Government

"Self-Government in Industry" is the theme which will be stressed at the session of the Natural Resources Division of the Chamber of Commerce of the United States when the annual meeting is held, May 11. Walter Barnum, president of the Pacific Coast Co., New York City, one of the three speakers, will discuss the question with respect to the coal industry. The other two speakers will represent the oil and the lumber industries.

Northern Pacific to Open Bids

Bids for coal for the Northern Pacific Ry. for the line extending from Mandan, N. D., to Missoula, Mont., required from May 1, 1926, to April 30, 1927, will be received until April 12 by R. J. Elliott, purchasing agent of the road, 5th and Jackson Sts., St. Paul, Minn. Not less than 1,200,000 nor more than 2,400,000 net tons will be required, to be delivered in approximately equal monthly proportions.

The Edwight mine of the Raleigh-Wyoming Coal Co., in the New River field, was closed down recently according to reports.

Pities Those Blind to Need For Conservation

"Conservation, like other vision, is not to be considered a question of morals; it is more a matter of education, of experience, of intelligent interest," said George Otis Smith, Director of the Geological Survey, in an address at the annual dinner of the American Society of Naval Engineers at Washington, D. C., March 27. "We should not condemn so much as pity the defective eyesight of our fellow citizens who can see no reason why we as a nation cannot spend as we go, regardless of the sources of our present wealth and equally thoughtless as to the wherewithal for the future. 'Please help the blind!' is the placard that should be hung on the breast of every public official who neglects any opportunity to plan for the distant future of his state or country, or tacked outside the door of the boardroom of every big corporation that fails to guard its reserves of raw material, or painted above the wide entrance to any legislative hall whose occupants can spell out that long word 'preparedness' only when martial music arouses attention and flying colors stimulate the optic nerve."

Southern Illinois coal producers are working on the details of a plan to ship coal to the Twin Cities by barge. The southern Illinois operators propose to develop a fleet for operation on the upper Mississippi River in order to regain a market for southern Illinois coal which has been practically eliminated since the freight rates went up last season.

Government Needs Engineers

The U. S. Civil Service Commission announces examinations for senior mining engineer (safety service) and senior mining engineer (coal and metal), applications for which will close May 18. Vacancies are to be filled in the Bureau of Mines, Department of Commerce, for duty in Washington, D. C., or elsewhere. The entrance salary is $5,200 a year. After the probational period required by the civil service act and rules advancement in pay without material change in duties may be made up to a maximum of $6,000 a year. Promotion to higher grades may be made in accordance with the civil service rules as vacancies occur. Full information and application blanks may be obtained from the Civil Service Commission, Washington, D. C., or the secretary of the board of U. S. civil service examiners at the post office or custom house in any city.

The Commission also announces examination for junior mechanical engineer (fuel combustion), junior mining engineer and junior engineer to fill vacancies in various branches of the government service throughout the United States. Receipt of applications will close April 17. The entrance salary is $1,860 a year. After the probationary period required by the civil service act and rules advancement in pay may be made without change in assignment up to $2,400 a year.

The Commission announces an examination for assistant business economist (coal), receipt of applications to close May 11. The examination is to fill a vacancy in the position of assistant economic analyst, Bureau of Mines, Washington, D. C., and vacancies occurring in positions requiring similar qualifications, for duty in Washington, D. C., or in the field. The entrance salary is $2,400 a year, with advancement to a maximum of $3,000 a year.

U. S. Chamber of Commerce Initiates Action To Abate Uneconomic Trade Practices and Abuses

The setting up of machinery for the elimination of trade abuses and uneconomic trade practices, marking a further step toward the eventual self-government of business, was announced March 18 by the Chamber of Commerce of the United States. The board of directors of the national organization authorized the appointment of a permanent committee on trade relations to serve as the focussing point for all activities in this direction.

The new committee will comprise representatives of wholesaling, retailing, manufacturing and the consuming public. It will serve in the first instance as a clearing house for information relating to the adjustment of trade disputes and the suppression of trade practices detrimental not only to the merchant and the manufacturer but to the consuming public.

It is recognized that the first task of the committee will be to promote the setting up of the necessary machinery within the various trades to facilitate the adjustment of disputes between manufacturers, wholesalers and retailers in a particular trade. It will aid in the adjustment of disputes between members of different trades and eventually, it is expected, will serve as the capstone —or lead to the organization of another committee which will serve the same purpose—in the entire structure of trade self-regulation.

"As at present contemplated," said Alvin E. Dodd, manager of the department of domestic distribution of the National Chamber, in a statement explaining the functions of the new committee, "the joint trades relations committee will be composed of one influential member of each trade. Each of the members of this committee will be the key man in developing in his particular trade a joint trade relations committee to include manufacturers, wholesalers and retailers."

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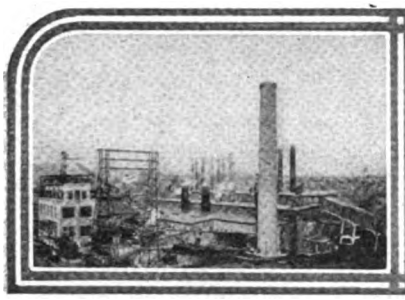

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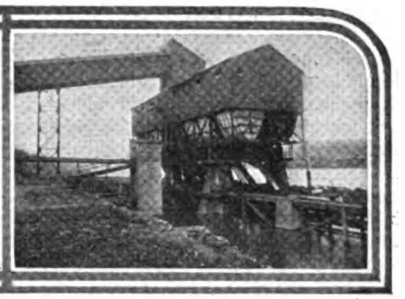

ALABAMA

The Pratt Fuel Corp., of Birmingham, has installed a new steam shovel, one of the largest in the state, at its mine at Hagger, Walker County. The company is making several new openings at Hagger and will erect 20 new houses for miners.

ARKANSAS

The Vilonia Coal Co., Vilonia, of which M. E. Sams is secretary, is beginning the development of 57 acres of coal land.

ILLINOIS

About five hundred men were thrown out of work April 1 with the closing of the New Baden mine of the Southern Coal, Coke & Mining Co., at Belleville. Company officials say the mine will be closed indefinitely. In a statement W. F. Davis, general superintendent, said: "Illinois must have a lower wage scale if we are to survive. It also is necessary for the officials of the United Mine Workers to accept a more liberal attitude toward mechanical loading devices and assist the operators to a day wage scale for undercutting machines used in connection therewith, if the non-union invasion of the Illinois coal markets is to be checked." Some of the miners may be taken to the Shiloh mine within a short time, Davis said.

Nokomis Mine Sold.—The Brewerton Coal Co., of New York and Chicago, it is announced, has purchased the Nokomis mine of the Nason Coal Co. The mine has not been operated since Feb. 5, and there is no immediate prospect of resumption.

Peabody mine No. 15, better known as Cora mine, at Andrew, reopened March 25, after having been closed since Feb. 11.

The Illinois Miners' Examining Board has announced its itinerary for this month as follows: West Frankfort, Miners' Hall, 8th; Duquoin, Miners' Hall, 9th; Centralia, Miners' Hall, 10th; Litchfield, Hod Carriers' Hall, 19th; Springfield, State House, 20th; Taylorville, Court House, 21st; Danville, Court House, 22d; LaSalle, City Hall, 23d; Peoria, Court House, 24th.

Franklin County produced 13,082,000 tons of coal during 1925, according to statistics compiled by Lon Fox, president of Subdistrict No. 9, United Mine Workers. The 1925 output broke the 1920 mark of 11,299,280 tons by 1,700,000 tons. Fox compiled his figures to refute the contention that union mines cannot successfully compete with the non-union fields of Kentucky and West Virginia.

INDIANA

Officials of District No. 11, United Mine Workers (Indiana) have protested against any step to appoint Walter Wills, of Linton, as a member of the Indiana industrial board. The mine officials say that because of the big percentage of accidents in mines, one member of the industrial board, which has to do with the settlement of compensation claims, should be an experienced miner.

The Indiana joint purchasing board will receive bids in April for supplying coal to state institutions for the year beginning May 1. Bidders may bid on all or part of the coal required.

KANSAS

The conference of top vein coal stripping operators of the Mulberry district with officials of the miners' union in an effort to negotiate a contract has been postponed until April 25.

Seventy-seven miners in District 14, United Mine Workers (Kansas), have completed the course of mine rescue training given by federal mine rescue car No. 6 since its arrival in the district, Oct. 19, 1925. Thirty-one miners also have completed the course in first-aid given by instructors attached to the car.

Rules for the Kansas state first-aid and mine-rescue meet to be held at Pittsburgh May 22, were drawn up March 29 by U. S. Bureau of Mines instructors and officials of the Kansas mine inspection department. The winning team will be sent to the international meet in San Francisco, Sept. 2, 3 and 4.

Fire destroyed the tipple of the Sheridan Coal Co.'s mine No. 7, near Breezy Hill, early in the night of March 30. Two shotfirers in the mine at the time escaped through an air-shaft. The mine has been operated for several months by the Eastern Coal Co. The origin of the fire is not known and representatives of both the Sheridan and Eastern companies are conducting a thorough investigation.

KENTUCKY

One of the laws enacted by the Kentucky Legislature at the session just closed, and now in effect, is Senate Bill No. 67, fixing the rights and duties of coterminous owners of mineral lands, imposing penalties for trespass underground, and giving owners of adjoining properties the right to arrange for surveys from shafts and through mines on adjoining properties to determine whether or not any trespass has been committed.

Work on the Virginia-Kentucky highway through the Lotts Creek section in eastern Kentucky, has been held up pending agreement with some of the coal companies through whose property the highway will extend. Some changes in the routing will be necessary as the line is laid out to run through miners' homes and other buildings in some instances.

Receivers of the **Himler Coal Co.** have been visiting the mine of the company at Himlerville, where portable conveyors are to be installed for transporting coal from the face of the rooms to mine cars in the heading. The mine has a capacity of 30,000 tons weekly. Fred G. Hatton, president of Hatton, Brown & Co., Inc., Columbus, Ohio, is one of the receivers.

Construction of 30 barges for the West Kentucky Coal Co. will be started this month. The new barges will be used in the company's coal transportation trade in the Mississippi and Ohio rivers.

MASSACHUSETTS

Hard-Coal Stocks Low.—Stocks of anthracite in the yards of Massachusetts retail coal dealers on March 1 totaled 53,418 net tons, according to the Special Commission on the Necessaries of Life. This compares with 725,558 tons on hand on April 1 of the preceding year. Deliveries to consumers during the eleven months ended Feb. 28 aggregated 3,887,646 tons, as against deliveries during the entire preceding coal year of 5,115,717 tons.

MICHIGAN

Will Enlarge Dock.—Work of rebuilding and remodeling property recently purchased by the Escanaba Coal & Dock Co. will be started at once. The dock will be enlarged to permit handling of 150,000 tons of coal annually and it will have an actual storage capacity of 100,000 tons. Its equipment will be capable of handling 500 tons of coal an hour.

MINNESOTA

The Zenith Furnace Co. has nearly completed extensive overhauling of its coke-oven plant at Duluth, made necessary by a fire, several weeks ago, which caused a loss of $75,000.

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MISSOURI

To Open $100,000 Strip Mine.—Evan Jones and A. E. Marriott, of Moberly, have closed a deal for 400 acres of coal land south of Higbee for a strip mine. The consideration was said to be close to $30,000. It is said that a switch will be laid from the Missouri, Kansas & Texas tracks to the field. The Kansas City Power & Light Co. will furnish power to operate the machines and will use all the coal produced. This will mean the expenditure of approximately $100,000 before the coal can be put on the market, it is said. The company will install a crusher at the strip pit to crush the coal before shipping.

Missouri mines in 1925, according to statistics compiled by O. L. Hengar, of the State Bureau of Mines, Jefferson City, produced 2,542,449 tons of coal valued at $7,411,162.

An injunction suit brought by the Clay Coal Mining Co., of Excelsior Springs, against local union No. 27, United Mine Workers, was refused last week by the Circuit Court in Clay County. The operators alleged that the union miners were intimidating their workers, who are non-union.

In about sixty days coal will be loaded from new strip mines to be worked near Higbee by the Howard County Mining Co. Work has begun on switch tracks by the M. K. & T. R.R. The coal company intends to remove from 30 to 70 ft. of earth off the coal by the use if the largest steam shovels built. Winson Brothers, of Minneapolis, Minn., have charge of all the operations in the production of this coal. The coal underlying the lands which were purchased, consisting of 500 acres, is 3 ft. 3 in. thick.

NEW JERSEY

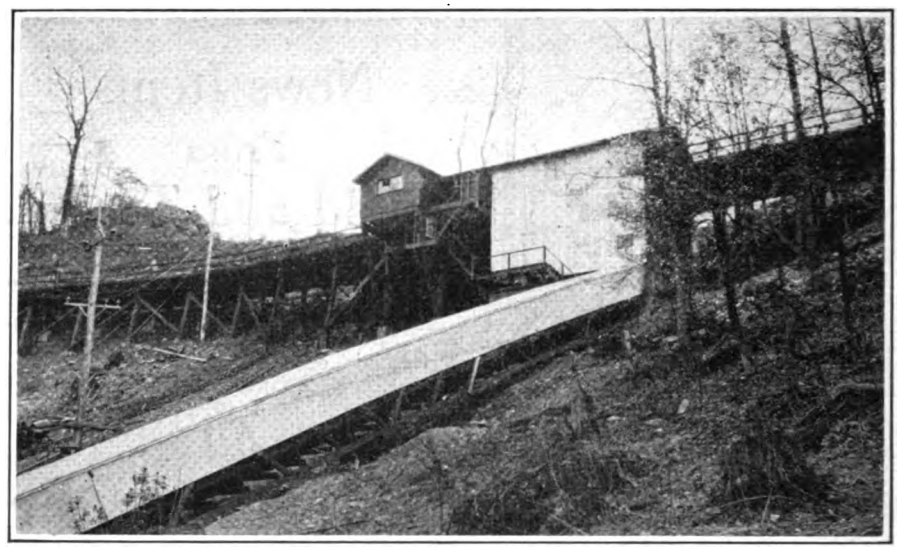
Retail coal dealers at Atlantic City have joined hands in supporting an exhibition of devices for the burning of anthracite buckwheat for domestic use. They have leased a storeroom at Atlantic and Kentucky Aves., where they have set up heaters and have them in active operation. The exhibition will be continued as long as the interest of the public continues, which so far has been very satisfactory.

NEW MEXICO

An area of 720 acres of coal land in Sandoval County will be offered for lease soon by the general land offices. A royalty of 10c. a ton, an investment of $25,000 during the first three years of the lease and a minimum production of 15,000 tons yearly commencing with the fourth year of the lease are the requirements.

NEW YORK

The contract for furnishing three-quarter smokeless coal to the Erie County armory of the 106th Artillery for a year, amount not specified, was awarded on March 31 to the Dealers' Coal Co., Buffalo, on its bid of $4.83, delivered, which requires some carting. The highest bid was $5.74.



Dump-House of New Mine at Allais, Ky.

Drop-bottom cars are used at this drift mine, which was opened about one year ago in the Hazard field by the Columbus Mining Co. A rope-and-button conveyor retards the coal on its descent to the tipple located in the valley.

Bids will be opened April 10 for furnishing 35,000 tons of bituminous three-quarter slack to the Buffalo waterworks.

OHIO

The Lick Run Coal & Clay Co., of Nelsonville, has filed a petition in bankruptcy in the U. S. Court at Columbus, listing liabilities of $72,446 and assets of $132,309. This company was organized with P. J. Merz, president; Douglas McGill, vice-president, and Robert Green, secretary, to reopen a mine near Nelsonville that had been abandoned by E. A. Cole & Co. After erecting an expensive tipple operations were started, but the coal was limited. Later the tipple was destroyed by fire, but the loss was covered by insurance. Another tipple was then constructed, but the mine has been idle for several months.

PENNSYLVANIA

Mining Students Get Certificates.—Eight employees of the Bethlehem Mines Corporation, all of Wehrum, have completed a two years' course in mining sponsored by the state vocational education board in co-operation with the school of mines of Pennsylvania State College. The course was instituted three years ago by the vocational board. The instructor of the class at Wehrum is Ray Mardis, who also is employed by the Bethlehem corporation. Those who completed the course are Leonard Mulvehill, Frank Collobert, Charles Walton, Samuel A. Gromley, Thomas Madigan, Andrew Pero, Clarence Frazier and Raymond C. Mardis. Seventeen men in the class have completed one year's work.

Revenues of the Delaware, Lackawanna & Western R.R. from anthracite shipments in 1925 were $5,818,872 less than in 1924, attributable to the suspension of mining in the last four months of the year. The annual report of the company, however, reveals a decrease of only $238,673 in net income, which totaled $14,430,194. Revenues from other freight increased $2,216,186, due in large measure to special efforts made to obtain other freight traffic to fill in the gap caused by the loss of anthracite traffic.

In the week ended March 27 mines of the **Pittsburgh Coal Co.**, operating on the 1917 scale in the Pittsburgh district produced a total of 37,923 tons of coal, a new high record since operations were started last August. During the same week the mines established a new daily maximum of 6,683 tons. The number of miners working reached a new high point with 1,860.

The total net income of the Lehigh Valley Coal Co. for 1925 was $643,118, a decrease of $2,657,953 from that of 1924, the consolidated income report shows. Coal receipts for the year were $11,978,094 less than for the previous year.

Sixteen miners, arrested recently when matches were found in their clothing as they were leaving the Mollenauer Mine No. 3 of the Pittsburgh Terminal Coal Corp., were fined $50 each on charges of violating the mine safety laws at a hearing before Justice of the Peace John Popp, Jr.

Erection of a steel coal tipple, bin and trestle approach has been begun at the Mt. Hope coke plant of the Snowdon Coke Co., near Brownsville. It is expected to have the tipple in operation about the middle or latter part of April.

TEXAS

Texas Pacific Coal Income Up.—A net income of $730,430 for 1925 is reported by the Texas Pacific Coal & Oil Co., after depreciation, depletion, amortization, etc. The figure is equal to 86c. a share earned on 844,004 shares of $10 par stock, and compares with $32,665, or 3c. a share in 1924. Gross earnings for 1925 were $5,641,373, as against $5,080,915 in 1924. Other income was $536,706 in 1925 as compared with $60,554 in the preceding year. The report showed operating expenses

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in 1925, $2,809,413; in 1924, $2,633,468; interest, rentals, etc., in 1925, $909,404; in 1924, $747,820; depreciation in 1925, $1,728,832; in 1924, $1,727,516.

VIRGINIA

Revive Norfolk Exchange.—Plans are on foot to revive activities of the Hampton Roads Coal Association, composed of coal agents and managers with offices in Norfolk. This will be of special interest to local shippers to the port, as the association aims for mutual friendship and co-operation for the betterment of the port and shipping facilities. Clayton M. R. Wiggs is president and Chester B. Koontz, secretary, of the association.

Safety Boosters Meet.—The seventh annual banquet of the Safety Boosters of the Clinchfield Coal Corp., held at Dante, March 27, was attended by about 200 officials. The loving cup for the unit holding the best safety record for the year was won by the Dante operation, R. S. Adams, superintendent. The 1925 fatality record was 2.5 per million tons. The addresses included "Accident-Prevention Experience," F. E. Harr, industrial claim agent; "The Mine Foreman's Duty," Frank R. Clark, superintendent Clinchco operation; "Prevention of Accidents by Falls of Slate and Coal," D. L. Rumgay, superintendent Wilder operation; "Handling the Careless Worker," R. S. Adams, superintendent Dante operation; "Psychology of a Safety Committeeman," W. R. Sparks, safety committeeman, Clinchco operation. D. H. Pape, assistant to the executive secretary of the National Coal Association, stressed the value of complete statistics on safety.

WEST VIRGINIA

A statement was issued April 3 by Robert M. Lambie, chief of the state Department of Mines, showing that one hundred safety meetings were held in West Virginia in March and that 12,000 coal miners has signed the safety pledge. "Coal, the Source of Power," the state Department of Mines film, was shown April 7 at the safety meeting held at the mines of the Mallory Coal Co. at Mallory, Logan County.

Operation of mine No. 6 of the Crab Orchard Improvement Co., at Eccles, Raleigh County, began this week. Mine No. 5, where the explosion occurred, will start in about a month. The inquest into the explosion got under way this week, starting at the mine April 7.

Foundations have been built by the Webb Coal Co. for a rope and button conveyor at its Webb mine, along the Coal River branch of the Chesapeake & Ohio Ry. at Garrison, Boone County. The Winifrede seam is worked at a height of 600 ft. above the tipple. The conveyor will be 1,200 ft. long.

Figures compiled by the Kanawha Coal Operators' Association show that in 1925 5,250,854 tons of coal was produced in the Kanawha field by 3,136 men, compared to 3,820,937 tons by 4,976 men in 1921, which the operators say was a normal year. Figures for 1925 show greatly increased activity under non-union conditions, when compared with 1921.

State mining department officials received word last week that the mine fire was completely extinguished in No. 63 of the Consolidation Coal Co., at Monongah. Recently the coal that had been burned was removed from the interior of the mine.

The Consolidation Coal Co. through the federal state employment bureau in Charleston, is advertising for coal miners at its Jenkins and McRoberts (Ky.) plants.

Strike Helped N. & W. Earnings.—Due largely to increased demand for bituminous coal because of the anthracite strike, operating revenues of the Norfolk & Western Ry. in 1925 were the largest in the history of the road. Net revenues from operations, $37,284,175, the annual report reveals, increased $9,446,594, or 33.9 per cent, over the 1924 net.



Daniel Boone Coal Corporation's Mine No. 8

Located at Heiner, Perry County, Ky., and operated and managed by the Columbus Mining Co. The mine, which produces coal from the Flag seam, formerly was the property of the Maynard Coal Co. The coal is moved from near the top of the hill by means of a steel button conveyor, to the tipple, which is equipped with shaker screens, picking tables and loading booms.

Traffic News

Lake Coal Shipments to Toledo Embargoed on Hocking Valley

M. S. Connors, general manager of the Hocking Valley Ry., has advised all lake shippers that an embargo has been placed on all shipments of coal via the Hocking Valley intended for transshipment to the Northwest until 6,700 loaded cars at the Toledo docks are cleared away. He expressed the belief that the embargo would not be of long duration, however, as the loading machines at the docks are being operated 24 hours daily. One of the causes was a freak in the current of the Maumee River, where the docks are located, which was too strong for tugs to get the lake boats in position for loading. An order was sent to Cleveland for more tugs and the larger type are being used to place the boats. The Toledo docks have a capacity of 1,000 cars daily and it will not take long to eliminate the congestion.

Advices from the Head of the Lakes show that there is still 29 in. of ice in the harbor at Duluth-Superior and less from the head of Lake Superior down to the passageways from Lake Erie. The date for opening of navigation is thus in doubt.

Rates to Black Tom Unjust, Says Tentative Report

Examiner Griffin, of the Interstate Commerce Commission, in Docket 16645, Harbor Coaling Corp. vs. Baltimore & Ohio R.R., recommends that the Commission should find the rate assailed is unreasonable and unduly prejudicial to the extent that it exceeds $2.79 per gross ton. The complainant alleged that the rate of $3.09 from mines in Clearfield, Cumberland-Piedmont and Meyersdale districts to Black Tom Pier, Jersey City, N. J., is unreasonable and unjust, discriminatory and prejudicial. The $3.09 rate applies to local track delivery, Jersey City, and the examiner agrees with the complainant that the pier rate should apply, which is $2.79. Reparation was recommended.

Suspend Hard-Coal Rates To the East

The Interstate Commerce Commission, in I. & S. 2637, has suspended from April 1 until July 30, 1926, the operation of certain schedules as published in various tariffs of the Central Railroad of New Jersey, the Delaware & Hudson, the Delaware, Lackawanna & Western, the Erie, the Lehigh & New England, Lehigh Valley, New York, Ontario & Western and the Reading, which propose changes in the rates on anthracite from Pennsylvania mines to points in New Jersey, New York and Pennsylvania. To illustrate: From the Wyoming district of Pennsylvania to Albany, N. Y., the present rate on prepared sizes is $2.65 (gross ton) via D. & H., and $3.02 via D. L. & W.-N. Y. C. The proposed schedules would make these rates $2.75 and $2.88, respectively.

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Among the Coal Men

J. E. Westervelt was appointed sales manager of Castner, Curran & Bullitt, Inc., on April 1. At the same time the company announced that it had taken over the marketing of the output of additional mines with a total production of between five and six million tons.

Thomas Fraser, formerly of the U. S. Bureau of Mines, but recently assistant professor of mining at West Virginia University, has been engaged by the Pennsylvania State Geological Survey to assist in the study of fine sizes of anthracite in the anthracite region beginning in the spring. Mr. Fraser is recognized as one of the best authorities in the United States on the preparation and washing of coals. He will assume his new duties May 1 with headquarters in Wilkes-Barre. Mr. Fraser will co-operate with Dever C. Ashmead, anthracite mining engineer of the U. S. Bureau of Mines.

William T. James, superintendent of Bon Ayr Mine of the Bon Ayr Mining Co., and W. C. Barr, president of the City Coal Co., both of Jasonville, Ind., have been named members of the board of directors of a newly formed industrial bureau of that city, organized for the purpose of developing the commercial and industrial interests of Jasonville.

E. E. White, formerly president of the E. E. White Coal Co., in the Winding Gulf field, is wintering at St. Augustine, Fla.

A. G. Bailey, manager of Castner, Curran & Bullitt, Inc., at Norfolk, has taken over the management of the New England Coal & Coke Co. **H. J. Spear,** who was manager of the New England Coal & Coke Co. and the Mystic Steamship Co., a subsidiary, will give his attention to the management of the latter.

Nels R. Erickson, of Ogden, has become general sales manager of the Carbon Fuel Co. and the Blazon Coal Co., of Salt Lake City. Erickson has been general manager of the Superior Rock Spring Coal Co., of Ogden, having been connected with Utah and Wyoming coal operating companies for the past 14 years. At one time he was with the Lion Coal Co., of Ogden.

Ernest A. Bowen, formerly assistant secretary-treasurer of the Superior-Rock Springs Coal Co., Ogden, Utah, has accepted a position as traveling auditor for the J. C. Penny Co.

Edgar Blackwell, former superintendent of the New River company at Scarbro, W. Va. has been appointed safety director of that company.

Rembrandt Peale, Jr., vice-president of Peale, Peacock & Kerr, recently arrived at New York on the "Aquitania" after spending several weeks in Europe.

J. W. Bischoff has been appointed superintendent of the Bower Mine of the West Virginia Coal & Coke Co., at Bower, W. Va., succeeding B. M. Mitchell.



Major Clarence T. Starr

CLARENCE T. STARR has resigned as coal specialist for the Chamber of Commerce of the United States and on April 12 will assume the duties of assistant to the president of the Pittsburgh Terminal Coal Corporation, C. E. Tuttle, who also is chairman of the board. Major Starr was elected chairman of the Washington section of the American Institute of Mining & Metallurgical Engineers a few months ago.

Obituary

Thyssen, German Coal and Iron Magnate, Dead at 84

August Thyssen, famous Ruhr coal and iron magnate, died near Muehlheim, Germany, on April 4, aged 84. Death was due to pneumonia following an eye operation.

Thyssen began his industrial career in the '60s with a capital of $6,000, which he invested in a rolling mill at Hamborn, employing sixty men. Like John D. Rockefeller, he developed a region whose natural resources were untouched. In later years they called him the Rockefeller of the Ruhr. The first rolling mill at Hamborn is now the Deutsches Kaiser Works, employing 26,000 workers. His various enterprises engaged the service of 70,000 employees.

Beginning life as a Ruhr contemporary of the late Hugo Stinnes' father, Thyssen, unlike the Stinnes family, reinvested all his earnings in his own business until he became a veritable colossus of the coal, iron and steel industry, with holdings in India, France, Belgium, Holland and South America.

Few of the heavy industries of Germany failed to feel Thyssen's grasp. He was the biggest coal operator in the country. He owned iron mines, rolling mills, steamship lines, docks, cement factories and allied industries.

When the World War began Thyssen manufactured small arms for the Central Powers. Despite this small share of the armament industry, he went into competition for heavy armaments, and in the end he broke the Krupp monopoly in big guns.

As soon as the war ended Thyssen transformed his munition plants into electrical machinery plants and was no less successful. During the French occupation of the Ruhr the octogenarian industrialist worked fifteen hours a day while his men labored in three shifts under the eyes of French sentries. He opened every mine he had in the Ruhr and developed it to full capacity to make up to Germany the coal production she had lost when Upper Silesia and the Saar passed out of her control.

Colonel Thomas G. Price, aged 69, one of the prominent coal men of northern West Virginia, who was connected for a number of years with the Consolidation Coal Co. and before that with the Camden interests, died March 28. Mr. Price was a native of Franklin County, Virginia. Thirty-seven years ago he located in Marion County, being employed by Bennett and Talbott, railroad contractors, who built the Monongah branch of the Baltimore & Ohio R.R. from Fairmont to Clarksburg. Later he became identified with the Monongah Coal Co. and the Camden interests and for a number of years was outside superintendent of the mining plant at Monongah. He continued in that capacity after the Monongah operation had been taken over by the Consolidation Coal Co., remaining with the latter company as long as his health permitted him to do so.

Joseph Watson, pioneer Colorado resident and coal mining expert, died March 15 in Louisville, Ky., his home for the last twenty years, following an illness of a few months. Mr. Watson was 61 years old when he died, having lived in Colorado for forty-seven years. He first settled in this state in Trinidad in 1879, later lived for many years in Gunnison, and in 1907 became general superintendent of the National Fuel Co., opening the Puritan mine for that company in Weld County. In 1916 be became general inspector for the Coal Operators' Mutual Insurance Co., with headquarters in Louisville, and held that position until his death.

Ned Irish, formerly engaged prominently in the operating end of the anthracite industry and a member of the firm of Irish Bros., Philadelphia, died at his home in Norristown, Pa., on March 29. He was 72 years of age, and at his funeral on the 31st, there was a large attendance of coal men from Philadelphia and the hard-coal region.

The death is announced at Port Colborne, Ont., of **Thomas Lannan,** managing director of the Century Coal Co., at the age of 70 years. He was a prominent figure in the coal zone, having been identified with marine interprises and construction work practically all his life. He was manager of the Comion Bros. coal dock at Port Colborne, subsequently buying out the dock and merging it with the Century Coal Co., a subsidiary of the Canada Steamship Lines.

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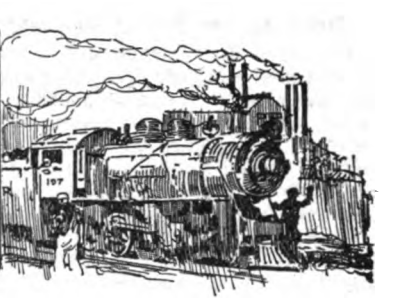
Production And the Market



Soft-Coal Trade Flounders in Aim at Stability; Distress Tonnage Sets Fictitious Values

The opening of the new coal year finds the bituminous trade of the country still floundering around in its efforts to put the business upon a stable and profitable basis. In the East this process is hampered by the fact that there still is enough distress tonnage seeking a buyer to dull the interest of the consumer in offerings at fair prices and to establish a fictitious basis of values. In the West and Middle West the competition between union and non-union coals gives large industrial consumers the whiphand in discussing contract renewals.

The blizzard which swept over so many states last week added a touch of last-minute activity to the domestic trade. The flurry, when measured in tonnage, however, was inconsequential. Many retail distributors, it is true, were caught with scant stocks in their yards, but the rush orders they placed with the mines were for small lots. Only in Kansas was buying sufficiently heavy to have any real effect on the "no bill" situation.

In the drive to corral domestic business many bituminous districts established spring prices which represent substantial reductions from the schedules in effect prior to April 1. For the major domestic sizes the new circulars of the Illinois and Indiana producers show a cut of 40c. per ton. In the Far West still more drastic reductions have been made in the past fortnight, but it does not appear that these latter cuts have stimulated buying. Alabama, on the other hand, reports active contracting by retail dealers on the new spring prices.

Price Situation Unsettled

Less success has attended efforts to stabilize quotations in the Appalachian region. Low-volatiles have been particularly hard hit in the readjustment process. April circulars had hardly reached the buyer before one large West Virginia company dropped its lump price 25c. Mine-run, too, is weak in both Eastern and Western markets. Except in eastern Kentucky, high-volatile prices on prepared sizes have been wobbling badly. *Coal Age* Index of spot bituminous prices on April 5 stood at 158 and the corresponding price was $1.93. This was a decline of five points when compared with the index for March 29.

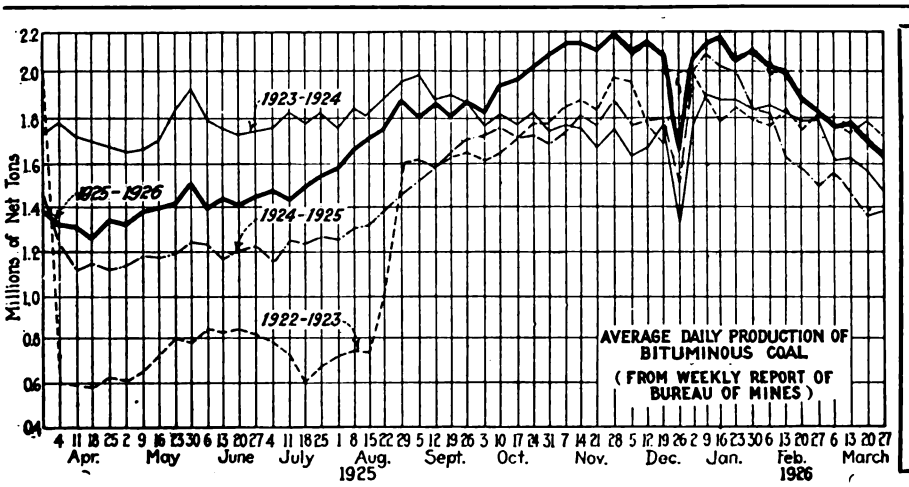
The most hopeful feature in the present situation is the steady decline in production rate. Bituminous output for the week ended March 27 was estimated at 9,609,000 net tons by the Bureau of Mines. Barring the Christmas holidays, this was the lowest weekly output reported since the beginning of last August. Holidays the end of last week held out the hope that further reductions would be registered.

Anthracite Production Climbing

Anthracite production, on the other hand, has been climbing. For the week ended March 27 the output was estimated at 1,991,000 net tons. In view of the growing disinclination of buyers to pay premium prices, the halt in this high rate last week was not unwelcome to the independent shippers. For the most part, the latter can no longer command premiums in excess of 50c. over company maximum. Steam sizes are weak.

There are signs of a slowly expanding market for No. 1 buckwheat coal in the domestic trade. This movement is slightly accelerated by the scarcity of pea. Most of the latter size now being produced is being consumed in the anthracite region. It is reported that at least one big company is planning a reduction in the No. 1 price, but there is nothing to indicate that the producers will reverse themselves on the question of prices on the larger domestic sizes.

The Connellsville coke market is featureless.



Estimates of Production

(Net Tons)

	1925	1926
BITUMINOUS		
March 13	8,641,000	10,690,000
March 20 (a)	8,283,000	10,263,000
March 27 (b)	8,353,000	9,609,000
Daily average	1,392,000	1,602,000
Coal yr. to date (c)	468,167,000	535,614,000
Daily average	1,542,000	1,760,000
ANTHRACITE		
March 13	1,656,000	1,966,000
March 20	1,513,000	1,963,000
March 27	1,640,000	1,991,000
Coal yr. to date (c)	85,627,000	50,442,000
BEEHIVE COKE		
March 20	226,000	263,000
March 27 (b)	220,000	251,000
Cal. yr. to date (c)	3,115,000	3,824,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

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Drive on for Spring Business

The drive for spring and summer business in the Middle West was opened last week with price reductions by Illinois and Indiana operators. Effective April 1, leading Franklin County shippers quoted $2.60 on lump and 6x3 egg, $2.55 on 3x2 egg, $2.50 on cook-stove egg, chestnut and mine-run, $2.40 on pea and $2 on 2-in. screenings. Central Illinois offered coal at approximately 25c. less. Fourth Vein Indiana circulars named $2.60 on lump and egg; Fifth Vein, $2.25. Advances are planned later in the season.

There also were a number of contracts signed—in most cases for screenings. Franklin County is asking $1.75 on 2-in. coal, and some business has been closed at 10@25c. higher. The prevailing contract figure on 1¼-in. screenings in southern Illinois is $1.60. Fifth Vein Indiana coal has been signed up at $1.35@$1.50. Most of the railroad bids are in, but no awards have been made. St. Louis reports that some Springfield and Mt. Olive screenings have been quoted as low as $1.25 on contract and some Standard mine-run at $1.65.

Aside from a rush demand for domestic sizes, brought about by the blizzard which swept over Illinois and neighboring states, business at the mines was sluggish. This flurry, however, resulted in many small-lot orders for immediate shipment and temporarily reduced the number of "no bills" in the southern districts. Duquoin did not fare so well and the outlook for Mt. Olive is not promising. The Belleville field is limping along.

Eastern Coals Press Middle West

Eastern shippers are still combing Chicago and other markets in the Middle West for orders. High-grade smokeless mine-run has been offered to the retail trade as low as $1.65. Quotations on high-volatile coals cover a wide range. Wholesalers have been pressed to take 4-in. Logan County block at $1.60 and 4x2 egg at $1.35. Eastern Kentucky block is $2@$2.50 and egg, $1.75@$2.25. Anthracite receipts are increasing.

Raw weather and a falling thermometer increased household demand for Kentucky coal last week. For the most part, however, retail dealers in Louisville were able to meet the demand with stocks on hand, but in some other parts of the country hurry-up orders were placed with the producers.

There is a moderate movement of Kentucky coal to Northern markets. Producers in the eastern part of the state are signing up some lake business and the western district is lining up orders north of the Ohio River in territory formerly considered the exclusive preserve of the Illinois and Indiana producers. Eastern Kentucky block is $1.75@$2.25; lump, egg and nut, $1.75 @$2; mine-run, $1.50@$1.60; screenings, 90c.@$1.10. Western Kentucky block is held at $1.75@$2; lump and egg, $1.50@$1.75; nut, $1.35@$1.60; mine-

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	Apr.6, 1925	Mar.22, 1926	Mar.29, 1926	Apr. 5, 1926†
Smokeless lump	Columbus	$3.10	$3.35	$3.10	*$2.75@$3.00*
Smokeless mine run	Columbus	1.90	2.10	2.00	*1.90@ 2.00*
Smokeless screenings	Columbus	1.20	1.15	1.15	1.00@ 1.35
Smokeless lump	Chicago	2.85	3.10	2.60	2.50@ 2.75
Smokeless mine run	Chicago	1.85	1.95	1.85	*1.65@ 2.00*
Smokeless lump	Cincinnati	2.85	3.25	2.75	2.50@ 3.00
Smokeless mine run	Cincinnati	2.00	2.25	2.10	*2.00*
Smokeless screenings	Cincinnati	1.50	1.35	1.35	1.25@ 1.50
*Smokeless mine run	Boston	4.35	4.40	4.25	*4.10@ 4.25*
Clearfield mine run	Boston	1.95	2.05	1.95	*1.75@ 2.00*
Cambria mine run	Boston	2.25	2.30	2.15	2.00@ 2.35
Somerset mine run	Boston	2.10	2.10	2.00	*1.85@ 2.15*
Pool 1 (Navy Standard)	New York	2.65	2.85	2.75	*2.60@ 2.85*
Pool 1 (Navy Standard)	Philadelphia	2.65	2.80	2.80	2.65@ 3.00
Pool 1 (Navy Standard)	Baltimore	2.10	2.10	2.05	2.00@ 2.10
Pool 9 (Super. Low Vol.)	New York	2.05	2.35	2.30	*2.15@ 2.35*
Pool 9 (Super. Low Vol.)	Philadelphia	2.00	2.35	2.35	2.20@ 2.50
Pool 9 (Super. Low Vol.)	Baltimore	1.90	2.00	1.90	1.85@ 1.95
Pool 10 (H.Gr.Low Vol.)	New York	1.80	1.95	1.95	*1.70@ 2.00*
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.65	2.05	2.05	1.90@ 2.25
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.75	1.80	1.75	1.70@ 1.80
Pool 11 (Low Vol.)	New York	1.55	1.70	1.70	*1.50@ 1.85*
Pool 11 (Low Vol.)	Philadelphia	1.55	1.80	1.80	*1.55@ 1.85*
Pool 11 (Low Vol.)	Baltimore	1.50	1.65	1.60	1.60@ 1.65
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.45	1.50	1.45	*1.35@ 1.55*
Pool 54-64 (Gas and St.)	Philadelphia	1.45	1.45	1.45	1.35@ 1.55
Pool 54-64 (Gas and St.)	Baltimore	1.70	1.35	1.30	1.30@ 1.35
Pittsburgh sc'd gas	Pittsburgh	2.40	2.45	2.45	*2.35@ 2.50*
Pittsburgh gas mine run	Pittsburgh	2.00	2.05	2.05	2.00@ 2.15
Pittsburgh mine run (St.)	Pittsburgh	1.80	2.00	2.00	*1.90@ 2.00*
Pittsburgh slack (Gas)	Pittsburgh	1.65	1.45	1.45	**1.50@ 1.60**
Kanawha lump	Columbus	2.10	2.10	2.10	*1.85@ 2.30*
Kanawha mine run	Columbus	1.50	1.55	1.55	1.40@ 1.70
Kanawha screenings	Columbus	.95	.85	.85	**1.00@ 1.20**
W. Va. lump	Cincinnati	2.00	2.05	1.85	1.75@ 2.00
W. Va. gas mine run	Cincinnati	1.30	1.50	1.40	**1.40@ 1.65**
W. Va. steam mine run	Cincinnati	1.20	1.35	1.35	**1.35@ 1.50**
W. Va. screenings	Cincinnati	1.00	.85	.85	**.75@ 1.10**
Hocking lump	Columbus	2.25	2.50	2.35	2.25@ 2.50
Hocking mine run	Columbus	1.45	1.50	1.50	**1.40@ 1.70**
Hocking screenings	Columbus	1.15	1.05	1.05	**1.00@ 1.20**
Pitts. No. 8 lump	Cleveland	2.25	2.25	2.25	1.90@ 2.65
Pitts. No. 8 mine run	Cleveland	1.75	1.85	1.85	1.85@ 1.90
Pitts. No. 8 screenings	Cleveland	1.45	1.35	1.40	**1.50@ 1.60**

Midwest	Market Quoted	Apr. 6, 1925	Mar.22, 1926	Mar.29, 1926	Apr.5, 1926†
Franklin, Ill. lump	Chicago	$2.60	$3.00	$3.00	*$2.60*
Franklin, Ill. mine run	Chicago	2.35	2.40	2.40	2.35@ 2.50
Franklin, Ill. screenings	Chicago	2.10	1.85	1.90	*1.75@ 2.00*
Central, Ill. lump	Chicago	2.35	2.60	2.35	*2.25@ 2.40*
Central, Ill. mine run	Chicago	2.10	2.10	2.10	*2.00@ 2.10*
Central, Ill. screenings	Chicago	1.90	1.40	1.40	*1.25@ 1.40*
Ind. 4th Vein lump	Chicago	2.60	2.75	2.75	*2.25@ 2.60*
Ind. 4th Vein mine run	Chicago	2.10	2.20	2.15	2.10@ 2.25
Ind. 4th Vein screenings	Chicago	2.05	1.70	1.70	1.65@ 1.75
Ind. 5th Vein lump	Chicago	2.10	2.15	2.15	2.00@ 2.35
Ind. 5th Vein mine run	Chicago	1.95	1.95	1.95	1.85@ 2.10
Ind. 5th Vein screenings	Chicago	1.70	1.30	1.30	1.25@ 1.35
Mt. Olive lump	St. Louis	2.50	2.75	2.75	*2.50*
Mt. Olive mine run	St. Louis	2.25	2.15	2.15	2.15
Mt. Olive screenings	St. Louis	1.75	1.40	1.40	1.40
Standard lump	St. Louis	2.25	2.50	2.50	2.50
Standard mine run	St. Louis	1.80	1.80	1.80	1.75@ 1.85
Standard screenings	St. Louis	1.70	1.15	1.15	1.15@ 1.20
West Ky. block	Louisville	1.85	1.85	1.85	1.75@ 2.00
West Ky. mine run	Louisville	1.35	1.30	1.30	1.15@ 1.50
West Ky. screenings	Louisville	1.25	.95	.95	**.90@ 1.10**
West Ky. block	Chicago	1.85	1.75	1.75	1.65@ 1.85
West Ky. mine run	Chicago	1.30	1.15	1.15	.80@ 1.50
South and Southwest					
Big Seam lump	Birmingham	2.25	2.35	2.00	1.75@ 2.25
Big Seam mine run	Birmingham	1.75	1.75	2.00	1.75@ 2.25
Big Seam (washed)	Birmingham	1.85	2.10	2.25	2.00@ 2.50
S. E. Ky. block	Chicago	2.10	2.60	2.35	*2.00@ 2.50*
S. E. Ky. mine run	Chicago	1.55	1.65	1.65	1.50@ 1.85
S. E. Ky. block	Louisville	2.10	2.35	2.00	1.75@ 2.25
S. E. Ky. mine run	Louisville	1.35	1.55	1.50	**1.50@ 1.60**
S. E. Ky. screenings	Louisville	1.10	1.00	1.00	.90@ 1.10
S. E. Ky. block	Cincinnati	2.10	2.25	2.10	2.00@ 2.25
S. E. Ky. mine run	Cincinnati	1.25	1.50	1.50	1.25@ 1.75
S. E. Ky. screenings	Cincinnati	1.05	.90	.90	**.80@ 1.15**
Kansas lump	Kansas City	4.25	4.35	4.35	4.25@ 4.50
Kansas mine run	Kansas City	2.85	2.85	2.85	*2.50@ 3.00*
Kansas screenings	Kansas City	2.75	2.50	2.50	2.50

* Gross tons, f.o.b. vessel, Hampton Roads.

† Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	April 6, 1925 Independent	April 6, 1925 Company	Mar. 29, 1926 Independent	Mar. 29, 1926 Company	April 5, 1926† Independent	April 5, 1926† Company
Broken	New York	$2.34	.....	$8.00@$8.50	.....	$8.15@$9.25	.....	$8.15@$9.25
Broken	Philadelphia	2.39	.....	9.15	$9.00@12.50	9.00@ 9.25	*$9.00*	9.00@ 9.25
Egg	New York	2.34	$8.25@$8.50	8.25@ 8.50	10.25@11.00	8.75@ 9.25	*9.50@10.25*	8.75@ 9.25
Egg	Philadelphia	2.39	8.50@ 9.20	8.30@ 8.50	9.25@12.50	9.15@ 9.25	*9.25@ 9.90*	9.15@ 9.25
Egg	Chicago*	5.06	7.76@ 8.40	7.42@ 8.08	.....	8.13	8.75	8.13
Stove	New York	2.34	8.50@ 8.75	8.50@ 8.90	10.50@11.00	9.25@ 9.50	*9.50@10.25*	9.25@ 9.50
Stove	Philadelphia	2.39	9.10@ 9.55	8.75@ 8.90	9.60@12.50	9.35@ 9.50	*9.60@10.00*	9.35@ 9.50
Stove	Chicago*	5.06	8.12@ 8.50	7.82@ 8.00	.....	8.33@ 8.58	8.88	**8.58**
Chestnut	New York	2.34	8.25@ 9.50	8.25@ 8.50	10.25@11.00	8.75@ 9.15	*9.50@10.25*	8.75@ 9.15
Chestnut	Philadelphia	2.39	8.50@ 9.35	8.40@ 8.50	9.25@12.50	9.00@ 9.15	*9.25@10.25*	9.00@ 9.15
Chestnut	Chicago*	5.06	7.94@ 8.25	7.59@ 8.00	.....	8.33@ 8.53	8.88	8.33@ 8.53
Pea	New York	2.22	4.25@ 5.00	5.00@ 5.50	6.00@ 7.50	6.00@ 6.35	**6.50@ 7.50**	6.00@ 6.35
Pea	Philadelphia	2.14	5.00@ 5.75	5.25@ 5.30	6.50@ 7.50	6.00@ 6.50	*6.50@ 7.00*	6.00@ 6.50
Pea	Chicago*	4.79	4.91@ 5.36	4.69@ 5.00	.....	5.65@ 5.80	5.65	5.65@ 5.80
Buckwheat No. 1	New York	2.22	2.00@ 2.75	2.50@ 3.00	2.50@ 3.00	3.00@ 3.50	*2.10@ 2.60*	3.00@ 3.50
Buckwheat No. 1	Philadelphia	2.14	2.00@ 2.25	2.50	3.00@ 3.50	3.00	*2.50@ 3.00*	3.00
Rice	New York	2.22	1.90@ 2.25	2.00	1.85@ 2.25	2.00@ 2.25	*1.50@ 2.00*	2.00@ 2.25
Rice	Philadelphia	2.14	1.75@ 2.00	2.00	2.25	2.25	2.25	2.25
Barley	New York	2.22	1.35@ 1.50	1.50	1.30@ 1.65	1.60@ 1.75	*1.30@ 1.50*	1.60@ 1.75
Barley	Philadelphia	2.14	1.50	1.50	1.75	1.75	*1.50@ 1.60*	1.75
Birdseye	New York	2.22	1.40@ 1.60	1.60	1.40@ 1.60	2.00	**1.60@ 1.75**	2.00

*Net tons, f.o.b. mines. †Advances over previous week shown in **heavy type**; declines in *italics*.

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run, $1.15@$1.50; screenings 90c. @$1.10.

Try to Unload Dock Surplus

Current movement in the dock trade at the Head of the Lakes has been erratic, in keeping with the weather fluctuations in demand. Bookings for early April delivery, however, have been substantial and industrial inquiry has improved. Sales agents have started an aggressive campaign to cut down the stocks on hand—estimated at 2,375,000 tons—before navigation opens. Irregularity in prices has been the result and quotations are off 25@50c. a ton, except upon smokeless, which slipped sharply a few weeks ago.

With orders for anthracite flowing in at an increasing rate, dock operators feel that the market will readily absorb 1,000,000 tons during the coming season of navigation. Retail yards at Superior and Duluth have been booking fill-up orders from householders who are not quibbling over what the price may be. On the industrial side the most active demand at the present time is for bituminous screenings, which are held at $4, f.o.b. docks.

Unseasonably cold weather kept the retail trade in the Twin Cities busy last week, but few orders were placed with the wholesalers. Steam buyers, too, have been holding back, influenced in their policy by the fact that they have been able to pick up distress tonnage here and there. Weather conditions also had a favorable effect upon the movement of coal in Milwaukee.

Snowstorm Cleans Up "No Bills"

The heavy snowstorms which swept over the Middle West last week cleaned up the "no bills" in the Kansas field and brought full-time operation to the mines that were open. Stripping operations were the chief beneficiaries. Shaft-mine screenings are scarce, but the demand has been met by crushed shovel mine-run. Arkansas and Oklahoma operations shared little in the rush demand. Although the retailers specified small cars of Kansas coal, they took any equipment loaded.

April reductions averaging $2 per ton have failed to stimulate domestic demand for Colorado coal. Retail buying, for the most part, is limited to current consumer demand. Steam-coal movement, on the other hand, is active and prices have been advanced approximately 50c. Colorado mines are running about three days a week.

A weather flurry toned up Utah retail business last week, but there was little reaction at the mines. Few operations are doing better than two days a week. Industrial demand is subnormal and "no bills" are piling up. An interesting development is the activity of companies doing business on a C. O. D. basis. Two companies, offering Carbon County coal, are now working on this plan in Salt Lake City. One has cut quotations 75c.@$1.50 and the other, $2.25 per ton.

Smokeless Prices Slumping

The price situation in smokeless coals is still unsettled. After most of the standard shippers had announced a $3 price on lump and egg for April, one of the largest in the field—the Crozer-Pocahontas Co.—quoted $2.75 and three other distributors met that figure. Nut is $2@$2.25 in the Cincinnati market; mine-run fairly steady at $2, and slack, $1.25@$1.50.

Diversion of business from the Harlan to the Elkhorn field is the outstanding development in the high-volatile market. One contract calling for approximately 700,000 tons for steel plants has been switched to the Elkhorn district on a $1.50 mine-run basis. Several Ohio and Canadian utility contracts also are going to the Elkhorn field on the same basis. The $1.50 price has been fairly well established as the ruling lake figure. Heavy contract buying on "a mine-run basis" has strengthened the market in slack. Some coal still can be had at 80c., but the better grades are $1@$1.15.

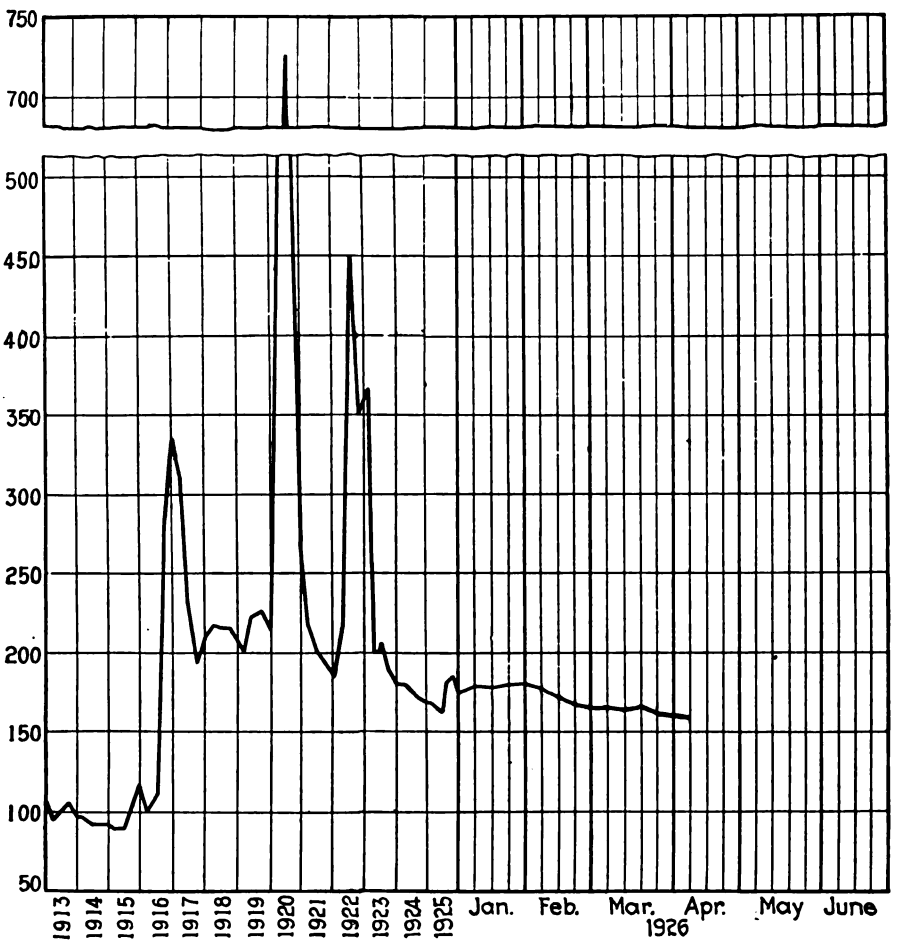
The market for prepared sizes is in a state of collapse. Southeastern Kentucky is sticking to the $2@$2.25 range on block, but 4-in. West Virginia block is freely offered at $1.75@$2 and egg is weak at $1.50@$1.75. Spot mine-run, both steam and byproduct, is draggy.

Uncertainty Rules Central Ohio

The central Ohio steam trade is still an uncertain quantity. Many of the contracts which expired April 1 have not been renewed, and there is nothing in sight to indicate that they will be. With supplies plentiful, buyers find the spot market equal to all their demands. No improvement is expected until the lake trade is in full swing. Southern Ohio, which is now producing about 18 per cent of capacity, is cherishing no hopes, however, that it will be an active participant in that business.

Except in the case of slack and nut-and-slack, it has been difficult to market eastern Ohio coal—even at a loss. Screenings, however, have again stiffened and recent quotations show an advance of 10c. Production in the No. 8 field during the week ended March 27 was estimated at 217,000 tons, or 31 per cent of potential capacity. The output was 30,000 tons less than in the week preceding and 34,000 tons under the figures for the corresponding week in 1925.

What little business is left in the Pittsburgh district appears to be drifting into the hands of a few operators. The majority of the producers seem to feel that they cannot operate on the Jacksonville scale and do not care to follow the lead of the Pittsburgh Coal Co. in its open-shop policy. That com-



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926				1925	1924
	Apr. 5	Mar. 29	Mar. 22	Mar. 15	Apr. 6	Apr. 7
Index	158	163	167	168	162	171
Weighted average price	$1.93	$1.97	$2.02	$2.03	$1.96	$2.07

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average of the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.

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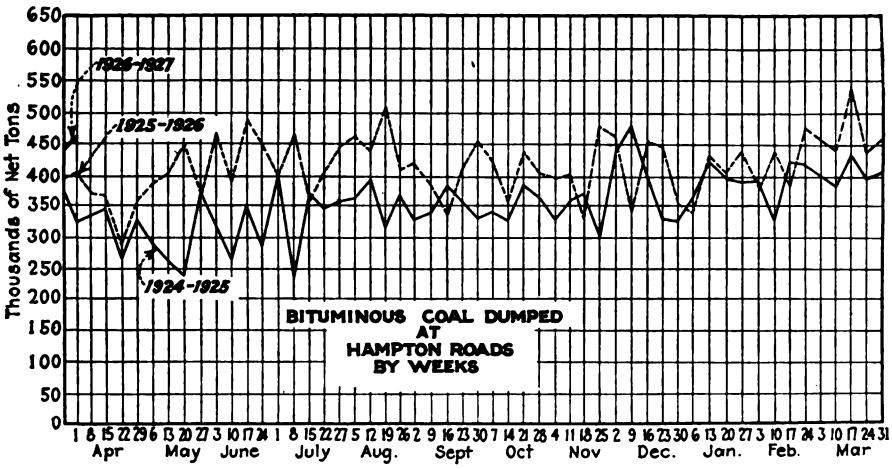


pany during the week ended March 27 had nine mines running and produced 37,923 tons—approximately 15 per cent of its weekly output in 1923.

Slack coal is up 10c., but steam mine-run is off a dime. Screened gas coal, too, is a shade easier. Some West Virginia mines working the Pittsburgh seam have been offering three-quarter steam at $1.35, as compared with $1.90 @$2 in the Pittsburgh district. Lake season contracts have been sought by these same non-union interests at $1.45.

More Pennsylvania Mines Down

A number of the smaller operations in the central Pennsylvania field have shut down until demand shows more life. Production last month was 70,340 cars, as compared with 82,648 cars in February. Prices on the higher grades of coal are steady, but quotations on lower grades have weakened. Pool 1 is $2.50@$2.60; pool 71, $2.35@$2.45; pool 9, $2.10@$2.20; pool 10, $1.85@$1.90; pool 11, $1.65@$1.70; pool 18, $1.60.

Industrial demand for bituminous coal in the Buffalo market is as dull as has been the case for several weeks past. Nominal quotations are unchanged. Domestic demand last week reflected winter weather conditions, but there was little call for the "substitute" fuels. The only sign of interest in that section of the trade was in the low-volatiles. Consumers rebel against current coke prices despite recent reductions.

Midsummer moribundity characterizes the steam coal market in New England. Inquiry for all grades is very light. Consumers who buy in volume appear to have made a resolution to pay the lowest prices which have prevailed in recent years. They are relying upon accumulations at the southern loading piers to control the situation. Those who will not buy distress tonnage expect their regular sources of supply to modify quotations in the light of the prices at which demurrage coal has been moved.

Southern Spot Market Demoralized

The spot market at Norfolk and Newport News is demoralized. Few shippers pretend to ask more than $4.25 gross, f.o.b. vessels, for Navy Standard coal. There is a surplus available at the Northern ports for inland delivery and spot prices are wobbly. As low as $5.60 gross on cars at Boston has been heard within the past few days.

There are only occasional inquiries for Pennsylvania bituminous, either for all-rail or rail-and-water shipment. Quotations are soft. Even where the competition with the low-volatiles from southern West Virginia is not direct, the central Pennsylvania shippers know that only a minimum figure will attract any attention.

Marine freights are settling into a low season basis, especially on steamers. Only those owners with good connections are able to keep their tonnage continuously in service along the coast, and rates are correspondingly easy. Retail prices on steam coal at Boston have been reduced.

Distress Coal Still a Factor

Distress coal, which can be bought at $1@$1.25, mines, is still a depressing factor in the New York bituminous market and dulls the interest of consumers in other spot trade. Tidewater buying has been slow. There are many loaded boats in the harbor awaiting buyers. Most of these boats were loaded to relieve congestion at the piers. Small quantities of sized Connellsville coke are moving at $3.50@$3.75, ovens. A few vessels of foreign coal and coke reached the harbor last week.

At both Philadelphia and Baltimore, as at New York, there is little interest displayed by buyers in contract renewals. The only bright spot in the latter city is the export situation, which has absorbed some of the coal standing at the piers. The eagerness of Philadelphia coal men to line up contracts has resulted in many attractive price tenders, both to utilities and industrials. Spot gas slack is the weakest member of the slack family. April contracts on pool 1 coal at Hampton Roads average $1.75 net, f.o.b. mines.

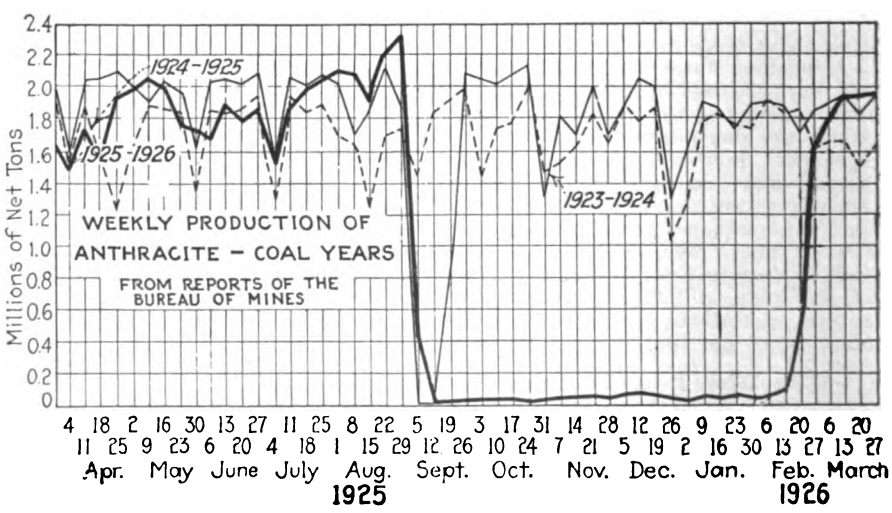
Sales of domestic coals in the Birmingham market last week were largely on contract orders. At the present rate of buying the bulk of the medium and high-grade coals will be booked up through the spring and summer by the end of May. On the industrial side there has been no material decline in the demand for high-grade mine-run and washed coals. All large consumers are taking their contract quotas. Output approximates 400,000 tons per week.

New York Anthracite Demand Easier

Domestic anthracite coals were easier in the New York market last week. Independent shippers welcomed the week-end suspensions in the hope that the price situation—from their standpoint—would be improved. Current quotations cover a wide range, with the average minimum around $9.50. Stove and nut lead in demand. Pea is still scarce, much of the output being consumed in the region. There was no change in company prices on April 1, but it is reported that at least one large producer is planning a cut of 50c. on No. 1 buckwheat.

Retail dealers, however, readjusted prices to the consumer. The new schedule generally prevailing in Manhattan is as follows: Broken, $14.25; egg and nut, $14.50; stove, $14.75; pea, $10.75; No. 1 buckwheat, $6.40; rice, $5.90; barley, $5.40; bituminous, $7.25. One company announced that Welsh anthracite would be retailed at $2 per ton above the price on the Pennsylvania product.

Independent shippers at Philadelphia signalized the new coal year with reductions which brought their average quotations down to 50c. above the company range. Retail dealers, for the most part basing their prices on company coal figures, which showed no change, established the following basis: Egg and nut, $15.75; stove, $16; pea, $12; buckwheat, $8, curb delivery.



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Car Loadings and Supply

	Cars Loaded All Cars	Cars Loaded Coal Cars
Week ended March 20, 1926	977,209	183,205
Preceding week	967,411	188,834
Week ended March 21, 1925	911,481	140,746

	Surplus Cars All Cars	Surplus Cars Coal Cars	Car Shortages All Cars	Car Shortages Coal Cars
March 22, 1926	213,780	79,551	.....	.....
March 15, 1926	198,854	72,214	.....	.....
March 22, 1925	320,565	168,963	.....	.....

Buckwheat Demand Broadening

There is a growing demand for buckwheat as a domestic fuel and more dealers are offering this size to the household consumer. In many cases buckwheat is replacing pea, which is not being shipped in quantities equal to the demand. Summer fill-ups have started and that prevents real weakness in any domestic size. The steam trade is slow. There is considerable shading of independent prices, particularly on buckwheat.

Baltimore retailers have not deviated from their policy of placing the bulk of their orders with company shippers. With milder weather, they are hopeful that high premiums on independent tonnage will disappear. Most of the yards have some stock of each domestic size and there has been no great difficulty in supplying current needs of consumers.

Spot trade in the Connellsville coke region last week was extremely dull. There has been little call for spot furnace coke, which is quoted at $3.25, and no surplus seeking a market. Spot foundry coke is $4.50@$5, with buying light and production closely regulated. Production during the week ended March 27, according to the Connellsville *Courier* was 187,630 tons. Furnace ovens produced 104,800 tons, or 200 tons more than during the preceding week; merchant ovens produced 82,830 tons, a decrease of 2,580 tons.

New Title for Safety Director

Because Bureau of Mines officials felt that the title "Director of Safety Service" was a misnomer, a change in designation was made this week, and henceforth the official in charge of this branch of the work will be known as "Chief Engineer, Safety Service."

Total Coke Output Falls in February; Daily Rate Gains

Output of byproduct coke during February, according to the Bureau of Mines, totaled 3,500,000 net tons, a decrease of 304,000 tons, or 8 per cent, compared with the output in January, although the daily rate increased to 125,006 tons, a gain of 2,295 tons, or 1.9 per cent. The coke plants operated at about 94 per cent of capacity. There have been 80 byproduct plants in existence since November, of which 74 are active.

Total production of beehive coke in February, estimated at 1,402,000 net tons, shows a gain of 21,000 tons, or 1.5 per cent, compared with that in January.

Production of all coke amounted to 4,902,000 tons, the byproduct plants contributing 71 per cent (73 per cent in January), and the beehive plants the remainder.

Monthly Output of Byproduct and Beehive Coke in the United States(a)

(In Thousands of Net Tons)

	Byproduct Coke	Beehive Coke	Total
1923 Monthly average	3,133	1,615	4,748
1924 Monthly average	2,833	806	3,639
1925 Monthly average	3,332	893	4,225
November, 1925	3,557	1,213	4,770
December, 1925	3,760	1,307	5,067
January, 1926	3,804	1,381	5,185
February, 1926	3,500	1,402	4,902

a Excludes screenings and breeze.

Estimated Monthly Consumption of Coal in the Manufacture of Coke

(In Thousands of Net Tons)

	Consumed in byproduct Ovens	Consumed in beehive Ovens	Total Coal consumed
1923 Monthly average	4,523	2,507	7,030
1924 Monthly average	4,060	1,272	5,332
1925 Monthly average	4,787	1,371	6,158
Novembr, 1925	5,111	1,913	7,024
December, 1925	5,403	2,062	7,465
January, 1926	5,466	2,178	7,644
February, 1926	5,029	2,212	7,241

Of the total output of byproduct coke during February, 2,859,000 tons, or 81.7 per cent, was made in plants associated with iron furnaces, and 641,000 tons, or 18.3 per cent, was made at merchant or other plants.

Bethlehem's Output of Coal And Coke Climbs

The 21st annual report of the Bethlehem Steel Corporation shows that for the year ended Dec. 31, 1925, the mines of that concern produced 6,331,246 gross tons of coal, as compared with 5,586,200 gross tons in 1924, and that 4,446,472 gross tons of coke was manufactured as compared with 3,446,728 tons in the previous twelve months.

The coal properties of the Corporation are located in the vicinity of Ellsworth, Heilwood, Johnstown, Marianna, Slickville and Wehrum, Pensylvania; Fairmont and Morgantown, West Virginia. The properties are estimated to contain 840,395,000 tons of coal and are equipped to produce 10,000,000 tons per annum. The Corporation also owns 1,704 byproduct coke ovens.

Erie Coal Segregation Not Imminent, Is Report

No plan of segregation of the Erie R.R. coal interests is imminent or under consideration, according to a report this week. The subject of segregation of the Erie's holdings of the stock of the Pennsylvania Coal Co., it is understood, was not considered at the March 26 meeting of the railroad's directors. It has been pointed out that in addition to the fact that the Pennsylvania Coal Co.'s shares are pledged specifically as collateral security for a bond mortgage loan made to the Erie R.R., there is no interlocking of the two companies. The directors, officers and management of the Pennsylvania Coal Co. are all, it is stated, separate and distinct from those of the railroad company.

Federal Fuel Yard Asks Bids

Chief Engineer Pope, Government Fuel Yards, sent out proposals March 30 for bids on anthracite and bituminous coal for the fiscal year commencing July 1. Bids are to be opened at 10 a.m. May 12 at the office of Mr. Pope, in Washington, for 12,450 tons of anthracite and 244,500 tons of bituminous.

Coal Produced in Missouri in 1924[a]

(Exclusive of Product of Wagon Mines)

County	Net Tons: Loaded at Mines for Shipment	Net Tons: Sold to Local Trade and Used by Employees	Net Tons: Used at Mines for Steam and Heat	Net Tons: Total Quantity	Value: Total	Value: Average Per Ton	Number of Employees: Underground: Miners b	Number of Employees: Underground: All Others	Number of Employees: Surface	Number of Employees: Total	Average Number of Days Worked	Average Tons Per Man Per Day
Adair	123,193	26,082	5,020	154,295	$474,000	$3.07	218	111	24	353	138	3.17
Audrain	3,291	12,877	122	16,920	69,000	4.08	36	13	4	53	264	1.21
Barton	702,690	5,440	31,724	739,854	2,170,000	2.93	33	10	636	679	122	8.96
Bates	198,220	2,002	7,625	207,847	518,000	2.49	103	22	102	227	146	6.25
Boone, Chariton, and Callaway	600	18,738	.....	19,338	65,000	3.36	43	8	7	58	176	1.87
Caldwell, Clay, and Platte	51,279	45,590	2,756	99,625	472,000	4.74	194	79	24	297	182	1.84
Grundy, Harrison, and Schuyler	2,050	7,904	237	10,191	52,000	5.10	40	12	6	58	151	1.16
Henry	101,300	9,605	826	111,731	322,000	2.88	21	3	99	123	192	4.73
Lafayette	277,635	39,163	9,699	326,497	1,238,000	3.79	865	273	101	1,239	124	2.12
Linn	2,699	19,027	103	21,829	104,000	4.76	72	18	12	102	111	1.92
Macon	170,533	9,519	1,546	181,598	559,000	3.08	594	159	59	812	101	2.21
Putnam	8,547	.....	.....	8,547	26,000	3.04	47	9	5	61	89	1.56
Randolph	128,289	6,070	3,865	138,224	446,000	3.23	328	55	37	420	144	2.29
Ray	363,639	41,504	3,059	408,202	1,529,000	3.75	993	277	132	1,402	146	1.99
Other counties c	34,560	781	841	36,182	110,000	3.04	62	19	12	93	135	2.88
Total	2,169,155	244,302	67,423	2,480,880	8,154,000	$3.29	3,649	1,068	1,260	5,977	135	3.08

(a) Note that the coal statistics of the Geological Survey for a given year include only the mines that had an output in that year. Many mines that operated in 1923 produced no coal in 1924; moreover, many of the mines that did produce in 1924 worked for a short time only. The number of active mines of commercial size in Missouri was 149 in 1923 and 127 in 1924.

(b) Includes also loaders and shotfirers. (c) Johnson, Ralls and Vernon. Statistics issued by U. S. Bureau of Mines.

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Foreign Market And Export News

Welsh Trade Picks Up As Boats Wait to Berth; Tyne Market Marks Time

London, England, March 23.—The Welsh steam coal trade was much more active this week, largely owing to the better arrival of shipping, and for the first time in two months ships have been waiting to berth. This factor, combined with better loading facilities at the docks, has enabled operators to clear large stocks of coal and also to put their pits into more regular operation.

There are indications that foreign buyers, in anticipation of some unusual event on May 1, are laying in heavy stocks of coal as a precautionary measure. In addition to this there is the usual accelerated activity preceding the Easter holidays. These influences have served to stiffen prices, though as yet there is little sign of operators covering the gap of around 3s. 3d. between selling prices and cost of production.

On account of this gap there is a feeling in Wales that unless the subsidy is continued or some other relief measure is introduced, many of the pits must close down. The report of the Coal Commission has been received with mixed feelings, though the general attitude is hostile.

The situation at Newcastle has fallen entirely under the influence of the Coal Commission report, and until it is known what is going to happen in the industry there is little inclination to do business of any sort. The business for March is quite good and the exports are satisfactory, but there is very little forward business on foot. The only contract worth reporting is one of 40,000 tons of Durham gas coals for the Genoa gasworks, to be delivered from May to August.

Output by British collieries during the week ended March 20, according to a special cable to *Coal Age*, totaled 5,370,000 gross tons, compared with 5,285,000 tons the preceding week.

Belgian Conditions Unchanged

The Belgian market jogs on without startling change, reports Brussels under date of March 25. Domestic coals are sluggish and industrial grades maintain their position with difficulty. Foreign competition being to a certain extent eliminated by the rise of sterling, this may react favorably on the Belgian coal market, especially in the Borinage.

Coking smalls are moving at 85@87 fr. and in spite of their high prices they are in great request. Lean duffs, and especially smalls 0x8 for cement works, are scarce at 42@45 fr. per ton. In semi-bituminous, large sizes, such as 10x20 for boilers, are neglected. Small sizes, on the other hand (5x10, 6x8 and 10x15) are active, but the demand for bituminous peas and beans is restricted. The official price on lean smalls has been fixed at 70 fr.

Belgium received 269,424 tons of reparation fuels in February against 312,632 tons in January.

French Spot Demand Featureless; Agree on Summer Prices

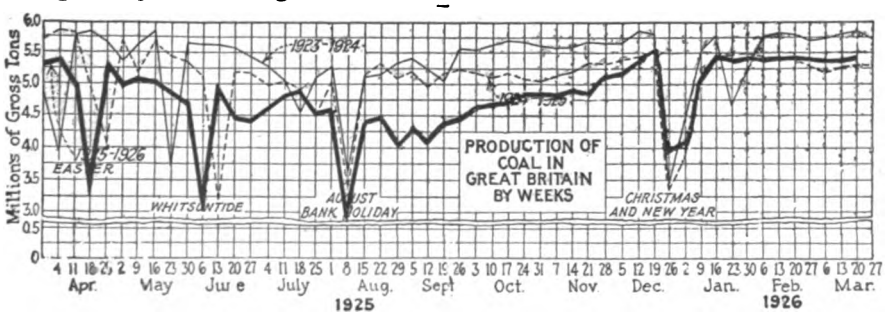
Paris, France, March 25.—There was little change in the French coal markets the past week. Domestic demand is restricted by the weather and the merchants' yards are well stocked. Nevertheless, the mines find a fairly ready sale for their output because Belgian prices are up 6@10 fr. and British quotations are too high to appeal to French buyers. As a result there is a better movement of semi-bituminous and lean nuts. Industrial buying is well sustained.

At a meeting in Paris ten days ago French and Belgian producers reached an agreement on domestic prices in the Paris district for the summer season. The base prices on French coals at the mines range from 162 to 210 fr. on semi-bituminous, 165 to 210 fr. on quarter bituminous, 160 to 210 fr. on lean coals and 180 to 230 fr. on anthracite. A discount of 10 fr. is given for April-May orders, 6 fr. on June-July business and 4 fr. on August orders. The base price on ovoids is 136 fr. and the discounts are 15, 10 and 5 fr., respectively.

Base prices on Belgian coals range from 177 to 230 fr. on semi-bituminous 175 to 230 fr. on quarter bituminous, 175 to 235 fr. on lean and 175 to 255 fr. on anthracite. Discounts are 12 fr. on water and 10 fr. on rail shipments in April and May, 6 fr. on June-July orders and 4 fr. for August. The base price on ovoids is 116 fr. and the discounts are the same as on French patent fuel. Belgian prices are in French francs, and will be subject to correction only when exchange rates have dropped to 80 Belgian to 100 French francs.

In addition to the summer discounts, there also are discounts on large orders. These are 0.5 fr. for lots of 500 to 999 tons; 1 fr. for orders of 1,000 to 1,499 tons and 1.5 fr. for orders exceeding 1,500 tons.

French production, exclusive of the Saar, during January was as follows: Coal, 4,160,862 metric tons; lignite, 90,353 tons; coke, 293,813 tons; patent fuel, 360,319 tons. The Saar turned out 1,112,658 tons of coal and 22,249 tons of coke.



Export Clearances, Week Ended April 1

FROM HAMPTON ROADS

	Tons
For Brazil:	
Ital. Str. Monte Vevoso, for Rio de Janeiro	7,277
Ger. Str. Adeline Hugo Stinnes No. 3, for Rio Grande do Sul	5,715
Br. Str. Skipsea, for Rio de Janeiro	6,604
Br. Str. Essex Heath, for Rio de Janeiro	5,272
For Nova Scotia:	
Br. Str. Fred. Cleves, for Halifax	677
For Cuba:	
Nor. Str. Ravnanger, for Havana	5,087
For Italy:	
Ital. Str. Maria Adele, for Porto Ferrajo	9,914
Du. Str. Vredenburg, for Genoa	9,809
Ital. Str. Sic Vos Non Vobis, for Palermo	2,904
For Mexico:	
Nor. Str. Hanna Nielsen, for Santa Rosalia	3,368
For French West Indies:	
Br. Str. Mathara, for Fort de France	7,213

FROM BALTIMORE

For Italy:	
Br. Str. Lady Brenda, for Savona	4,537
Jap. Str. Kofuku Maru, for Venezia	7,398

Hampton Roads Coal Dumpings*

(In Gross Tons)

	Mar. 25	Apr. 1
N. & W. Piers, Lambert's Pt.:		
Tons dumped for week	152,916	172,261
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	92,640	91,945
C. & O. Piers, Newport News:		
Tons dumped for week	144,390	146,982

* Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS	March 27	April 3†
Pool 1, New York	$5.50@$5.75	$5.50@$5.75
Pool 9, New York	5.10@ 5.30	*5.10@ 5.25*
Pool 10, New York	4.75@ 5.00	4.75@ 5.00
Pool 11, New York	4.50@ 4.75	4.50@ 4.75
Pool 9, Philadelphia	5.10@ 5.40	5.10@ 5.40
Pool 10, Philadelphia	4.95@ 5.15	*4.80@ 5.15*
Pool 11, Philadelphia	4.60@ 4.80	*4.25@ 4.50*
Pool 1, Hamp. Roads	4.40@ 4.50	*4.25@ 4.35*
Pool 2, Hamp. Roads	4.20	4.15@ 4.25
Pools 5-6-7, Hamp. Rds.	3.90	3.95@ 4.00
BUNKERS		
Pool 1, New York	$5.75@$6.00	$5.75@$6.00
Pool 9, New York	5.35@ 5.55	*5.35@ 5.50*
Pool 10, New York	5.00@ 5.25	5.00@ 5.25
Pool 11, New York	4.75@ 5.00	4.75@ 5.00
Pool 9, Philadelphia	5.35@ 5.65	5.35@ 5.65
Pool 10, Philadelphia	5.20@ 5.40	*5.05@ 5.40*
Pool 11, Philadelphia	4.65@ 5.05	*4.50@ 4.75*
Pool 1, Hamp. Roads	4.50	*4.35*
Pool 2, Hamp. Roads	4.30	*4.25*
Pools 5-6-7, Hamp. Rds.	4.00	4.00

Current Quotations, British Coal, F.o.b Port, Gross Tons

Quotations by Cable to *Coal Age*

Cardiff:	March 27	April 3†
Admiralty, large	24s.6d.	24s.6d.
Steam smalls	14s.	*14s.3d.*
Newcastle:		
Best steams	18s.	18s.
Best gas	18s.@ 20s.	20s.
Best bunkers	16s.6d.	16s.6d.

Advances over previous week shown in **heavy** type; declines in *italics*.

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Coming Meetings

Canadian Retail Coal Association. Annual convention, King Edward Hotel, Toronto, Ont., Can., April 14 and 15. Secretary, B. A. Caspell, Brantford, Can.

American Welding Society. Annual convention, 29 West 39th St., New York City, April 21-23. Secretary, M. M. Kelly, 29 West 39th St., New York City.

California Retail Fuel Dealers Association. Thirteenth annual convention at Del Monte, Calif., April 22-24. Secretary, J. B. Muir, Oakland, Calif.

Mine Inspectors' Institute of America. Annual meeting, Seventh Avenue Hotel, Pittsburgh, Pa., May 11-13. Secretary, G. B. Butterfield, Hartford, Conn.

International Railway Fuel Association. Eighteenth annual convention, Hotel Sherman, Chicago, Ill., May 11-14. Secretary, J. B. Hutchinson, Omaha, Neb.

National Retail Coal Merchants' Association. Ninth annual convention, New Willard Hotel, Washington, D. C., May 17-19. Resident vice-president, Joseph E. O'Toole, Transportation Bldg., Washington, D. C.

Electric Power Club. Convention at The Homestead, Hot Springs, Va., May 24-27. Secretary, S. N. Clarkson, B. F. Keith Bldg., Cleveland, Ohio.

The American Mining Congress. Annual Exposition of Coal Mining Equipment, May 24-28, at Cincinnati, Ohio, in conjunction with the annual meeting of practical operating officials. Assistant secretary, E. R. Coombes, Washington, D. C.

International Geological Congress. The fourteenth congress will be held in Madrid, Spain, commencing May 24, 1926. From May 5 to 22 excursions of interest to the visiting delegates will be arranged. Information concerning the congress can be obtained from the secretary of the organizing committee, Enrique Dupuy de Lome, Plaza de los Mostenses, 2, Madrid, Spain.

Midwest Retail Coal Merchants Association. Annual meeting, May 25 and 26, at Kansas City, Mo. Secretary, James P. Andriano, St. Joseph, Mo.

Western Canada Fuel Association. Annual meeting at Winnipeg, Manitoba, Can., May 27 and 28. Secretary, W. H. Morrison, Winnipeg.

American Wholesale Coal Association. Annual meeting at Toledo, Ohio, June 7-9. Treasurer, R. B. Starek, Union Fuel Bldg., Chicago, Ill.

Association of Iron & Steel Electrical Engineers. Exposition and convention at Hotel Sherman, Chicago, Ill., June 7-10. Secretary, J. F. Kelly, 1007 Empire Bldg., Pittsburgh, Pa.

American Institute of Electrical Engineers. Annual convention, White Sulphur Springs, W. Va., June 21-25. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

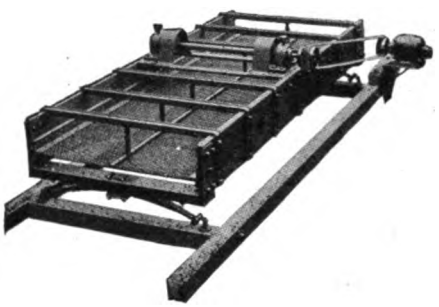
American Society for Testing Materials. Convention at Haddon Hall, Atlantic City, N. J., June 21-25. Secretary, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

New Equipment

Light Weight and Strength Distinguish This Screen

A vibrating screen, new to the mining field, has been put on the market by the Universal Vibrating Screen Co., of Racine, Wis. This screen, the makers claim, handles efficiently either wet or dry materials, 1¼-in. in size to 30-mesh. The Type C screen is shown in the accompanying illustration.

In construction the screen is strong, being built of steel and oak. The steel side members receive all the wear from material passing over the screens. The upper frame is supported on special springs at centrally located points at the end of the frame. The makers



A Slight Motion but Sudden Makes Screening Easy

A shaft with two off-center weights rotated at 1,800 r.p.m. gives this screen a vibration that makes fine material roll on its way rapidly to the holes in the wire cloth.

claim that this two-point suspension is essential, as it tends to equalize the load or feed to screen, so as to keep the vibratory action at an equal intensity over the entire screening area even though the material is fed unevenly at the upper end of screen. To eliminate all possibility of dead areas the distance between the screen cloth supports is made comparatively short. Additional vibration is transmitted directly to the center of cloth where it is most needed.

The vibrating mechanism is simple. It consists of a shaft on which two off-center weights are mounted, and which is rotated at a speed of 1,800 r.p.m. Specially designed dust-proof housings are used for the self-aligning ball bearings, and it is claimed by the makers, all parts of the assembly are 100 per cent oversize, to insure continuous and trouble-proof service. The power requirement is a little over ¾ hp.

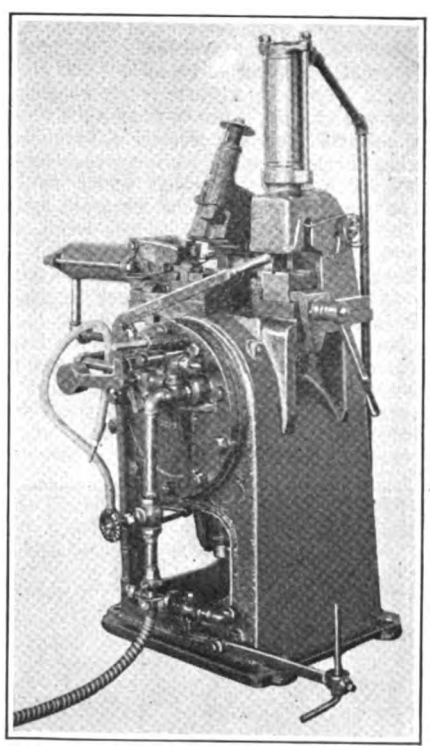
The Type C screen, using screen cloth 3 ft. wide and 8 ft. long, is said to meet nearly all requirements. Special sizes are built, however, among which is the Type F vibrator, using either perforated plate or heavy wire cloth, 4 ft. 8 in. wide by 6 ft. long. This latter type has been designed especially for handling large quantities of fairly dry material, and is essentially a heavy-duty screen. The vibrating mechanism is mounted directly beneath the screening surface, where it is thoroughly protected by steel plates from wear of material passing through the screen, and there are no obstructions to the flow of material.

These screens can be driven from shafting in the plant or by individual motors. The weight of the Type C screen, without motor, is 735 lb., and of the special Type F is 1,050 lb.

Will Sharpen All Sizes of Hammer Drills

Rock-drill users sometimes require a drill sharpener that is sufficiently light and compact to be easily moved and that is able to make ordinary hammer-drill steel bits and shanks effectively. Among these are strip pits and coal mines, also rock tunnels in connection with the latter. To meet this need the Sullivan Machinery Co., Chicago, Ill., has developed the so-called Type C all-hammer sharpener, which weighs only 1,000 lb. and occupies a floor space of only 3½ x 2½ ft. It may be mounted on timbers or skids and is easily moved when necessary. It is capable of making and resharpening any ordinary hammer-drill steel up to 2½-in. gage, and of forging collar or lug shanks. All operations, both upsetting under the dollies and swaging or dressing out the wings, under the vertical dies, are performed by hammer action, with powerful, fast-hitting, horizontal and vertical air hammers.

The sharpener, as shown by the illustration, consists of a substantial,



Portable Type of Sharpener

Though light it has a bit-gaging device similar to that on larger machines. This accurately gages the wings and enables a true double taper to be given the bit.

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cast-steel frame on a pedestal, on which are mounted the horizontal hammer for upsetting and the vertical hammer for swaging. In the base is contained the vise or clamp for holding the steel while being dollied and the diaphragm and toggle which furnish the power to operate the clamp. The horizontal and vertical hammers are similar in type and action to those standard on older Sullivan sharpeners. Heavy springs are used to retract the dolly and to lift the upper vertical die from the steel when air is shut off. Dollying is controlled by a hand lever and swaging by a foot lever, the two interlocking, so that the vertical hammer cannot strike while the vise is closed. An adjustable bit-gaging device is provided similar to that used on the older machines, for accurately gaging the wings and for enabling a true double taper to be given the bit. This gage is mounted on a substantial hinge, which permits it to be raised out of the way when not in use, affording a clear view of all the working parts.

Small Machine Handles Much Dust

In the accompanying illustration may be seen the dust spreading machine recently developed and placed on the market by the Chas. C. Steward Machine Co., Inc., of Birmingham, Ala. This shows the machine fully guarded, and equipped with electric motor. It may be fitted with a gasoline engine with equal facility and in fact when thus equipped has been found better fitted for rock dusting the main slopes of mines, inasmuch as these passages are seldom fitted with trolley wire or other conductors from which electric current may be drawn.

This machine weighs less than 1 ton when fully equipped. The frame is all steel, electrically welded. The hopper is small, holding only about 200 lb. of dust. This is agitated by means of three disks on a shaft passing through the bottom of the hopper. This shaft also carries a small pinion which drives a gear on a valve shaft which rotates the dust valve at the desired speed. This delivers the dust to the wind pipe and also seals the air blast from the dust in the hopper.

Although this dust blower is small, it is capable of "shooting" 3,000 lb. of dust per hour without any "blow back" through the hopper. When equipped with a gasoline engine the exhaust is turned into the dust pipe and is blown off with the dust. The nozzle of the machine may be turned by a lever attached to it. An elbow which will slip over this nozzle may be employed to divert the flow of dust at right angles to the pipe if desired.

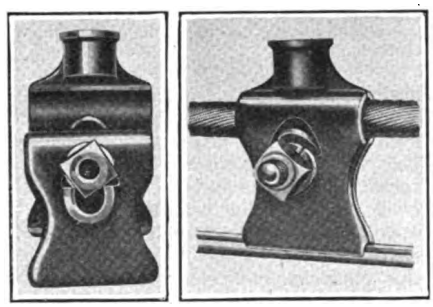
Machines of this kind have been built as low as 30 in. above the rail. They have also been used in mines where the coal ran 14 ft. in thickness, the results in both cases being excellent. In most instances where this machine is used within the mine a car filled with sacks of dust goes along with it. This serves as a source of supply, sacks of dust being taken from it as desired.

Some operators, however, are using this machine without the supply car. In such a case the dust is distributed along the entry to be treated during the day's run. The last in-going trip takes the machine into the mine and leaves it for the dust crew. This consists of two men who operate and feed the machine and also push it along the entry. This is easy as the unit is light and need only be moved a few feet at a time. The sacks of dust are picked up along the entry as they are reached. By this means the labor cost of rock dusting is small and the operation in nowise interferes with the normal working of the mine.

The builder states that these machines are being sold, fully equipped with gasoline engine, f.o.b. Birmingham, for $545 each.

Clamp Holding Trolley Wire Supports and Taps Feeder

Demand for some practical device to simplify and cut erection costs in overhead construction has led to the development of a combination feeder-trolley clamp, announced by the Ohio Brass Co., of Mansfield, Ohio. This clamp, arranged for attachment to a standard insulated hanger, supports in a single unit assembly, both the feeder wire and the trolley, the two being firmly gripped at a predetermined distance of separation, by the tightening of one center bolt.



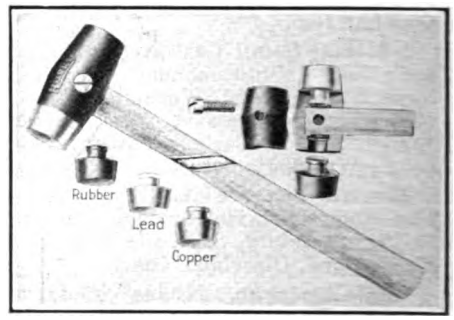
Supports Both Feeder and Trolley Wire

This clamp supports and grips both the feeder cable and the trolley wire in a mine heading. These two conductors are thus held at a predetermined distance of separation and individual supports for each are unnecessary. Lip acts as a cable sling while feeder line is being slung.

It is estimated that the use of this combination cuts almost in half the material and the work required for the separate installation of these conductors. The clamps themselves act as feeder taps, thus eliminating all necessity for the latter. Flecto iron, a new malleable metal is used in the manufacture of this combination clamp, making, it is said, a product that is entirely free from brittleness.

Hammer Fitted with Several Interchangeable Tips

The patent and manufacturing rights to the interchangeable soft-tip hammer illustrated have been acquired by the Husky Wrench Co., 928 Sixteenth Ave., Milwaukee, Wis. The hammer is made in 2- and 4-lb. sizes.



Will Strike Cushioned Blow That Will Do No Injury

Hammer has tips of copper lead, rubber or other soft material

Hammers are supplied with interchangeable soft tips of copper, lead, rubber or other material as desired. They are marketed in sets with two of each kind of tip. The tips can be replaced after loosening the fillister-head screw and separating the housings.

New Companies

The F. P. Weaver Coal Co., Ltd., of Montreal, Que., has been incorporated to carry on the business of mining and selling coal and other fuels wholesale and retail, with a capital stock of $500,000. The incorporators are John Antliff Kent, Stewart Gordon Robertson, Hugh Canniff Willson, and others, of Toronto, Ont.

The G. & G. Coal Co., Orville, Ohio, has been incorporated with a capital of $20,000 to operate mines and deal in coal at wholesale. The incorporators are Ralph Marie, Carl Graber, Benjamin Graber, Willis Horn and H. M. Garver.

The H. D. Grace Coal Co., Coshocton, Ohio, has been incorporated with a capital of $10,000 to mine and sell coal in the Coshocton field. Incorporators are Hugh D. Grace, Edward A. Crawford, Robert H. Daugherty, Karl K. Sherrettes and Elise C. Hosick.



Electric Duster

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When the Seals Were Broken at the Horning Mine, pp. 327-331

IV
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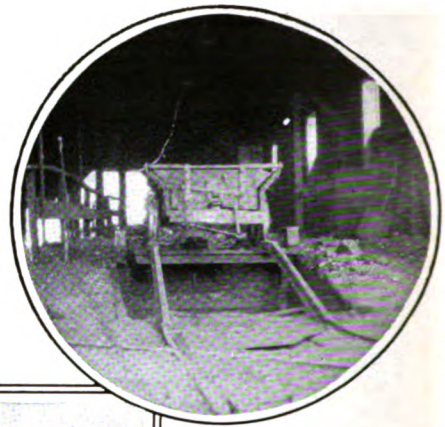

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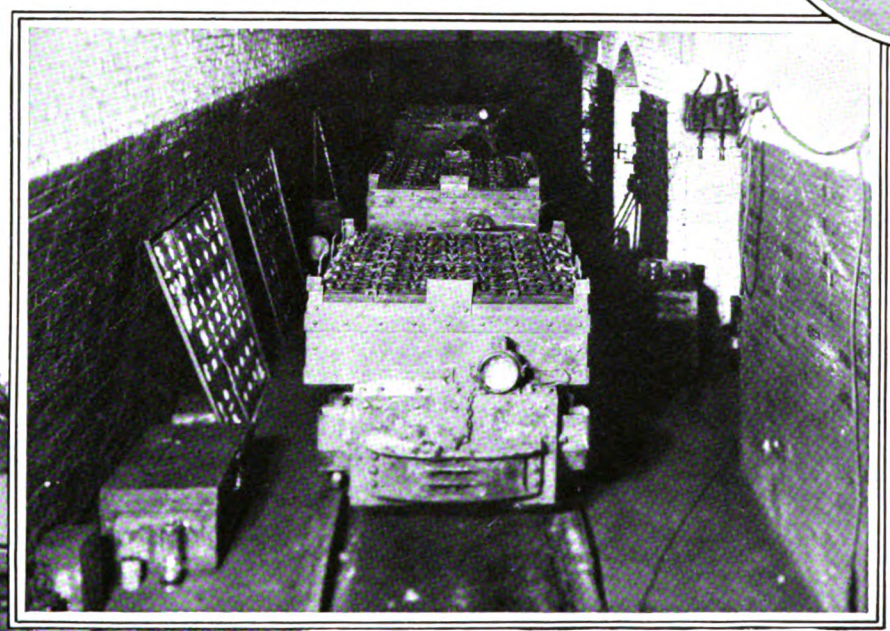

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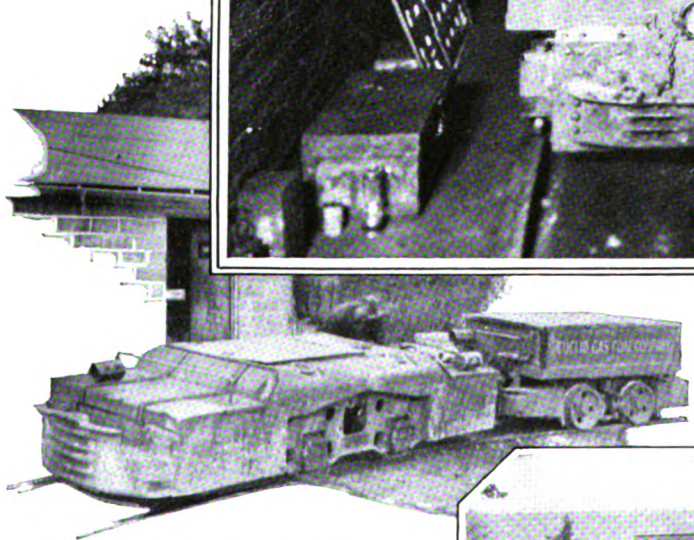

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 29 — New York, April 15, 1926 — *Number* 15

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With which is consolidated "The Colliery Engineer" and "Mines and Minerals"
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Procedure at Horning Mine Disaster Exemplifies Strategy to Be Adopted After Explosions 527
BY ALPHONSE F. BROSKY.

Briquets of Coal Cut into Fuel Oil's Orchard-Heating Business 531

Many Coal Companies Plant Forests to Provide Timbers for Use in Their Mines 532
BY NEWELL G. ALFORD.

Coal Hearings in Congress Elicit Many Remedies for Emergencies; Constitutionality Imperils Legislation 541

British Miners Reject Lower Wages, Longer Hours and District Pacts; Invite Owners to Continue Parley 543

Witnesses Say Runner of Open-Type Cutter Ignited Gas at Eccles Mine; Jury Declares Cause Not Determined 545

Plan to Assure Consumer of Coal Quality 541
Journalists of Americas Hold Pan-American Congress 542
Ewen Miners Sign Contract for Pay by Ton 542
Kansas Shovel Operators to Consider Union Agreement 542
Unskilled Workers' Wages Rise Rapidly Since War 542
War Department Wants Coal 542
I. C. C. Denies Plea to Make Emergency Rates Permanent 542
Bittner Asks Rehearing 543
Supreme Court Sustains Commerce Commission on Emergency Priority Orders 543
Mines of Pursglove and Paisley Interests Resume with Reduced Wage Scale 544
New England Retailers' Meeting Stresses Better Coal Quality and Service 544
Soft Coal an Aid to Art Says British Painter 544
Miners Sign Scale and Give Employer Scarfpin 545
Mine Accidents Claim 164 Lives in February; Fatality Rate Recedes 546
Coal Consumption by Utilities Continues to Decline 546
Shaw Invests in Project to House Miners 546
Preparing Safety Statement 546

Editorials 525
Viewpoints of Our Readers 538
Underground Operation 536
Practical Pointers 540
News Items from Field and Trade 541
Traffic 547
Weekly Review and the Market 551
Foreign Market and Exports News 556
New Equipment 557

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Your Under-the-Hill Problems

Coal Age has been giving diligent attention to problems close to the working face. In "Underground Management" every week will be found reference to the problems of mining's nether world. Next week we print an interesting discussion by E. O'Toole on roof action. He shows why it is so important that the roof should break clear up to the surface. His comparison of roof to a girder, though not new, brings some of the problems of roof control appreciably nearer solution. This week in the underground department is given the discussion at Pittsburgh, Pa., on turret cutting and vertical shearing. The report is well worthy of perusal.

Our Readers' Views

The Discussion page also is lively. What our friends think of the issues discussed in the editorials and articles makes interesting reading. You will remember the Huber paper on mine fans. Next week we run a critique of that article by someone who believes that our modern practice is not at fault and does not need revision in the direction of backward-running blade fans. This week, Graham Bright gives the hoist at Harworth the "once over" and after taking exception to a dozen features he remarks, in effect, that if it weren't for these it would be all right.

Advertising Index—Alphabetical, 58; Classified, 55; Consulting Engineers, 48; Searchlight Section, 50-52

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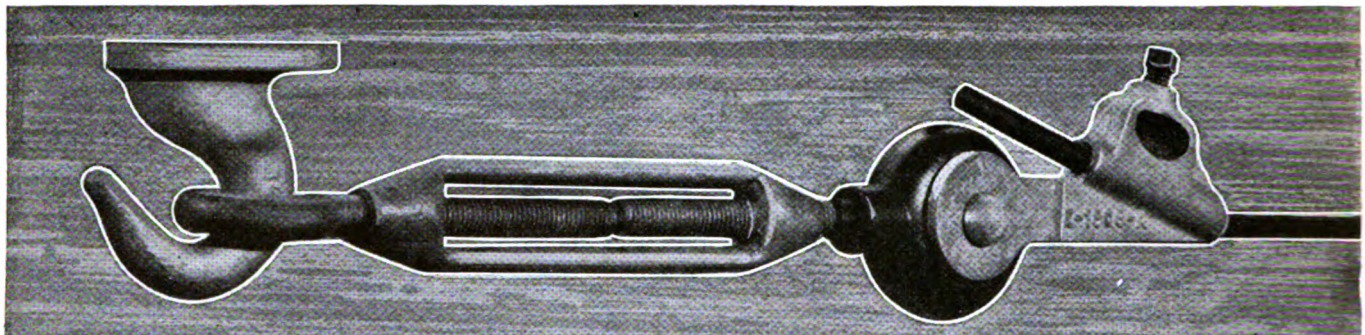

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COAL AGE

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Devoted to the Operating, Technical and Business
Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 29 NEW YORK, APRIL 15, 1926 Number 15

Safety in Ventilation

ONE IMPORTANT feature in ventilation is illustrated by the Minister Stein explosion. A fall of rock in an entry entirely blocked the air. A mine amply supplied with air suddenly became deprived of all circulation. Obviously, the mine would have been safer had there been two returns. In that mine it would have been necessary to drive the headings in the rock, for they were what our metal-mining friends would call crosscuts running as they did, from the shaft to the deposit, but where there are drift mines and shafts that intersect the bed worked, two intakes and two returns can usually be constructed with relative ease. If one falls in, the other is available. Many mines have this advantage already and it is often quite helpful in recovery work. An entry of large size is not as safe as two entries of an equal cross section, because the larger the entry the more likely it is to cave and because with two entries both will not cave at the same time.

Robert M. Lambie

THE BITUMINOUS industry is proud of Chief Inspector Lambie, of the West Virginia Department of Mines. He has shown great courage and leadership in the rescue and restoration operations following mine explosions and fires, and an untiring zeal in the promotion of safety. From his close associates come several stories as to his intrepidity in the presence of great danger.

The tales of his tireless efforts during the Benwood and Barrackville explosions are now history. Last fall he acceded to a request from the state of Tennessee to lead in a search for eight bodies in a fire zone which had been sealed for three months after an explosion in the Rockwood mine. He directed and led the rescue teams during the recent Jamison explosion. Soon after, he was called to the southern part of West Virginia to fight a fire in the Paint Creek mine. During this undertaking he was exposed to carbon monoxide and as a result was for a while confined to a hospital.

In the meantime he was asked to take part in the recovery work at the Horning mine in Pennsylvania. He telephoned his willingness to do his bit in this work, but soon after suffered a breakdown which compelled him to rest. Then came the Eccles explosion and his was the responsibility for the safety of the rescuers and of those who were rescued. Though he was then in the early stages of convalescence from carbon-monoxide poisoning and had been advised to rest, he took upon himself the task of leading rescue teams to a barricade in the Eccles mine where ten men were found alive. On reaching this barricade he collapsed, and after being administered oxygen for an hour, he was carried unconscious from the mine. Now he is spending most of his time in the open air while slowly regaining his former good health.

The industry appreciates his efforts, and West Virginia is proud of him, as one of the greatest fighters of flame, smoke and gas, and as an exponent of the safety movement which under his leadership is making much progress. All join in trusting that hereafter he will curb his one dangerous tendency, to overtax his system in the pursuit of duty.

Broken Ropes

RECENTLY an electric elevator in a comparatively new hotel fell from the third floor to the basement, injuring a number of persons. An investigating committee reported that the breaks occurred in or near the sockets and that tensile tests on pieces of the broken ropes showed each to have sufficient strength to hold double the load on the elevator when it fell.

A few years ago at a certain shaft mine it became necessary to bring a 10-ton locomotive to the surface. The age of the hoisting rope was not known, but an inspection indicated little wear on the outside strands and not a broken wire in sight. The locomotive was hoisted, but a few days later the rope broke with the regular 3-ton load. The break occurred in that part of the rope which was located at the head sheave, whenever the cage was at the bottom of the shaft.

In a handbook published by one of the wire-rope manufacturers it is recommended that resocketing be done every six months, or under certain conditions, every three months. A portion of the rope should be cut off so as to get rid of any crystallized or corroded portion at the socket, and to change the rope position with regard to the headsheave when the cage is at the bottom. Other rope manufacturers advocate resocketing, according to service, at definite intervals such as once a year.

Generally speaking, mine hoisting ropes do not get the attention that they need. Inspections are superficial, records not complete, and resocketing neglected. Replacing the rope with a new one at certain intervals regardless of condition is good practice. Because of the expense, however, some users are tempted to keep the rope in service longer than the stated time and yet they do not resocket it because they expect to renew the rope in a short while. Mine ropes should be resocketed every three, six, nine or twelve months, according to service, and should be renewed at regular intervals regardless of the outside appearance of the rope. A counter should be attached to the hoist indicator to total the trips made by the cage during the life of the rope. This information would be a good guide to indicate when the rope should be resocketed and renewed.

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More Than Dividends

STOCKHOLDERS of the Coal River Collieries Co., the operation financed by members of the Brotherhood of Locomotive Engineers and their friends, held their annual meeting last week. Following the precedent established a year ago, the session was preceded by an inspection trip over the company's properties near Huntington, W. Va. About two hundred of the worker-capitalists made up the inspection party. These men and women, exhibiting a pardonable pride in their partnership, acquired first-hand information upon working conditions by actual contact with the miners.

That the company in which they have invested a part of their surplus has never paid a dividend appeared to cause no great concern. They have been learning things about capital and capital's share in the products of labor in a way no polemic could teach. They are discovering, too, the unreality of the line which divides capital from labor. Such lessons are more valuable than dividends to future industrial peace and prosperity.

Unbalancing the Power Demand

IN THESE days of severe competition for markets it behooves the coal mines to reduce their costs of production by all means possible. Although the expense entailed for power is usually one of the smallest components making up the total cost per ton f.o.b. yet where this can be lowered it is well worth while. The margin on which coal is produced is usually so small that one or two cents shaved from the cost may mean all the difference between a profit and no profit or between breaking even and sustaining a loss.

One of the ways of cheapening the cost of power, regardless of whether it be purchased or generated is to use it steadily at as nearly a uniform rate as possible throughout the entire 24-hr. day. The greatest efficiency is attained when both the power-generating and power-consuming equipment is operated to approximate capacity all the time. Unfortunately this condition can be maintained by but few industrial enterprises, and it becomes a problem as to how closely it may be approximated at any one mine. In many cases it is possible to so juggle the various power-consuming operations as to render the total load or demand approximately uniform.

The chief power consuming operations about the mines include: Hoisting, haulage, cutting, ventilation, pumping, preparation, shops, lighting and battery charging. In any particular mine one or more of these operations may be totally absent while in many if not even most cases two or more must be performed simultaneously. Thus preparation is the logical complement of hoisting, which in turn, must be prosecuted concurrently with haulage. On the other hand lighting usually attains its peak at a time when hoisting is at its minimum; the same is true also of battery charging.

It becomes possible therefore in many instances to balance the various loads one against the other with the result that fair uniformity in power consumption is attained throughout the entire day. Thus the day load might logically comprise haulage, hoisting, preparation, ventilation and shops while the night load would be made up of cutting, ventilation, pumping, lighting and battery charging. How nearly a full load factor may be maintained throughout the entire day will depend on the relative sizes of these various loads especially on the magnitude of the dewatering problem, and the flexibility with which it can be handled. Some mines afflicted with large quantities of water have such larger pumping installations that the load factor is maintained at practically 100 per cent at all times.

A disturbing influence that sometimes makes itself manifest in any scheme aiming at the preservation of unity load factor is the attitude of mine labor. Thus in the southern Illinois field the union will not countenance operation of coal cutters or mechanical loaders at night except on entry driving or other development work. Inasmuch as the pumping or dewatering load in this region is comparatively inconsequential, this throws all of the bigger operations, so far as power consumption is concerned into the day shift thus rendering its load vastly greater than that carried during the night, utterly destroying all semblance of balance between the two periods. This naturally increases the cost per ton of mine output in a direct proportion.

Where the problem of mine drainage is as light as it is in southern Illinois it would probably be difficult if not impossible to exactly balance the day and night power demands and thus obtain the much-desired 100-per cent load factor throughout the entire 24-hr. period. A transfer of the comparatively large power consumption for cutting from the day to the night shift, however, would do much to equalize these two loads especially where hoisting is done by steam as is the case at many of the mines in this region. It would thus tend to lower the cost of coal and permit the Illinois product to compete on more nearly equal terms with that from other fields.

And although it is quite true that the power bill represented by a ton of coal on car at the mine is one of the lesser components in its cost, it is nevertheless of appreciable and measurable magnitude. It could be reduced by careful balancing of loads. This would be beneficial to miner and operator alike as it is to the manifest interest of each to meet the fierce competition of other fields. By arbitrarily refusing to permit a balancing of the power demands of the day and night shifts therefore, the miners' union, figuratively if not literally, snaps the hand that feeds it.

To Make or to Mend

ECONOMY is not assured by having inadequate forces at the mines, in management, repair or accident prevention. With the force cut down too low the work is always behind. Men are busy correcting mistakes that should have been avoided, repairing wrecked equipment that should not have been damaged, explaining the shipment of inferior coal that never should have been loaded, accounting for excessive slack that should not have been produced. The forces around the mine under such a régime becomes defensive, not aggressive; they have to content themselves with the vain hope that nothing will happen, for hope takes less time and less money than prevision and prevention. Figuratively the management arrives breathless at every problem and cannot do it the justice it deserves. System goes to the wall; records are not kept; nothing can be found, and it is not long before a smoothly working organization breaks entirely down.

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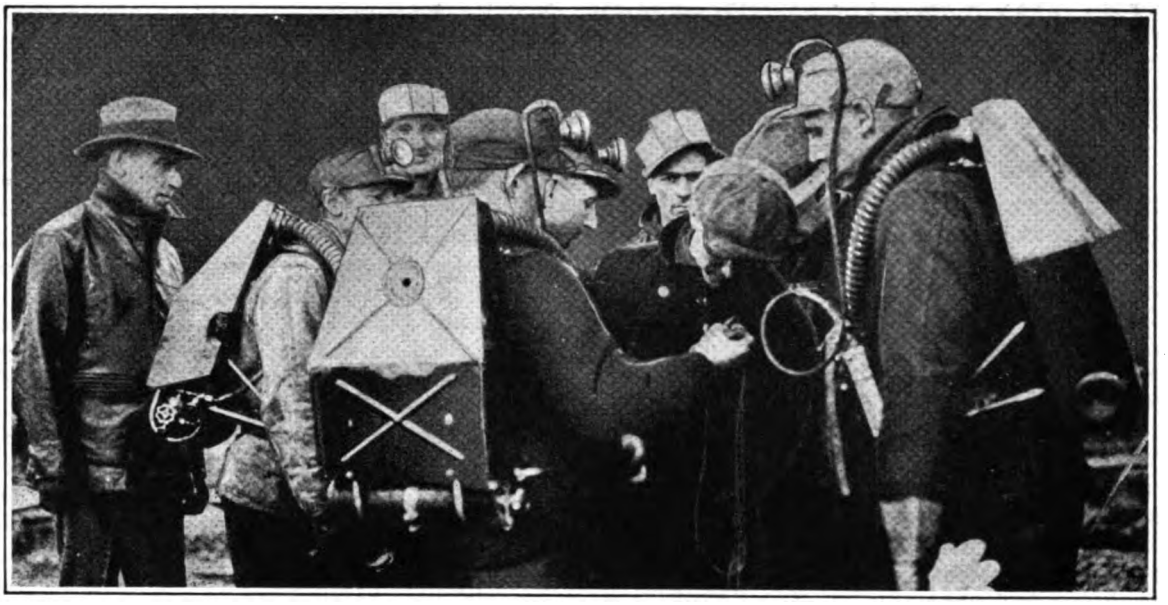

The headpiece shows rescue men at the Horning Mine searching a fellow worker to see if he is carrying any matches or smoking material.

Procedure at Horning Mine Disaster Exemplifies Strategy to Be Adopted After Explosions

Attack on Fire Area Planned in Detail Prior to Recovery and Charge of Operations Entrusted to Leaders of the Three Shifts by Which the Work Was Conducted

By Alphonse F. Brosky
Assistant Editor, *Coal Age*
Pittsburgh, Pa.

MUCH ATTENTION has been given to the explosion in the Horning mine of the Pittsburgh Terminal Coal Corporation, among other reasons, because of its location in the industrial and bituminous coal center of the country, within a few miles of Pittsburgh. Representatives of companies which produce the bigger portion of the tonnage in the Pittsburgh district either visited the mine or tendered their assistance during the restoration and recovery proceedings. The state departments of mines and the U. S. Bureau of Mines also were well represented.

Added interest has been taken in the information furnished by a few men who escaped the explosion by a matter of minutes after having been engaged with the victims for about six hours in fighting the mine fire, of which the explosion was an aftermath. Though exact knowledge of the explosion itself is not available, the survivors brought with them to daylight information which, with that derived otherwise, has been made the basis of many theories as to just what happened. The purpose of this article is to bring out the lessons which the explosion and the subsequent recovery of the mine teach. The officials of the Pittsburgh Terminal Coal Corporation assisted in the preparation of this article by placing at my disposal the records which were kept during the recovery and restoration work.

A brief review of the events prior to the explosion is appropriate at this point: An undercutting machine, equipped with an open starting box, ignited a feeder of gas in a clay vein at the face of the Sixteenth Right butt entry of Section 4, at about 10 a.m. on the day of the explosion. The flame spread to insulating material, oil and coal dust on and about the machine. Attempts to beat out the fire and later to quench it with water failed. It was decided then to seal off this entry at *A* and also at *B* in the Fifteenth Right butt entry which runs parallel to it. Work on the construction of these stoppings began about 2 p.m. They were in a fair way of completion when the explosion occurred, at about 4 p.m. A more detailed account of these earlier events appeared in *Coal Age* of March 18.

A map of the affected workings is shown in the accompanying figure. The territory inby of Eleventh and Twelfth Right butt entries was ventilated by a split carrying about 16,000 cu.ft. of air. These two butt entries served as intakes from an air shaft which is located in the adjoining No. 3 mine close to the boundary between it and the Horning, or No. 4, mine and at a point that is about 3,000 ft. from the face of the Sixteenth Right butt entry where the fire occurred and the explosion originated. The air of this split was

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conducted through the Seventh and Eighth face entries and returned through the Ninth face entry to the overcast marked *C* where it crossed over the Eighth to the Seventh face entry which from this point on was used as a return and not as an intake. Accordingly, Sixteenth Right butt entry served as an intake and Fifteenth Right butt entry as a return.

STOPPINGS HAD BEEN BLOWN OUT

About three hours after the explosion a group of men entered the mine for the purpose of exploring as much of Section 4 as possible. They found that ventilation had been crippled because the stoppings between the face entries of this section, inby of Eleventh and Twelfth Right butt entries, has been torn out by the explosion. The roof of the overcast at *C* had been lifted.

The result was that all three of the face entries inby of this point were serving as intakes, whereas before the explosion the territory was ventilated by a split in which two entries served as intakes and one as a return, as described in the preceding paragraph. Afterwards it was learned that the intake air in these entries returned to the outside, through Fifteenth and Sixteenth Left butt entries in Section 4 at point *D*. Stoppings in the latter entries had been demolished by the explosion. At the time, however, no one knew exactly what path the air followed.

AFTER the second explosion, in which no one was injured, the rescue men bravely continued their work without intermission, deciding that at no time was it safer to undertake the sealing than immediately after the flame had burned part or all the methane from the fire area. Seals were not broken till oxygen content fell below 4.2 per cent; and before recovery commenced all material had been located at convenient points, doors having been made for use wherever it had been planned to erect them. Air was reversed in the forefront of the fire area so as to take the foul air away from points where rescue squads were working. Rock dust quenched flames wherever they were encountered.

The explorers went as far as the Thirteenth and Fourteenth Right butt entries from which much carbon monoxide was being discharged. Fresh air was temporarily shut off from these entries by the erection of canvas stoppings. While this work was being executed several men with gas masks began to explore the territory further inby.

At this time, about 11:55 a.m., a second explosion occurred. It was purely an ignition of gas, which manifested sufficient force to knock down the men. Those present state that the greater force was exhibited in the middle or Eighth South face entry, probably due to the fact that the pressure followed the line of least resistance, through a chute or shoofly running from the Fifteenth Right butt to this entry. Four distinct air movements, back and forth, were felt.

This explosion was of little consequence, no doubt, because the first explosion either ignited or carried with it much of the coal dust which had accumulated in its path. It is believed that a dearth of air at the face prevented a serious explosion. Much coked coal dust was lifted and carried by the expanding gases. No flame was observed and no heat or smoke became manifest to the men engaged in the exploration.

Though some of the men were slightly affected by carbon monoxide, none was injured. Still there were a few anxious moments for all of them which was relieved when it was found that no one had been injured to any material degree. Following this explosion the men retreated to fresh air in the Eleventh and Twelfth Right butt entries, which are, as has been stated, intakes from an auxiliary air shaft. Some of the men then decided to leave the mine.

The rest reasoned that the mine would be safer after an explosion had burned up at least some of the methane, for it might be several hours before the gas would find time to accumulate in dangerous quantity and diffuse to an explosive mixture. Therefore, preliminary steps were taken to seal the area. A brick stopping was erected in each of the three face entries inby of the Fourteenth Right and the Sixteenth Left butt entries, as indicated on the accompanying map. These were completed at about 7 p.m. on the day following the major explosion.

After these seals were erected the next logical step was to explore and restore ventilation in the workings off the Thirteenth and Fourteenth Right butt entries. As the rescue teams knew definitely that these workings were in the path followed by the flame and main force of the explosion, a careful inspection of this area was made, after which ventilation was restored by the erection of stoppings and line-brattices as shown on the map. These were so placed as to cause fresh air to enter this area at *E* and *F* and to return through the "chutes," or shooflies, *G* and *H* to the Fifteenth and Sixteenth Left butt entries and thus to the return airway in Section 3 of Horning mine. Incidentally, the latter entries served as the return for the air which was conducted by steps to the faces of the three face entries while the latter were being cleared of gas.

Having cleared the workings of the Thirteenth and Fourteenth Left butt entries the workers erected permanent stoppings which later would be needed and yet would not interfere with an already-determined plan for the restoration of ventilation. Included in this work was the erection of an air lock *I* on No. 9 face entry, between the Thirteenth and Fourteenth Right butt entries.

In the meantime a consultation was held, which was attended by representatives of the Pittsburgh Terminal Coal Corporation, the Pennsylvania Department of Mines, the U. S. Bureau of Mines, the Mine Safety Appliance Co., the H. C. Frick Coke Co., and the Bertha Consumers Co. At this consultation, over which J. J. Walsh, secretary of mines for the state of Pennsylvania presided, a plan of procedure detailing definite steps in the work of unsealing and recovery was drawn up and signed, covering, however, only the initial advances and not the complete undertaking.

These men agreed, first of all, that the seal on the Ninth face entry to Section 4 (or for that matter the seals on either of the other two face entries) should not

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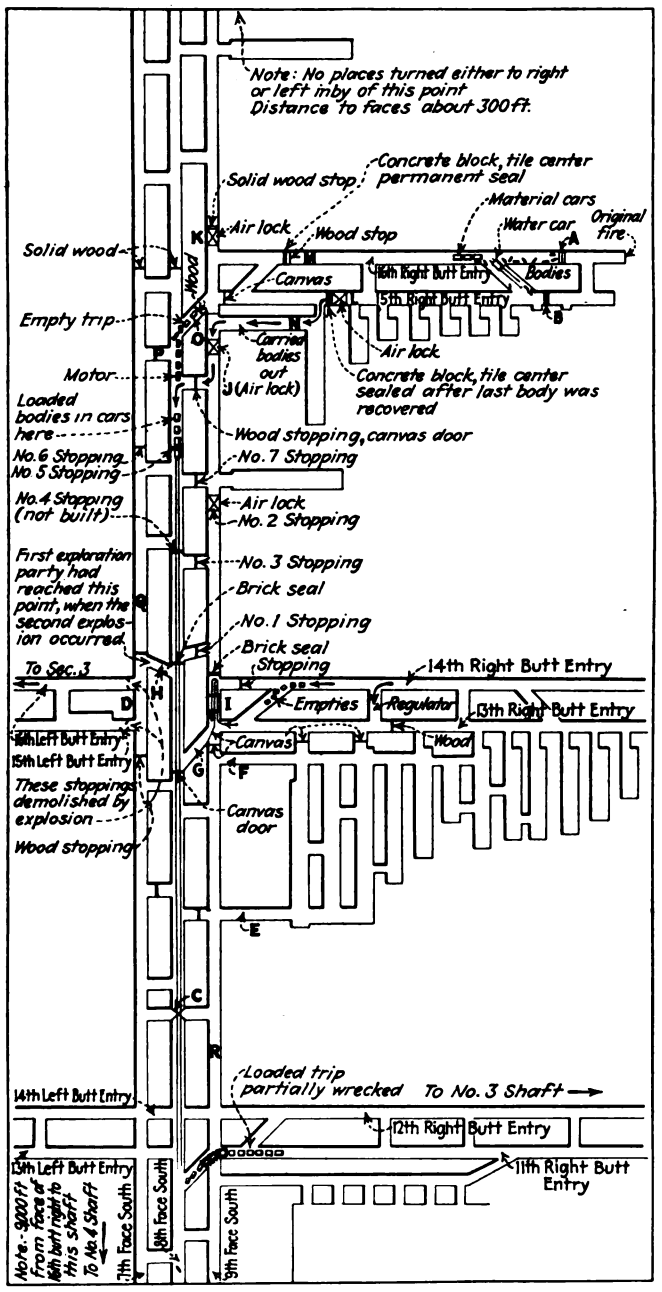
be disturbed until the oxygen content in the sealed area, as shown by samples analyzed by the U. S. Bureau of Mines, had fallen to approximately 4 per cent.

The steps to be taken as set forth in the agreement were as follows: Step 1—Canvas stoppings Nos. 1, 2 and 3 were to be erected at the points indicated on the map. Step 2—After these were completed fresh air was to be conducted to the crosscut in which No. 3 stopping was erected. Step 3—Matched lumber stop-



Map Illustrating Moves in Horning Rescue Work

No attempt was made to unseal the headings till the oxygen percentage fell below 4.2 per cent, but as it was feared that a little air might revive hot embers the approach was made with great caution and in accordance with a plan of campaign devised after much deliberation. In the diagram can be seen where the vicitms were found and where cars were derailed. Some men were killed at places so remote from the fire that the points where they lay do not appear in the map.

pings were to be built at points where canvas stoppings, Nos. 1, 2 and 3 had been located. Doors were to be placed in Stoppings Nos. 2 and 3, also a pipe in No. 2 stopping for the purpose of taking gas samples. An air lock was also to be provided, the door of No. 2 stopping being designated as one of its entrances.

Step 4—A matched-lumber stopping was to be constructed. This is indicated on the map as No. 4. (This stopping, however, was not erected as it was not needed.) No. 3 stopping was then to be removed and the initial seal on the Eighth face entry broken, a door being erected on that roadway. Step 5—No. 5 stopping in the Eighth face entry was to be built and then No. 6 stopping on the Seventh face entry, as indicated on the map. Next the doors in the initial stopping or seal in the Seventh face entry were to be opened.

Step 6—No. 7 stopping was to be built of 3-ply canvas in the crosscut between the Eighth and Ninth face entries, and in the Ninth Face entry an air lock was to be constructed similar to that of which No. 2 stopping is a part. The location of this was left to be decided after examination of the ground. (As matters developed, this air lock was located in accord with the specifications of Step 7 which follows.) Step 7 and last—The final air lock in the Ninth Face entry was to be erected at the point indicated by *J* on the map.

After this plan for opening up the sealed area had been decided, all materials necessary for the work were gathered and such construction jobs, as the making of doors for all locks and air locks, were completed. All these were taken into the mine in readiness for the operations in which they would be utilized. Consequently, at no time were restoration and recovery proceedings delayed for lack of material.

Oxygen Dropped to 4.2 per Cent

On Feb. 9, at 10:50 p.m. and five days after the initial seals were completed, the oxygen content of the air behind these walls had fallen to 4.2 per cent. A unanimous decision was reached to begin the recovery work in accordance with the plan of procedure already outlined. This plan was followed as far as it went, and then by common consent an additional air lock *K* was placed slightly inby of the Sixteenth Right butt entry in the Ninth face entry, another air lock *L* was erected between rooms Nos. 1 and 2 in the Fifteenth Right butt entry and a stopping *M* was constructed in the Sixteenth Right butt entry slightly inby of the first chute.

On Feb. 13, four days after the first seal was broken ventilation was restored to the last crosscut of the Sixteenth and Fifteenth Right butt entries. Fourteen bodies were recovered on the following day. The other six, which were at more accessible places, had already been found and recovered.

An important decision, reached at the consultation which preceded the main part of the restoration work, was that three men should be authorized to act as leaders, one during each of three shifts. These men were John Berry, of the Bethlehem Mines Corporation; George Riggs, of the Mine Safety Appliance Co. and George S. McCaa of the U. S. Bureau of Mines. Mr. McCaa withdrew from this capacity after several days on account of the death of his mother. His place was taken by George Grooves of the U. S. Bureau of Mines. Each of the three shifts, consisting of four rescue teams and the necessary workers, was accompanied by two state inspectors and two officials of the company or chosen volunteers of official capacity from other companies. These men served as consultants for their respective leaders.

This divergence from common practice in restoration work after an explosion is worthy of adoption where at all feasible. One man is placed in complete charge during each shift and that man leads as well as bosses.

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Serious mistakes are apt to be made when supervision is conducted from the surface by a map in the hands of one or more individuals who endeavor to keep in touch with the men underground through a verbal interchange of information. Further, the scheme is of merit because a corps of consultants accompanies the leader to assist him in making decisions. Likewise, the scheme of coming to a definite agreement as to a plan of procedure before commencing operations possesses much merit.

Following is a list of the companies having teams taking part in this work: the Pittsburgh Coal Co., the Buckeye Coal Co., the Bethlehem Mines Corporation, two; the Hillman Coal & Coke Co., two; the H. C. Frick Coke Co., three; the Bertha Consumers Co.; the Vesta Coal Co. and the Inland Colleries Co. The Pittsburgh Terminal Coal Corporation had two teams and the group of companies in the coke region that maintains the Orient rescue station also supplied a team.

After all bodies were removed from the mine, concrete and tile-block stoppings were erected in the Fifteenth and Sixteenth Right butt entries as indicated on the map. These seals were kept in place until the night of March 13 when ventilation was restored in these entries. Meanwhile ventilation was conducted to the faces of the face entries of Section 4, and stoppings, doors and an overcast were erected so as to restore the ventilation in these entries to the same state as before the explosion.

In the restoration of ventilation in the Fifteenth and Sixteenth Right butt entries the air was reversed so as to carry directly into the main return what gas had accumulated in these entries, instead of taking it through other working places in the split. The intake air was conducted from No. 8 face entry through chute *G* to the face entry, thence through the air lock *J* and the passage *N* to the Fifteenth Right butt entry, thence returning through the Sixteenth Right butt entry and chute *O* to the Eighth face entry and through crosscut *P* to the Seventh Face entry which normally serves as an intake inby of overcast *C*, from which point outby it serves normally as a return. At 6:40 p.m. this reversing of the air was completed; at 10:25 ventilation in the two entries was restored. Three apparatus teams assisted by men equipped with gas masks were engaged in the work.

Not a Trace of Heat or Fire

The rescue teams made two inspections of the fire zone. This they entered through a break in the seal in the Fifteenth Right butt entry through the air lock inby of this wall. They found no trace of fire or heat and took temperature readings which indicated a normal thermal condition. Two gas samples also were taken within the zone.

After that, the seal on the Sixteenth Right butt entry was opened by apparatus men and ventilation restored in the entries in steps from one crosscut to the next. The rooms off the Fifteenth Right butt entry were swept free of gas consecutively by line brattices as ventilation was restored in steps to the face.

The Eighth face entry of Section 4 had been rock-dusted from a point within 250 ft. of its face to the hoisting shaft. Except for the 250-ft. interval which had not been rock-dusted, little evidence of flame from the explosion was observed in this entry, for here propagation of the explosion through the ignition of coal dust was absolutely checked by the rock dust. In the Seventh face entry evidence of flame was observed in an interval between its face and a point marked *Q* on the map. In the Ninth face entry similar evidence was observed in the interval between its face and the point marked *R* on the map. Evidence of coking was observed in all other places inby of the Eleventh and Twelfth Right butt entries, with the exception of the Fifteenth and Sixteenth Left butt entries which were not thus affected.

The main vent of the explosion, as manifested by flame, was in the Ninth face entry, but as seen it stopped short of the Eleventh and Twelfth butt entries, which are main intakes from an auxiliary shaft. What



Rock Dust That Stopped Flame in Horning Mine

This illustration is made from a photograph taken 24 hours before the explosion. It shows a generous application of rock dust on No. 8 face entry in Section 4. The rock dust on this entry no doubt stopped the explosion from going throughout the mine. The turnout on the right leads to the Sixteenth Right butt entry, at the face of which the fire and explosion originated. The distance from the point where the camera stood to this face was 700 ft.

was the cause of its extinction at this point? The most logical assumption is that the explosion lost its force in passing the Thirteenth and Fourteenth Right butt entries, for here it had opportunity to expand. Otherwise, in the fresh air of the Eleventh and Twelfth Right butt entries and the Ninth face entry outby of the latter, the explosion would no doubt have taken on renewed life in the direction of No. 4 shaft. Outby, in the direction of the No. 3 shaft, however, any flame that might have passed up that connecting link would have been smothered and cooled by the rock dust in a barrier 200 ft. long that had been placed between the two mines. Incidentally, the rock dust in the barrier was dislodged by the force of the explosion.

Evidence of force extended along the face entries of Section 4 from their faces to a point about 3,000 ft. outby. Evidence of great force was observed in the workings off the Thirteenth and Fourteenth Right butt entries. Force was also in evidence in the Fifteenth and Sixteenth Left butt entries which lead to the face entries in Section 3. Its manifestations were seen for a distance of about 1,100 ft. in the Eleventh and Twelfth Right butt entries which connect with the adjoining No. 3 mine of this company. No evidence of great force was seen in the Fifteenth and Sixteenth Right butt

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entries at the faces of which the explosion originated. A water car and three supply cars on the latter heading were not so much as lifted from the mine track. Many of the victims who met death in this entry were found in natural positions.

The greatest manifestation of force was exhibited in the Ninth face entry. This force swept practically free of debris and dust the interval between the Fifteenth and Eleventh Right butt entries. Several loaded cars in a trip standing on the track which crosses this entry to the Eleventh Right butt entry were wrecked by the explosion, and against these cars was piled all the debris, including that from several permanent stoppings carried by the force of the blast from inby points. These materials formed what might be termed a wall crossing the entry and completely blocking it.

Rock Dust from One Entry Aids Another

Rock dust in the Eighth face entry, coupled with room for quick expansion afforded by the Fifteenth and Sixteenth Left butt entries which join with Section 3, is believed to have confined the explosion to the limits already outlined. Open crosscuts between the Seventh and Eighth face entries inby of the overcast at *C* no doubt caused the rock dust strewn on the latter entry to be more or less effective on the former as well.

Aside from the constructive hints already drawn from the Horning explosion the following are suggested: Mines should be equipped with fire-fighting apparatus, some of which should be large and mounted on trucks and some lighter and capable of being carried. Boxes of rock dust might well be located at strategic points to assist in fighting a fire.

Fire seals should be erected with the utmost speed. Though every available agency was pressed into service to expedite the building of fire seals prior to the explosion in the Horning mine, the rate of erection did not match the speed with which an explosive mixture was developed within the zone.

Wherever possible, flame might, with advantage, be kept alive at the face or faces within the zone of a fire until the seals have neared completion. This would prevent an accumulation of gas, because whatever methane is liberated would be burned in that event as fast as it was liberated. Until the walls had been erected almost to the roof, sufficient air would have had to be introduced to the zone behind temporary brattices to support combustion.

Fire seals should be constructed of comparatively soft tile; at least the core of these structures should be thus constructed. That this would be good practice was demonstrated by the time lost and the labor expended in battering down several of the seals constructed of brick and concrete-block in this mine.

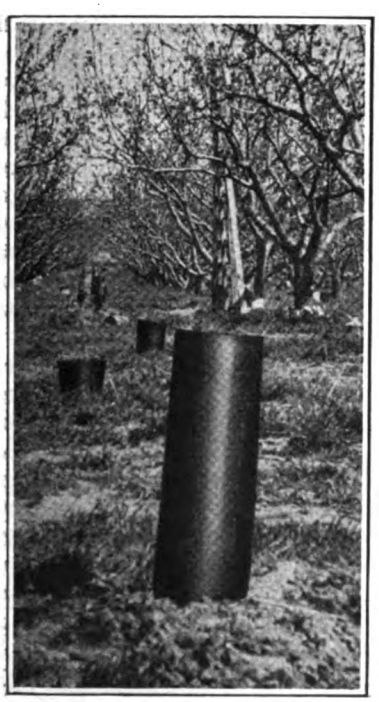
Briquets of Coal Cut into Fuel Oil's Orchard-Heating Business

By degrees coal and its byproducts are invading the realm of fuel oil. The latest invasion by coal of the sacred precincts of oil is the adoption of briquets for grove heating in the citrus belt of California.

The first heating of orchards with briquets was done successfully in the Wenatchee and Okanogan districts of eastern Washington, where apple growers of the "Inland Empire" learned that a certain amount of heating during the burgeoning of the apple trees in the spring protected them from the destructive frosts. Fuel oil was tried without success. A carload of briquets was sent to the district by the Pacific Coast Coal Co. and used with remarkable results.

Inspired by the success of briquet heating in the apple growing districts, the coal company shipped briquets to the citrus belt of Southern California. For years the oil-burning smudge-pot has been used by orange and lemon growers of California. Citrus fruits cannot stand a sudden drop in temperature and it is necessary —usually at great expense—to maintain fires in the groves during every cold spell throughout the winter. This overhead expense has been a contributing factor to the high cost of good citrus fruits.

The first use of briquets in the citrus groves was a complete success. Growers found that the clean burning, smokeless briquets did away with the main objections of fuel oil heating—complete elimination of smoke and noxious gases.





Coal Enters the Orchard

Once oil smudges exclusively were used to keep the frost from doing untold damage to budding citrus fruit crops in California and to the apple crops of Oregon and Washington. But the smudges turned whole counties black — even stopping moving picture production by hazing the atmosphere. Today Washington coal briquets are entering the orchards. In "stoves" that cost about one dollar each, briquets make clean heat and also require less attention.

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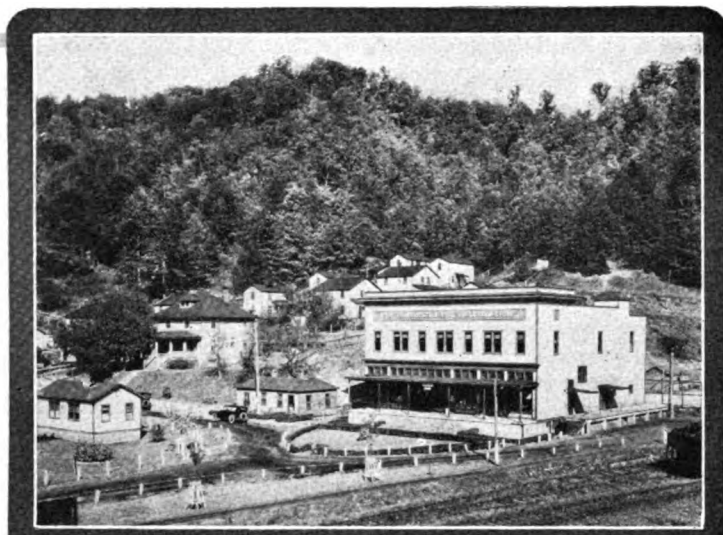
Village of the Consolidation Coal Elkhorn Division, Dunham, Ky.

West Virginia has not so completely denuded its hills as the State of Pennsylvania, where fire has removed what the axe has left and reburned the saplings seeking to establish themselves.



Shall Fire Denude or Trees Bedeck Hills Around Coal Operations?

Many mining companies have large acreages of idle land that, if not allowed to burn over, or if burned are then rewooded and watched, will give big returns on the labor expended on them.

Many Coal Companies Plant Forests to Provide Timbers for Use in Their Mines

Protection From Fire Highly Important — Natural Reseeding Adequate with Some Species—Fruit Trees Thrive on Stripped Ground—Thinning of Second Growth a Mean of Assuring Rapid Renewal of Old Forests

By Newell G. Alford
Consulting Engineer, Howard N. Eavenson & Associates, Pittsburgh, Pa.

WHAT IS BEING done to provide the mines with timber when the shortage becomes acute? Do the coal companies sense the difficulties they will face if they have made no provision for the future? In reply to these questions it may be safely said that the coal companies have been showing an unadvertised and progressively active interest in the forecasted shortage. The work of protection and reforestation is hardly broad enough as yet to be classed as general but a sufficiently serious endeavor has been manifested by both large and small operators to indicate the approach of a general and well-organized movement to meet the future timber requirements of the coal industry.

The U. S. Forest Service and the various state foresters are eager to serve the mining companies either with actual planting or helpful plans, and the coal companies will probably organize either by districts or states for the purpose of getting as much of this material assistance as they can.

The work of the coal companies differs and varies to include one or all of the following: (1) Protection by means of fire patrols, (2) Removal of dead undergrowth, (3) Proper thinning of young second growth, (4) Cutting of mature or diseased trees in the older growth, (5) Fostering of natural reforestation, (6) Artificial setting, and (7) Nursery planting and cultivation.

Of the states that are helping coal companies in their reforestation work, Pennsylvania, so far as is known, is doing much more toward providing for future supplies than any of the others. In Pennsylvania this work is by no means confined to the large producers, but most of the development so far accomplished has been done on the larger properties. Among the companies at present doing the most extensive work are: The Allegheny River Mining Co., the Berwind-White Coal Mining Co., the Bethlehem Mines Corporation, the Clearfield Bituminous Coal Corporation, the Rock Hill Coal & Iron Co. and the Wilmore Coal Co.

In the anthracite districts seven or more firms have a definite plan for retimbering their tracts of land. So far as is known, the most extensive work in this direction is being done by the Philadelphia & Reading Coal & Iron Co. In the fall of 1920 this firm organized a forestry bureau and now maintains a field force of fifteen foresters and rangers with thirty woodsmen as assistants. These men have opened and now maintain nearly 400 miles of roads and trails to make the forests more accessible for fire protection.

This company to date has planted 918,000 forest trees and expects to add about 225,000 more in the spring of 1926. The trees planted have been exclusively two-year old seedlings and largely of the pitch, jack, red and Scotch pine species. Though the planting has been extensive, the principal work of this forest bureau has been and is fire protection. An idea of the necessity of such protection may be gathered from the fact that 831 fires were fought on this company's property within the last four years, the area burned over by them aggregating nearly 50,000 acres.

This forestry bureau is self-supporting, in that it

From a paper entitled "Reforestation Progress by Coal Mining Companies" presented before the Coal Mining Institute of America, Pittsburgh, Pa., Dec. 9, 1925.

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supplies to the company an average of about 1,500 carloads of timber per annum. The trees cut are largely matured, the dead and defective timber being used mostly for mine lagging and props. Experience in this district shows that the cost for protection and development in a case like this is from 30 to 40c. per acre per year. This company employs a forester with unusual training and experience, and it is his thought that, where more than 25,000 acres of land are involved, the practice and technical nature of such work thoroughly justifies the services of a specialist.

On the authority of the U. S. Bureau of Mines, it may be stated that about nine board feet of timber is used in the anthracite districts per ton of coal mined. Furthermore, this consumption has practically doubled within the past eighteen years, and the unit price has quadrupled.

Over one million trees were planted with state aid in the spring of 1925. Probably the Wilmore Coal Co. is the leading firm in the scale of its reforestation. It has so far planted over 400,000 seedlings. These have shown excellent progress. For the last two years it has obtained two-year old seedlings from the State Forestry Department. These were mostly short-leaf, Scotch, pitch and red pine, Japanese and European larch. Next year this company expects to continue with white pine and as much white ash as it can obtain.

HAS ITS OWN NURSERY

Because it is believed that the ability of the state to distribute young trees will be taxed by heavy demands next year, this company is now preparing its own nursery so that eventually its forestry organization will supply all the seedlings it needs. It is expected that, in possibly fifteen or twenty-five years, mine props will be cut from present plantings.

So far the Wilmore Coal Co. has not attempted the planting of hardwoods as it believes that these varieties come from seed latent in the soil. It found in one case that a fine stand of white oak sprang up after pine had been cut off, indicating that the seed had been dormant in the soil for years.

The Bethlehem Mines Corporation began planting seedlings from the State Forestry Department in 1919, and to date has set out nearly 300,000 trees of this type. The experience of this company has been confined to the red, pitch and jack pines, which have proved to be rapid growers with ability to make a good growth on very indifferent soil. Pitch pine planted on one tract in 1919 has now attained a height of 15 ft. and a diameter of 5 in. at a point one foot from the ground. The other species have done almost equally well. Another phase of the work provides for the cutting out of dead chestnut and timber damaged by fire or disease. This cutting is under the supervision of a graduate forester who marks the trees which should be cut down and removed.

FAVORS CONSERVATION

During the last three years the Rochester & Pittsburgh Coal & Iron Co. has planted 500,000 trees in barren places. This organization believes in the conservation rather than in the planting of hardwoods. It utilizes hardwood trees down to the small limbs which are turned into sprags, with a consequent minimum of waste. Cut-over areas are allowed to develop a second growth of hardwood. The experience of this company so far has been highly gratifying.



Fig. 1—Fruit Trees Will Grow in Strippings Waste

Several thousand fruit trees have been planted in Indiana on such overturned areas as this, with results which surpassed those derived from orchards on solid ground. Here is a constructive measure which should not be overlooked.

In Ohio, the Carbondale Coal Co. began reforestation of waste land in 1906, and each year since has planted an average of 10,000 seedlings of the pine species. It has lately transplanted trees having a diameter of as much as 12 in., one foot from the ground, and over 30 ft. in height. Based on the density of tree growth in that section, this company has found that in general it takes three acres of timber for the mining of one acre of coal.

Three other concerns in the Ohio coal fields have been following a definite plan of reforestation under the guidance of the state forester at Wooster. Though these coal companies are not doing work comparable in scale with those in Pennsylvania, there are now ten reasonably large producers in Ohio who contemplate the starting of a definite program in timber work in 1926.

There is still a large quantity of timber suitable for mine props in the southern portions of Illinois and Indiana with a large available supply coming from Missouri and Kentucky. With the curtailment of this supply in sight, several of the larger coal companies in Illinois have begun conservation work. This consists of protecting standing timber against fire by means of guards and patrols, also stimulating natural production of standing trees by thinning stands of young second growth that are too thick. This constitutes a



Fig. 2—Wooded Hills in Central Pennsylvania

Here is a mine, as indicated by the tracks on the clearing in the lower right-hand corner—and here also are newly grown trees. At present the mine at this place supplies itself with low-cost timber from nearby hills but in the future it will have to import timbers from distant points at a high cost unless it has foresight enough to conserve its timber resources.

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large part of the present standing timber. They are also cutting such trees as have reached maturity in the older stands.

One of the three largest coal producers in Illinois has outlined a plan for reforesting land that involves the replanting of a definite acreage as wooded areas are cut off. This company has cleared land unsuited for farming use, and says that the success of its program depends largely on its ability to protect its present standing trees.

In southern Illinois large quantities of timber could be grown on worthless vacant land that is good for nothing else. If the state had a more liberal taxation policy for reforested areas, retimbering doubtless would be promptly and actively started in the southern portion of the state. Seventy-six per cent of the total area of Illinois is farm land, the rest of the land being occupied by cities, wastes, forests and unimproved pasture. Much the larger portion of the cultivated land lies in the central and northern part of the state. The Illinois Division of Natural History Survey estimates that the maximum area that could be used for forest production is probably not over 5,000,000 acres, and that it would take the state 100 years or more to produce enough timber to take care of its needs.

THIS COMPANY USES SEEDLINGS

One of the earliest pioneers in forest protection and the cultivation of timber was the St. Bernard Mining Co. in western Kentucky. This company was recently sold to the West Kentucky Coal Co. In 1890 it began the planting of seedlings on waste and vacant land from its own arboretum, and in 1920 it had the following quantity of timber from artificial reforestation on several tracts embracing 550 acres in all:

Table I—Reforestation Timber on Property of West Kentucky Coal Co.

Number of Trees	Kind of Timber	Range in Diameter One Ft. above Ground
1,310,000	Black walnut	4 to 16 in.
230,000	Catalpa	5 to 10 in.
400,000	Black locust	3 to 10 in.
30,000	Tulip (poplar)	5 to 15 in.
1,970,000 trees		3 to 16 in.

In addition the St. Bernard Mining Co. in 1920 had approximately 30,000,000 board feet of natural growth on the stump on 10,000 acres of land of 12 in. diameter and over, made up as follows: 20,000,000 ft. of oak, 1,000,000 ft. of hickory, 4,000,000 ft. of gum and 5,000,000 ft. of poplar.



Fig. 4—A View Typical of the Pennsylvania Terrain

No attempt has been made apparently to thin out the second growth, nor has any effort been made to replant the land where no trees are growing. Future generations will be lamenting the fact that the present operators failed to note the marvelous possibilities of the idle land lying above their coal mines.

A few other concerns in western Kentucky have been interested in this work. The W. G. Duncan Coal Co. has planted about 10,000 catalpa trees with satisfactory results, and has found that a natural growth of walnut trees can be started by scattering the seeds through old fields. In this section one of the greatest factors in reforestation has been the recent passing of a stock law covering Muhlenberg County, which it is expected will have a notable effect on young growth.

In this part of Kentucky old fields are showing a satisfactory second growth, although this is not usually of the most desirable species. Sweet gum, hickory and sycamore are predominating in these areas. In West Virginia, where the largest coal producers are interested in forestry, activities have been confined largely to systematic fire protection.

PROTECTION AGAINST FIRE ONLY

In Virginia, the Clinchfield Coal Corporation and the Virginia Coal & Iron Co. are likewise engaged in protective work. In the Alabama coal fields where mine timber is now none too plentiful, several of the large producers are similarly following a systematic plan for



Fig. 3—An Area Greatly in Need of Thinning and Protection Against Fire

A fire started in this growth would annul years of patient effort of Nature to restore the destructive work of the lumberman. The danger could be largely avoided by removing the underbrush, thinning out the trees and maintaining fire patrols. Hilly ground, though frequently farmed, would be better reserved for the growth of timber. A farm on rough ground rarely affords the farmer any more than a bare subsistence. Plowing rapidly denudes the humus that the old tree growth has created.

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protecting the timber from fire. In certain sections fire guards are cleared of all growth and burned over annually.

It is interesting that in Colorado an investigation has shown that to a large extent natural reforesting will

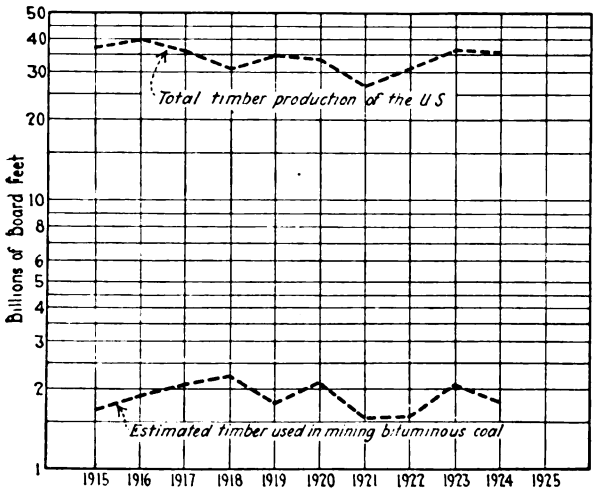

Fig. 5—Timber Used by Mines and for All Purposes

Fortunately for our future, the timber use in the United States is stationary year by year. Economies are preventing the upward swing in the curve of production as they have in coal, but fortunately for the timber industry the price changes leave the industry quite serene.

take care of itself. The Colorado Fuel & Iron Co. has found that by not cutting trees on the ridges and leaving a sufficient number below, second growth is coming on in sufficient quantity to provide for future needs.

Contrary to the common belief when coal stripping

Table II—Timber Cut in the United States for All Purposes
1915–1924

	Board Feet		Board Feet
1915	37,011,656,000	1920	33,798,800,000
1916	39,807,251,000	1921	26,960,864,000
1917	35,831,239,000	1922	31,568,688,000
1918	31,890,494,000	1923	37,165,505,000
1919	34,552,076,000	1924	35,930,986,000

Supplied by the "American Lumberman"

Table III—Consumption in 1924 and Expected Requirements of Timber Used in Bituminous-Coal Mining

Year	Board Feet	Year	Board Feet
1924	1,788,200,000	1929	2,312,000,000
1925	2,146,000,000	1930	2,405,000,000
1926	2,176,000,000	1931	2,479,000,000
1927	2,213,000,000	1932	2,553,000,000
1928	2,264,000,000	1933	2,627,000,000

became prevalent, the waste lands from this method of mining are found to be excellently adapted to the growing of trees. This has been demonstrated in Penn-

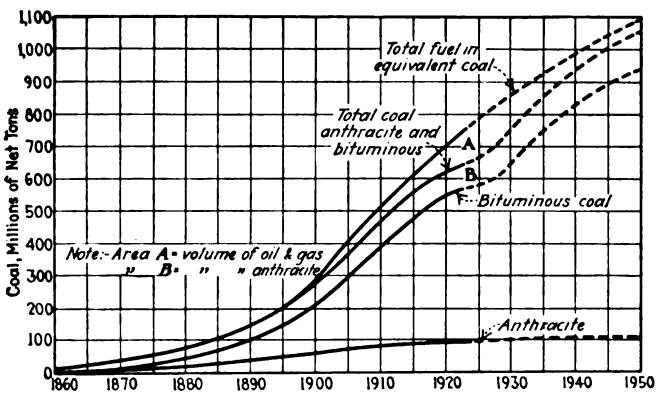

Fig. 6—Past and Future Fuel Production in the United States

The fuel requirements are expected, despite economies, to advance steadily but the part of coal in this fuel output has temporarily been reduced by oil. In time, however, coal will probably recover the business lost to oil as is shown in the chart by the upward bend of the coal curves.

sylvania. On certain overturned areas in Indiana several thousand fruit trees have been planted, with the highly surprising result that these trees are showing a much better performance than any neighboring orchards.

Generally, "the fundamental problem is to increase the production of timber by stopping forest devastation. About one-half of the timber left is in three Pacific coast states and over 61 per cent is west of the Great Plains. The annual new growth of timber is only one-fourth of the yearly consumption. The present cut of lumber in Pennsylvania is less than the City of Pittsburgh alone demands. The production of yellow pine is declining and within ten years will probably not exceed the requirements of the southern states themselves. Practically as much timber is destroyed annually in the United States as is produced for all uses."*

MINING USES THREE BILLION FEET

If the coal industry as a unit will actively join the growing movement for conserving our wood resources, the taxing of embryo forests by states can be supplanted with legislation that in time will rewood much of the vacant space suitable only to the growth of trees. Practically 3,046,000,000 board feet of timber

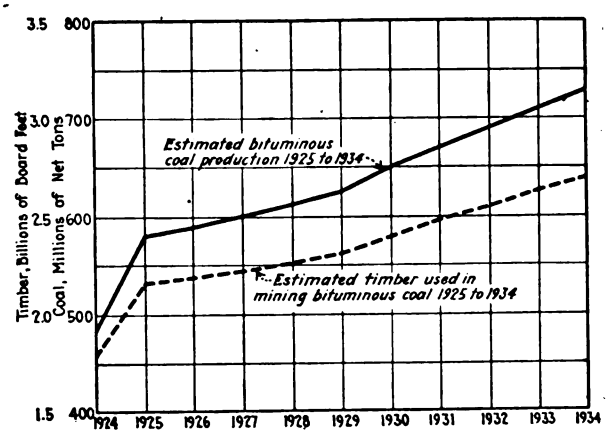

Fig. 7—Bituminous Coal Production and the Timber That Will Be Needed

Evidently the assumption is made that the need for timber will not be reduced by the introduction of steel, concrete or other substitutes or by economy in the use and reuse of lumber or by its extension in life by preservation.

are used annually in American mining, and approximately 60 per cent of this quantity is consumed in producing bituminous coal.

Fig. 5 shows that the quantity of timber cut yearly in the United States from 1915 to 1924 for all purposes has been nearly uniform and that the demands of the bituminous coal mines during the same period were also fairly constant. The reported total annual timber production for this period is given in Table II.

Fig. 6 shows the past and expected future production of bituminous coal. This is not submitted as a prophecy, but is based on the best data obtainable at this time.

Based on the expected future bituminous coal production shown in Fig. 6 and using the estimated unit of 3.71 board feet of timber per ton of bituminous coal mined, Fig. 7 shows the expected increase in the use of timber for soft-coal mining. It is expected that the true average timber consumption per ton of coal will be slightly higher rather than under this weighted average. The values as determined in Fig. 7 are shown in Table III. All of these figures are based on data obtained from the best sources now available.

*U. S. Forest Service Report, "Timber Depletion," 1920.

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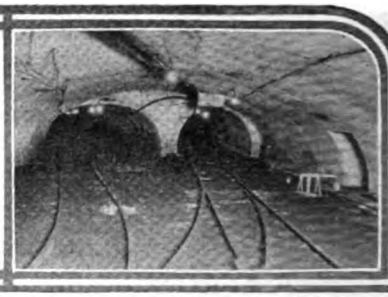
Underground Operation



Discuss Turret Cuts and Vertical Shears At Pittsburgh Meeting

In Thick Coal Longwall Fails and Why?—Cutting Wide Face with Arc Kerfs—Shearing Without Horizontal Cuts — Are Better Bits Needed?

At the bimonthly meeting of the mining section of the Engineers' Society of Western Pennsylvania, held in Pittsburgh on March 30, a paper on "Various Methods of Cutting Coal" was presented by W. R. Jarvis, Pittsburgh district manager of the Sullivan Machinery Co. As this paper dealt largely with methods of cutting as applied to new systems of mining, longwall was a topic in the discussion which followed. As one of the men expressed his impression of the meeting: "It gave the members an opportunity of kicking the old dog, *longwall*, around again."

Henry J. Lewis, consulting engineer of Pittsburgh, opened a discussion on longwall mining. Successful longwall operations, by and large, have always been in thin coal. People who try longwall in thick coal generally go back to room-and-pillar mining. Longwall in thick seams fails because the roof is too completely destroyed. Instead of bending, as it would in the mining of thin coal, it shears.

FAILS FOR LACK OF PACKING

L. D. Tracy, mining engineer, U. S. Bureau of Mines, Urbana, Ill., attributed failures of longwall in thick seams to a dearth of waste material for the building of pack walls. He knew of a longwall failure in thick coal at an English mine, though it is in Great Britain that longwall is best understood. This failure was caused by the lack of materials for the building of pack walls. He did not see how longwall could be worked successfully without pack walls.

E. H. Coxe asked Mr. Jarvis how a 30-ft. room could be cut with a machine which operates from a position on the mine track. Mr. Jarvis said that to undermine a place of that width two separate cuts must be made. In reply to further questioning, Mr. Jarvis added that a pivotal, curved cut, 20-ft. wide, will not shoot as well as one which is 15 ft. wide because the depth of the kerf diminishes from the center toward either rib. Mr. Jarvis denied that he had in his paper advocated the use of 16-lb. rails for track-mounted cutting machines. He emphasized the need for heavy rails securely anchored, for this purpose and placed the minimum limit of rail weight at 16 lb. A heavier rail than this he declared would give much better results.

ANGULAR FACE SUGGESTED

Graham Bright asked if a wide place could be cut by a track-mounted machine by swinging a track parallel to an angular face. Mr. Jarvis said that this is being done with some degree of satisfaction in several West Virginia mines. Mr. Coxe believes that even though advantage be taken of cleavage planes in driving these rooms much difficulty would be experienced in breaking out the coal in the acute-angled corner. Mr. Jarvis said that both the obtuse and the acute corners would have to be more or less rounded.

Edward Steidle asked if anyone by shearing had managed to eliminate the use of shots, to which question Mr. Jarvis replied by saying that though shearing had not totally eliminated shooting it had reduced the use of explosives and had made it possible to produce better coal. As to its applicability to the mining of coal on a long face, Mr. Jarvis said that no long-face shearing machine has yet been developed and doubted whether if it were it would be of any advantage. W. W. MacFarren said that a shearing bar might be mounted on a loading machine which would operate in a position parallel to the face. If the shearing cuts were shallow enough a hydraulic jack might be utilized for breaking out the coal, thus eliminating shooting. The face would have to be undercut first.

HORIZONTAL CUT OBLIGATORY

Mr. MacFarren inquired whether shearing without horizontal cutting had been tried and with what success, but Mr. Jarvis questioned whether it would give satisfaction under any condition. The scheme was tried in narrow work in a mine of the Vesta Coal Co., at California, Pa., working the Pittsburgh seam, but the attempt failed. Mr. Lewis remarked that shearing does not relieve weight and so free the coal, which is the main object of undercutting.

"Have cutter bits of alloy steel met with much success?" asked Mr. MacFarren. Mr. Jarvis sees no advantage at present in the use of higher grades of steel for cutter bits chiefly because they are handled with so little care that many are lost, but also because of the manner in which they are forged. No doubt a high-grade bit steel would be of great advantage providing means were made available at the mines for forging the steel in a more scientific manner.

BETTER BITS AND BATTERIES

Graham Bright declared that in his belief the storage-battery cutting machine will demonstrate the advantage of better steel bits. The Consolidation Coal Co. has discovered in the operation of storage-battery cutters that in cutting a place a dull bit will consume about twice as much power as one that is sharp. Machines of this type in the Consolidation mines are cutting regularly 18 to 30 places per shift, a record that could not be achieved if dull and inferior bits were employed in the cutter chains.

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Why Not Make More Lump?

It is indeed surprising that such a small proportion of the coal operators of the United States give little or no effective attention to an essential phase of the coal business, namely, increased lump-coal production. If a company employs a competent man to supervise the shooting of coal, the output of lump can be increased from 5 to 10 per cent. If, for illustration, a mine has a capacity of 2,500 tons per day, and the lump coal is increased 7 per cent, that would mean 175 tons increased lump coal for the market. Let us suppose the market price is $1.25 per ton more for lump than for slack. This would mean a net gain for the operator of $218.75 per day or $4,375 for each month of 20 working days.

If the company has six mines situated so that a supervisor could manage them all, figuring on the same basis as before, it will be clear that the operator would make $26,250 per month. The cost of haulage would be decreased as the loader could crib his cars and thereby load more coal for any given quantity of haulage equipment.

SHOOTING AND CLEAN COAL

A cleaner grade of coal can be loaded if the coal is properly shot as the bone or other impurities will not be shattered and mixed with the coal. If the company does the shooting, the powder expense will be decreased. Last but by no means least the safety of the men and property is enhanced materially and the danger of explosions is greatly diminished by the proper placing, charging, and tamping of holes. No doubt the reason so little interest is taken in this phase of the business is due to mistakes of the foreman or superintendent in selecting men to supervise this part of the work.

Frequently, in my observation, superintendents have selected men to supervise the shooting of coal simply because they had given good results in the physical performance of that particular class of work. However, a good coal shooter may be a failure at supervising and demonstrating. To give results as a supervisor, it is absolutely essential that the man have knowledge of explosives, practical experience in shooting coal, executive ability and the power to handle and control men. A man who has had experience managing mines would make an ideal man as supervisor of shooting, provided he has given explosives and increased lump-coal production study and thought.

No doubt Congress will in the near future enact laws relative to the conservation of lump coal, thereby eliminating much needless waste.

THOS. F. HOYE.

Huntington, W. Va.

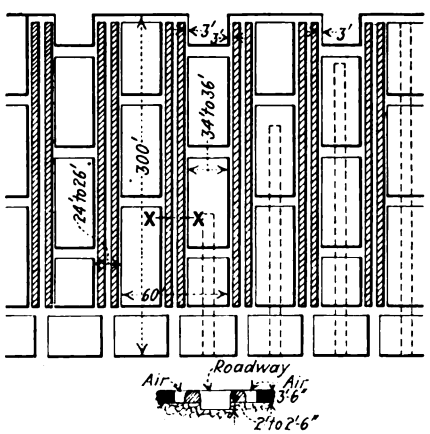
Double Chambers Best Suit Thin Anthracite

Now that the thick beds in some parts of the anthracite fields have been mined, it behooves the engineers to study the problem of mining the thinner seams, which in places have not as yet been touched.

In mining beds of 3 ft. 6 in. and over, the chamber-and-pillar method of mining has been adopted and proved successful, both in first mining and later in the second mining by means of which the pillars were recovered, but in the mining of the smaller beds this method, although applicable to first mining, is apt to prove too costly during second mining.

At present, where the smaller beds are being mined by the chamber-and-pillar method, the general practice is to drive the chambers on 60-ft. centers with a working face 24 to 26 ft. wide, leaving a 34- to 36-ft. pillar between each chamber.

In a bed 3½ ft. thick a miner removes from 24 to 30 in. of rock, 10 ft. wide, in order to make height for his roadway and for the laying of the car tracks. With this rock he fills the gob. The wall of rock formed between the gob and pillar on one side of his chamber creates an air-course 3 ft. wide for ventilating the working face. Sometimes the miner has more rock than he can pack into the gobs, and he has to load some of it into cars, which are sent to the rock dump to be unloaded.



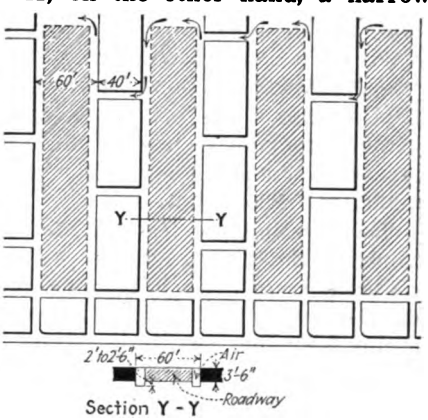
Putting Road on Room Center

The rock is gobbed on both right and left and therefore with minimum labor but, when an attempt is made to recover the pillar, it must be split or slabbed. But pressure may have rendered these methods impossible. If the room is reopened half the stowed rock must be hauled away—an impossible proposition.

When the time comes to recover the pillars in these small beds, the track will be laid either in the old roadway, or in a narrow heading bisecting the pillar.

If the track is laid in the old roadway it means that 50 per cent of the rock which was packed in these chambers during first mining must be moved to enable the miners to get at the coal. This will prove an expensive item.

If, on the other hand, a narrow heading is driven through the length of the pillar, all the rock which will be cut for the roadway must be loaded into cars and sent out to be unloaded.



Use Wide Room with Two Roads

With this method, if the room will stand driving at such great width, it is easy to get at the pillars to draw them. If they are to stand long they should be packed tight.

To eliminate this expense during the recoving of pillars, why not adopt the double-chamber method of mining in these small beds, as follows: The working faces of each double chamber to be 60 ft. wide, pillars between each double chamber to be 40 ft. wide; chamber lines to be set on 50-ft. centers, sights being kept 5 ft. from one rib; the roadways to be carried alongside the pillar, and all rock to be packed in the space between the two roadways.

The advantages of this method applied to the mining of the smaller beds would be: (1) All rock produced in the chambers during the first mining could be stowed away between the two roadways, forming a substantial pillar for supporting the roof. (2) When recovering the pillars in second mining, the tracks being laid on both sides of the pillar, there would be no rock gobs to handle, thereby reducing the cost of production.

AUBREY DAVIES

Edwardsville, Pa.

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Viewpoints of Our Readers

Harworth Hoist Well Designed to Meet Abnormal Depth of Shaft

With Skips or Large Cars Size of Equipment Could Be Reduced—Far Superior to Old Steam Hoist—Might Accelerate More Rapidly, Thus Decreasing Second Peak

By Graham Bright
Consulting Engineer, Howard N. Eavenson & Associates, Pittsburgh, Pa.

The two large hoists, illustrated and described in the April 1 issue of *Coal Age* and now being installed at the Harworth Colliery, near Sheffield, England, are splendid examples of the progress in design and construction of mining equipment being made by British engineers.

The hoisting problems in the coal mines of the United States are quite different from those in England and on the Continent, in that our coal seams lie much nearer the surface, and that depths of 3,000 ft. are found only at metal mines.

The first impression that an American engineer receives upon reading the description of the Harworth hoists is that there is a large amount of hoist for the output. This is, no doubt, due to the fact that skip hoisting is not allowed in the coal mines of England, and British conservatism will not permit the use of a mine car of sufficient size to afford maximum economy in the operation of a coal plant.

Could Save a Hoist

With skip hoisting, the same quantity of coal could be hoisted with a much smaller drum and cable, or with the same drum and the same cable the entire output of both shafts could be hoisted from either one of them. The power equipment necessary to drive the hoist would, of course, be roughly in proportion to the quantity of coal raised in a given time. By the use of larger cars, the cage and empty-car weight would be less, which would reduce the drum and rope size and, at the same time, simplify the decking arrangements.

The steam-turbine driven flywheel set is cleverly planned and is certainly a great improvement over the usual steam hoist with its great fluctuation in steam demand and with its unfortunate inability to use modern high pressures and superheated steam.

The use of a steam turbine for each flywheel set and a third turbine to drive a generator for the other mine load is an economical arrangement both from a first-cost and operating standpoint. From a standpoint of continuity of operation, the alternate scheme of installing two or more turbo-generators all alike and driving the flywheel sets by induction motors would receive, and no doubt did receive, careful consideration.

All-Electric Better

With the scheme as installed, a breakdown of either flywheel turbine would close down one hoisting shaft, whereas a breakdown of the turbo-generator would shut down all productive operation. With all developed power electric, a breakdown of any turbine would not affect operations, for one spare turbine would be available. With the all-electric scheme, an emergency connection could be put in from a central-station system, in which case a spare turbo-generator would not be necessary. Central-station power could be relied upon not to fail at the same moment as the power generated at the station.

The use of two hoist motors and two generators instead of one motor and one generator is largely a matter of available equipment. In general, single machines from an economical and operating standpoint prove better suited to hoist motor capacities up to 2,000 hp.

Eddy-Current Brake

The eddy-current brake necessary with the turbine-driven flywheel set is not necessary with the motor-driven flywheel as the induction motor will act as a generator and will pass the excess power on to the power system when lowering unbalanced loads.

From the hoist duty cycle shown, a reduction in rope speed of about 12 per cent could be obtained by shortening the accelerating and retarding periods from 16 sec. to about 10 sec. This would, of course, increase the accelerating peak and reduce the secondary peak, which, in many cases, is desirable. The reduction in rope speed would increase the safety of operation and would slightly decrease the heating of the equipment.

Flywheel Inadequate

The flywheel seems to be a little light for complete equalization of the load with the reduction in speed as shown on the duty-cycle curve. Complete equalization is not necessary, of course, in many cases, but the prime mover must be able to take care of peak loads greater than the average if the flywheel is not heavy enough for complete equalization.

For many years cams, shafts and safety links have been used on control systems in England and on the Continent, but this practice has largely been discontinued in this country in favor of accelerating and retarding relays, geared limit and hatchway limit switches.

This latter control system will give full safety under all conditions, will allow the operative much more latitude and ease in handling the control lever and will more completely safeguard the motors and generating equipment against overloads caused by the careless handling of the control lever.

Protection at Landings Only

With the cam-and-lever system, only at the end of the cage travel is there protection of the equipment against a careless movement of the control handle that would give excessive rates of acceleration or retardation. The large hoist of the Chicago, Wilmington & Franklin Coal Co., at West Frankfort, Ill., is an exhibit of the manner in which full automatic control can be attained with full safety features without the use of the cam system.

British engineers are to be congratulated on the splendid hoisting system being installed at Harworth. After all is said, only the failure to use skips differentiates this hoist, except in detail, from those commonly installed at American mines.

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Splint Resultants Drive Out Mine Run of Softer Coals

Perhaps there are few who realize the changes in the market which are modifying conditions in the southern West Virginia field. For more than a year the gas-coal mines have seen their market almost ruined by the splint-coal mines which sell, in competition with gas mine run, the product left after abstracting the lump. The gas coal is a little better for steaming than this splint "resultant," but the price which the former commands is not enough to pay for mining it. All around the region the "soft-coal" mines have been closed down, and the splint-coal mines have been developed. As these latter are becoming capable of meeting the demand, it seems likely that the gas-coal mines will not be reopened.

SPLINTS AND GAS BEDS

It should, perhaps, be said here that the high-volatile coal in southern West Virginia may be divided into splints and gas, or "hard" and "soft" coals, as they are termed locally. The splints come from the following beds: Coalburg, Winifrede, Block Five, and Lewiston. The gas-coal beds are: Eagle, Powellton, No. 2 Gas, and Cedar Grove. The last of these is sometimes classified as a splint, and in the western part of the Kanawha field and over on Island Creek the No. 2 Gas is so hard that it also is thus classified.

All the hard coals are screened, and the lump sold for domestic fuel; what remains goes as nut and slack. Island Creek has built up a large business by passing the coal over 6- or 8-in. screens, getting a fancy price for the block and a price for the coarse resultant somewhat lower than the regular mine-run price.

One company has confined its output to six splint mines and three gas mines, shutting down ten that were mining gas coal. Two more may have to be shut down. The tonnage, however, at the few mines still working has been maintained, and the company mentioned produced more coal last year from the nine mines than in any year since 1915.

Railroads that used to buy gas mine run have gone to splint mine run and resultants, so that over half of the rich steam coal acreage in the high-volatile districts is worthless as an investment.

Twenty odd years ago, when an anthracite strike of any duration occurred, there was a corresponding coal boom in West Virginia, but the recent strike had no effect that could be noticed, certainly not enough to afford a profitable business. If West Virginia, with the 1917 scale, with the anthracite strike in full swing and with the mines in other states trying to work on the Jacksonville scale, cannot make a decent profit, what will happen now that the strike is settled if the Jacksonville scale should be annulled?

WEST VIRGINIAN.

Defends Cast-Iron Wheels For Mine Cars

I read with interest an editorial on page 254 of Feb. 18 issue of *Coal Age*, under the heading: "Lighter Wheels and Heavier Loads." It seems to me some one has given you some wrong information concerning car wheels for mine car use.

My company has been manufacturing mine car wheels as a specialty for over forty-five years and we have watched carefully the development of the mine car wheel business in the United States. We have investigated personally the mine car wheels used in foreign countries—England, France, Germany and also Canada — which use some steel wheels on account of the high duty of importing American material.

The foreign countries generally have cars that carry maximum loads of from one to one and one-half tons while American cars today average a minimum of two and one-half tons and we are now building a large percentage of our cars to hold four to five tons and designing cars that will carry from five to ten tons.

HAVE SOFT TREADS

You mention some of the steel wheel difficulties. We believe that a steel casting is usually so soft in the tread that it will not last more than a few weeks in modern mine service where the trips are hauled long distances at high speeds, and when braking or spragging is necessary a steel wheel will not last more than one round trip. If they are made heavy enough to give much wear on the tread they cost two to three times the price of cast iron, and if they are made light enough to compare in first cost with cast iron they flatten between the spokes and you have a wheel with as many sides as you have spokes within a short time.

We believe the mining company to which you refer has made strong efforts to secure a steel wheel and has tried to forge or roll these with little success and at high cost.

Steel wheels are largely used on railroad cars today on account of their flange strength, the steel flange being stronger than cast iron, but as to actual economy cast iron wheels are being used today in quantities that show them to be on the increase instead of the decrease, and only on their heaviest cars where the flange-strength limit has been reached are they using steel wheels. Large steel wheels can easily be rolled but this is a serious problem in manufacturing small wheels.

LOST POWER AT CURVES

You overlooked one important point in reference to the steel wheels and mine car wheels in general. At least 99½ per cent of all mines now in use have wheels that rotate on the axle. The particular mine to which you refer is equipped with cars that have the wheels pressed on the axles and the bearings are in boxings. This makes a car consume considerable power in rounding curves for wheels pressed on axles on sharp curves makes it necessary for one or the other wheels on the axles to slip. The trackage in most mines contains curves that are rather sharp, especially at room necks.

You will find upon investigation that the reduction which you give in weight of steel under cast iron wheels is somewhat overestimated and we doubt if there is such a difference, especially if the steel wheel has sufficient tread for any reasonable amount of wear.

Chilled cast iron is one of the hardest substances known and, when polished, gives a very smooth running wheel on a rail. Cast steel or rolled steel wheels cannot be made satisfactorily when they must be machined in the hub for the fitting of roller bearings or, in a number of instances, arranged for lubrication in the wheel itself. As stated above, most of the wheels run loose on the axle, so there must be some bearing provided in the wheel itself and this practically eliminates steel wheel construction—either the rolled or cast type.

Some English steel wheels were shipped to this district about two years ago and they lasted about 60 days in service. Ten miles an hour speed, common in the United States, is different from hand pushed service in England. WHEELMAN.

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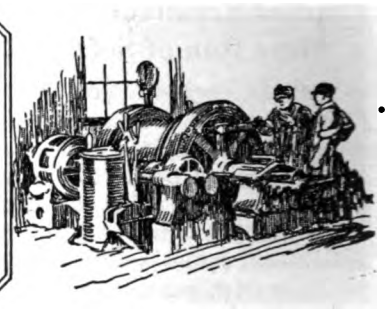
Practical Pointers For Electrical And Mechanical Men



Oil Circuit Breaker Should Receive More Frequent Attention

Test Breaker by Hand First, Then Electrically, But Not Connected with Line—Inadequate Connections May Heat Equipment—Set Breaker Plumb

By H. J. Pfandhoefer
General Electric Co.

An oil circuit breaker is the valve for the outlet or intake of generated electrical energy, and if not properly installed or maintained, stops the production or reception of power. It is, therefore, extremely essential that it be properly installed, and after installation that it receive as much care as a main steam valve or water valve.

Oil circuit breakers when operating under short circuit must open many times the normal generating capacity of a system, for, when a short circuit occurs, the current rises greatly and this higher current must be broken at the time of trouble. For this reason some points to be borne in mind when installing a circuit breaker may well be enumerated:

INSTALLATION SUGGESTIONS

Installation—(1) All manufacturers in shipping oil circuit breakers provide complete instructions for the installation of the breaker. Follow these instructions carefully and to the letter.

(2) After installation carefully check all moving parts to see that they function properly and freely, and that all bearings run free.

(3) Check studs and be sure that they are properly tightened in place.

(4) Inspect contacts for alignment to make sure that they all seat properly, that they do not bind, and that all contacts make and break at the same instant.

(5) Be sure that the tanks are provided with the right kind of oil and are filled to the proper level, and that the oil is clean and dry.

(6) Oil all moving parts on the mechanism thoroughly before attempting to put it into service.

(7) The breaker should now be ready for trial. Always try the breaker by hand first whether manual or electrical, and be sure that the breaker is dead before this trial is made.

BEFORE PUTTING ON LINE

(8) If the breaker is electrically operated and all the foregoing tests show its correct functioning and if further the breaker operates satisfactorily by hand, then try electrical operation with the breaker still disconnected from the line. Do not try to operate it electrically with the tanks off. The tanks should be in place so that the additional effect of the contacts traveling through the oil is obtained. If trial is made without the tanks, there is also some danger of injury to the breaker because the contacts lack cushion when they do not travel in oil.

(9) Connections can now be made to the breaker, and when made they should be tight and of ample size, otherwise heating may develop in the breaker. The equipment may be held responsible for this heating, when as a matter of fact, the trouble is in the heating of the connections and the transfer of this heat from them to the breaker.

(10) Be sure the breaker frame is thoroughly grounded.

GIVE BREAKER AIR

A Few Don'ts: (1) Don't install a breaker in a dead air pocket. All electrical apparatus must have changing air. I have seen many cases where breakers installed in dead air pockets have unduly heated simply because the air was never changed. As a result the heat continually pyramided, and the breaker was held at fault when the circulation of a small quantity of air was all that was needed.

(2) Don't guess. Your guess may be wrong and cause a shutdown which, of course, means a loss of revenue. If you do not know, find someone that does or look up your instructions on that particular breaker and find out.

(3) Don't expect an indoor breaker to withstand the elements. It is not expedient to install one of this type in a wet room or by a window left open during a storm.

(4) Don't install the circuit breaker so that it is out of alignment. If it is not properly aligned at the time of the installation some parts may bind just when you want it to open automatically.

(5) Don't install a breaker too small in ampere-carrying or in interrupting capacity and expect it to function properly on your system. In the first case the breaker will heat; in the second trouble will develop if the breaker has to operate under a short circuit.

INSPECT YOUR BREAKERS

An oil circuit breaker is liable to be regarded as a piece of apparatus to be installed and forgotten. There are no rotating parts to call the operator's attention to the fact that it is a piece of electrical apparatus and consequently he neglects it. An oil circuit breaker, like any other piece of electrical apparatus should receive ordinary care, or the best results will not be obtained from it. One would not think of allowing a turbine to run year in and year out without periodical inspection, or at least without putting some oil in the bearings. An ounce of care in installation and maintenance, as with all electrical equipment, may save many pounds of regret. Equipment other than electrical needs care throughout its period of use, but electrical apparatus is unfortunate in that it often falls into the hand of those who do not properly understand it.

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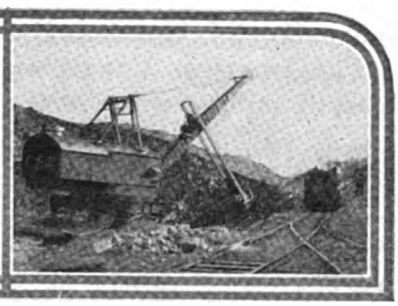
News Of the Industry



Coal Hearings in Congress Elicit Many Remedies for Emergencies; Constitutionality Imperils Legislation

By Paul Wooton

Washington Correspondent of *Coal Age*

Constitutionality is the big obstacle in the path of coal legislation. This was brought out clearly during the second week of the coal hearings before the interstate and foreign commerce committee of the House of Representatives.

The committee is earnest and conservative. It has no desire to attempt to exceed the powers of Congress. Chairman Parker evidenced marked impatience when Representative Black, of New York, suggested that the Supreme Court should be allowed to pass on the question if there is doubt as to the constitutionality of proposed coal legislation. Chairman Parker made it very clear that the committee will recommend no legislation which fails to square in all particulars with the Constitution.

The chances of any legislation have been hurt by differences of opinion among the members of the House as to what form the legislation should take. Each witness has a different plan and most of them are hostile to the other proposals. There is marked opposition to the creation of another "extravagant" government agency to deal with coal. There has been considerable crystallization of opinion against lodging emergency powers with the President.

Operators Invited to Appear

In line with the plans of Chairman Parker fourteen prominent bituminous operators have been invited to appear before the committee. They are to be asked what they have to suggest to prevent an interruption of coal supply. The position that they will take already is indicated. A spokesman for the operators declares that there is no problem in bituminous coal. The demand expressed at these hearings is for protection in the matter of anthracite supply. Anthracite and bituminous coal are very different commodities, he points out. If anthracite were another color and if it were not known by the name "coal," the bituminous product would not be dragged into this hearing, it was said. The demand for legislation is coming from the anthracite-consuming territory.

The point is made that under present conditions a strike among the soft-coal workers would not interfere particularly with supply. Non-union operations have increased to the point where they can meet the country's requirements. All western Kentucky is now non-union. Only 5 per cent of West Virginia's production now comes from union mines. Indiana and the Pittsburgh district are developing production which is not under union control.

No Assurance Against Strikes

The position of the operators seems to be that the public is amply protected in the matter of bituminous coal supply, except possibly against strikes. The producing area is scattered widely. There is no semblance of monopoly or centralized control of production. As there now is no great probability that a coal strike could stop enough bituminous production to cause much trouble the greater danger lies in the possibility of a railroad strike. Even that is becoming more remote, but the hearings before this same committee developed the fact clearly that no absolute assurance against strikes can be established. The feeling is that that situation can be controlled only by public opinion. The conduct of the public during the last strike, it will be pointed out to the committee, has done more to discourage another anthracite strike than any legislation that could have been enacted.

All Witnesses Have Cures

During the week the committee heard as many remedies as witnesses. Representative Black, of New York, wants to set up a government corporation empowered to operate coal mines during emergencies. He also thinks the coal industry should have a czar—a man the public could picture and who could be held responsible in the public mind. He has in mind for the coal industry a position comparable to that held by Judge Landis in baseball; by Will Hays in the motion-picture business, and by L. S. Storrs in the electric-railway industry.

Representative Mead, of Buffalo, would set up a council composed of a representative of the Federal Trade Commission, of the Interstate Commerce Commission and of the Department of Labor.

Representative Boylan, of New York City, urged that the President be empowered to take over the mines in an emergency operating through the departments of Commerce and Labor. He also condemned the Pennsylvania anthracite tax.

Urges "Pitiless Publicity"

"Pitiless publicity" was recommended by Representative Fish, also from New York, as the best way of controlling the coal industry. He told the committee that the coal situation is the greatest issue before Congress and that the public should have the whole truth of current developments in the coal situation. He recommends fact-finding by the Interstate Commerce Commission. He also asserted that a powerful lobby has been working for years to prevent this legislation and that a large majority of coal operators are unscrupulous in their relationships with the public.

Plan to Assure Consumer Of Coal Quality

In line with announced plans of Joseph Buchanan, Indianapolis (Ind.) smoke inspector, for the regulation of coal sales so that the consumer may be assured of the quality of the product he buys, the Better Business Bureau has drafted for presentation to the City Council an ordinance providing that when coal is delivered a duplicate ticket, designating "either the true, usual and customary name of such fuel, or the name of the state from which it comes, together with the name or number of the district, mine or seam from which it was mined," be given to the purchaser with a description of the size and character of the fuel.

Substitutions or mixtures of fuel would not be permitted under the ordinance, except by understanding with and consent of the purchaser. Penalties for violation of any of the provisions include fines ranging from $25 to $100 for the first offense and from $50 to $200 and revocation of the license of the offenders for the second offense. The inspector said he would include a proposal to have all coal sold according to government specifications and arrangements for tests to be made of questionable fuel by the city chemist.

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Journalists of Americas Hold Pan-American Congress

With the capital decorated as for an inaugural, publishers and editors from Central and South America, Mexico and the West Indies arrived in Washington on April 7 and met a similar group of representatives of the press from all parts of the United States at the First Pan-American Congress of Journalists.

The gathering is considered the most important journalistic conference ever held in the New World. Twenty-one republics are represented. Dr. Walter Williams, director of the School of Journalism, University of Missouri, was elected permanent chairman and Willis J. Abbott, editor, the *Christian Science Monitor*, Boston, vice-chairman.

Welcomed by President Coolidge and addressed, among others, by Herbert Hoover, the congress organized the Pan-American Association of Journalists to perpetuate the movement toward international understanding through the press initiated at the present gathering.

Among the prominent journalists taking part in the discussions at the Washington sessions were Señor Dr. Jorge Mitre, of *La Nacion*, Buenos Aires; Arthur Capper, Senator from Kansas; Rollo Ogden, editor, the New York *Times;* Frank B. Noyes, president of the Associated Press; Dr. James Melvin Lee, director of the School of Journalism, New York University; Señor Don Ernesto Montenegro, of *El Mercurio*, Santiago, Chile, and Dr. Benjamin Silva Herrera, of the *Diario Nacional*, Bogota, Colombia. These men discussed the part of the press in maintaining understanding among the American nations, as well as the various problems of news gathering, advertising and editorial policy common to all journalistic enterprises.

Following the Washington sessions of the congress, which terminated April 13, the 100 or more Latin-American editors started by motor bus on a tour of the eastern and central parts of the United States which will last approximately one month. On this tour many of the great industrial plants of the country will be visited and an inspection made of the highway development.

Kansas Shovel Operators to Consider Union Agreement

Five operators of the top vein of coal in the northern part of the Pittsburg (Kan.) field held a conference in Mulberry, April 7, with President Matt L. Walters and other officials of District 14, United Mine Workers, when it was decided that the miners should draw up an agreement for formal submission to the operators at once. Operators say they are paying the union scale for all work in the steam-shovel mines except what they class as common labor.

Refusal of the operators to sign a contract with the union including the scale for these employees was the occasion for the union miners "marching" on these mines a few weeks ago. That form of organization promotion eased after President Walters, other district officials and Alexander Howat, former president, were arrested. Their trials on charges of unlawful assembly and disturbing the peace have not yet been held. All are out on bond.

In a referendum on March 30 miners of the district decisively voted down a levy of 2 per cent of the earnings of working miners for the relief of unemployed members and a defense fund for the arrested men.

Unskilled Workers' Wages Rise Rapidly Since War

The findings of a recent report on wage changes in 29 countries by the International Labor Office are to the effect that international commercial competition has depressed wages in the export and import industries out of proportion to changes in wage levels which have taken place in strictly domestic lines of production.

The Scandinavian countries are the outstanding examples of those in which real wages are much higher than the 1914 index. The United States, Canada, Australia, Spain, Italy and Switzerland have in the past two years moved up into a similar position.

Another interesting fact brought out by the study is the position of unskilled as compared with skilled labor. In 1914 unskilled workers' wages were about 50 to 70 per cent of skilled workers' wages; in 1920 they were 80 to 90 per cent. This ratio has declined slightly but still remains much higher than in 1914.

War Department Wants Coal

The New York General Intermediate Depot, Quartermaster Supply Office, U. S. Army, Brooklyn, is receiving bids for the various camps, depots and buildings under its jurisdiction in the states along the Atlantic sea coast as far south as Delaware for nearly a quarter million tons of anthracite and bituminous coal, besides small tonnages of coke and briquets.

The first opening took place April 14, when bids were received for 71,445 gross tons of the various sizes of anthracite, 34 net tons smithing coal, 6 tons bituminous mine-run and 175 tons of briquets.

On April 19 bids will be opened for 10,851 net tons of bituminous mine-run and 7,038 net tons bituminous lump. On April 23 tenders will be received for 48,763 net tons of bituminous mine-run, 7,250 tons of bituminous lump and 30 net tons of coke. On April 27 bids will be opened for 58,517 net tons of bituminous mine-run, 26,971 tons of bituminous lump and 205 net tons of coke.

Indiana State Bids Rejected

All coal bids for state institutions of Indiana submitted recently have been rejected. The state joint purchasing committee said bids were received from forty-two firms. All the bids were considered too high. New specifications will be sent out and a new contract is expected to be let about May 20. The contract will call for thousands of tons of coal for the coming fiscal year.

I. C. C. Denies Plea to Make Emergency Rates Permanent

The Interstate Commerce Commission on April 12 denied petitions that emergency rates prescribed on coal from Southern fields to New England points during the anthracite suspension be made permanent or continued in effect pending establishment of permanent rates. The emergency schedules became effective Dec. 31 last and will expire April 30.

The Commission said its action was not to be construed as prohibiting the carriers from voluntarily continuing the present rates for such additional time beyond April 30 as in their judgment necessity might require.

The Commission reopened the proceedings for further hearings at a date to be fixed later, to determine the reasonableness of rates on bituminous and semi-bituminous coal and coke from mines in Pennsylvania, Ohio, Maryland, Virginia, West Virginia and eastern Kentucky to all points in the Middle Atlantic and New England States. The hearing also will consider rates on semi-anthracite from mines in Virginia to points in the Middle Atlantic and New England States.

The petitions to make the emergency rates permanent were filed by the New England Governors' Fuel Committee and others.

Ewen Miners Sign Contract For Pay by Ton

A new wage agreement, based on pay by the ton, has been accepted by the miners of the Schooley and Ewen shafts of the Ewen Colliery of the Pennsylvania Coal Co., at Pittston, Pa. Heretofore the men have worked on consideration, $8.80 for miners and $7.70 for laborers.

The new working agreement was framed last week at a meeting of representatives of the union and officials of the Pennsylvania Coal Co., following an inspection of the chambers in both shafts. The belief is that the new wage scale at the Ewen will be a benefit to the miners and company alike. International Organizer Frank Agati, who served as a member of the negotiating committee during the suspension, addressed the miners and urged acceptance of the new agreement.

Receiver for Southern Coal

Harry A. Mackey, City Treasurer of Philadelphia, was appointed receiver in equity for the Southern Coal & Iron Corp. on April 8 by U. S. District Judge Dickinson at Philadelphia under a bill in equity filed by William A. Behan, secretary and treasurer of the concern. The company is a Virginia corporation, capitalized at $3,000,000, and has offices in Philadelphia. Its home office is in Roanoke, Va. Its business is mining and selling iron, iron ores, coal and sand, and it has plants at Rittenhouse Gap. It owns leaseholds and mineral rights and also the capital stock of the Roanoke & Botetourt R.R., which represents a graded railroad right of way in Virginia.

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British Miners Reject Lower Wages, Longer Hours and District Pacts; Invite Owners to Continue Parleys

Miners' delegates from all British coal fields, at a conference in London April 9, adopted a resolution against the acceptance of wage reductions, the lengthening of hours and the substitution of district for national agreements regarding minimum wages. As a result of this action another serious deadlock looms between the operators and miners.

Acceptance of some of the proposals was suggested as part of a panacea for Britain's crisis in the recent report of the Royal Coal Commission, but since the publication of this report the miners have been careful to state that they have not refused to follow it as a whole in seeking to put an end to the crisis. Their opposition to the suggestions of the Coal Commission in such vital matters as those stated above, however, has created pessimism as to the feasibility of general settlement of the crisis along the lines laid down in the report.

Public concern is intensified by the fact that on May 1 the coal subsidy will be withdrawn and some new way must be found of adjusting the serious differences between the mine owners and the miners.

A ray of hope was seen when it was stated after the conference of the miners' delegates that the miners' executives had extended an invitation to the mine owners to meet them again immediately for the purpose of continuing negotiations. It is felt that last Friday's conference did not decide anything definite, but simply gave a hint to the miners' leaders in various districts as to what the delegates at the general conference thought the best line to be adopted.

After the districts have been heard from there will be another meeting of the miners' delegates, following which something definite doubtless will be decided.

It is not likely that the Premier, Stanley Baldwin, or any members of his Cabinet will meet either the mine owners or the miners for the present. Governmental pressure, however, will be brought to bear in an endeavor to bring the warring factions to an agreement. It will be pointed out that a stoppage in the mining industry will result in serious financial losses not only in the coal industry but in affiliated industries.

The government is ready to give all possible assistance to both sides in the controversy and in the negotiations which, it is believed, will be resumed in the near future.

Bittner Asks Rehearing

Petition for a rehearing was filed with the West Virginia Supreme Court of Appeals at Charleston on April 6 for Van A. Bittner, chief international representative of the United Mine Workers in northern West Virginia. By this procedure the sentence of six months' imprisonment for contempt imposed by Judge I. Grant Lazelle in Morgantown will be stayed again. A month ago a writ of error was refused by the Supreme Court of Appeals. In the meantime Bittner is at liberty on the strength of the bond which he originally furnished for the writ of error.



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Miners' Representatives Keep a Date with British Premier

Officials of the Miners' Federation of Great Britain in front of 10 Downing St., London, where they discussed the findings of the Royal Coal Commission with Stanley Baldwin, the Prime Minister. Left to right: Tom Richards, Herbert Smith, president of the Federation; A. J. Cook, secretary, and W. Richardson.

Supreme Court Sustains Commerce Commission on Emergency Priority Orders

In two decisions by Chief Justice Taft the U. S. Supreme Court on April 12 further sustained the authority of the Interstate Commerce Commission to issue priority orders for shipment of coal in periods of emergency, clarifying both the Elkins act and the Transportation act. Many points were covered by the Court last year in the Avent case; the decisions April 12 amplify these views and cover issues not raised in the previous case.

The two decisions reversed the actions of the U. S. District Court for Eastern Michigan, which had sustained demurrers to indictments returned against defendants under the Elkins act on charges of having violated provisions of Service Order No. 23 of the Interstate Commerce Commission, issued in July, 1922, establishing priority in coal shipments. The federal government appealed from the lower court's decisions. The action of the Supreme Court reinstates the indictments for trial on the merits of the cases.

The P. Koenig Coal Co., of Detroit, was indicted on charges of knowingly receiving as a shipper concessions from a carrier obtained by false representations to the carrier. In one count it was charged the Koenig company obtained shipment of coal from a West Virginia mine to Detroit on representations that the coal was destined for the Samaritan Hospital, when, in fact, it was intended for, and was delivered to, the Dodge automobile factory. Other counts were of a similar nature. The District Court sustained a demurrer on the ground that there could be no indictment under the Elkins act as no offense could be committed without the guilty knowledge and collusion of both shipper and carrier.

Shipper's Plea Denied

In its decision reversing this opinion, the Supreme Court holds there is nothing in the statute which releases a shipper from guilt because the carrier which granted the concession thought it was lawful.

An indictment against the Michigan Portland Cement Co. was returned on the charge that, in connection with the Bewley Darst Coal Co., the company obtained shipment of coal from a Kentucky mine to the Municipal Light & Power Co. at Four Mile Run Lake, and appropriated the coal to its own use. A demurrer on grounds similar to that in the Koenig company case was sustained by the District Court.

In the arguments before the Supreme Court, counsel for the cement company raised the points that violations of the Elkins act must be limited to concessions or discriminations violating a published tariff of a carrier and that the Transportation act does not give the Interstate Commerce Commission authority to fix preferences and priorities in transportation in that car service does not include transportation. Both of these contentions are swept aside by the Supreme Court decision.

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New England Retailers' Meeting Stresses Better Coal Quality and Service

Regret that the anthracite operators had seen fit to abandon the practice of reducing prices on domestic sizes on April 1 was voiced by members of the New England Coal Dealers' Association in a resolution unanimously adopted at the twenty-fourth annual convention of the organization, held at the State Armory, Worcester, Mass., April 7-8. This departure from tradition, they explained, had created more or less resentment in the minds of some of the household consumers.

In discussing the action to be taken when the resolution was offered for discussion, one retailer wanted to know how he was to placate the irate consumer when the latter objected to paying winter prices for summer deliveries. Another dealer stated that the failure to reduce prices had sacrificed the favorable opinion some of his customers had for the industry during the late strike. A third speaker said that his retail company had made a cut of 50c. per ton in order to hold the good will of the householders.

A second resolution offered at the same time and adopted without discussion urged the producers to maintain a strict inspection service so that all shipments made should be up to the uniform standards approved by the Anthracite Operators Conference last year.

Urges Solid Front Against Oil

Harry L. Gandy, executive secretary, National Coal Association, was the principal speaker at the first day's session of the convention. Mr. Gandy urged organized opposition to fuel-oil competition and suggested further that the coal trade devote more attention to quality and service and less to price in its salesmanship efforts. Turning to the question of bituminous coal for domestic consumption in New England, he cited the experiences of the recent hard-coal strike and the limits on anthracite production as reasons why the dealer should consider soft coal.

Mr. Gandy closed his address with a brief discussion of the legislative proposals now being considered by Congress. Suggestions for emergency seizure and operation of the mines, he asserted, lacked a Constitutional basis. Moreover, the taking over of the mines would only add to the public burdens, compelling the consumer to pay more for his coal. Nor is there any warrant for the fact-finding legislation, which must rest upon a breaking down of the safeguards against federal encroachment in the domain of private business. Harry E. Davis, counsellor to the Chamber of Commerce of the United States, also touched upon the legislative situation in his annual report.

At the Thursday morning session C. Willing Hare, vice-president and general manager of the Anthracite Coal Service, outlined the plans of the hard-coal producers to meet competition and to help the retail distributor meet competition. The Anthracite Coal Service had been launched, he said, because the competitive situation demanded that the industry meet its sales problems with trained engineering skill. The gains since made in recovering business that had been lost or was about to go to other fuels had fully justified the service.

Col. A. N. Payne, assistant to the vice-president in charge of traffic, Boston & Maine R.R., outlined the different classes of loss and damage claims presented to railroads and the steps which should be taken by claimants, first, to establish clear records on cars and, second, to support their claim papers with evidence which will lead to prompt payment.

Clear thinking, asserted Richard F. Grant, president, Susquehanna Collieries Co., will cure many of the ills and expose many of the fallacies of the day. There is too much loose thinking, too great a willingness to let others do our thinking. Thinking based upon knowledge of the facts of a situation will end much of the unfair charges now hurled against business and American institutions. It will lessen and curb the cry for government in business because it will bring the realization that managerial ability is a personal, not a bureaucratic, possession and that any system which gives men leadership except upon demonstrated merit invites destruction.

W. A. Clark was again the unopposed choice for president of the association.

Soft Coal an Aid to Art, Says British Painter

Sir John Lavery, British artist, on arriving in London last week, had some interesting comments to make on his recent five-month stay in the United States. Speaking of the effects of the temporary use of soft coal on New York, the artist said: "The effect of this temporary eclipse on great blocks of masonry is beautiful in the extreme, and I thought if Turner had been alive how it would have appealed to him. The softened effect on huge skyscrapers is wonderful."

Mines of Pursglove and Paisley Interests Resume With Reduced Wage Scale

The Pursglove interests, of Cleveland, last week posted notices at their mines announcing that beginning April 12 the plants of the Cleveland-Morgantown Coal Co., controlled by them, would be operated on what amounts to the 1917 wage scale. The notices were placed at the four mines of the company on Scotts Run, in the Monongalia field of West Virginia, on April 7. Following closely after the formation of the new union district, No. 31, this action is regarded as significant, especially as the Cleveland-Morgantown Co. has been one of the few companies in the Morgantown district which has continued to operate in agreement with the union at a time when other companies were operating on an open-shop basis.

Mines of the Pursglove interests were closed down on April 1, the explanation being given that the company could no longer operate under the terms of the Jacksonville agreement. The new wage scale represents a 30 per cent reduction from the Jacksonville scale, with pay at the rate of 60c. a ton for picking mining in entries, rooms and pillars, with 62½c. an hour for drivers, motormen, gathering locomotive men, trackmen, timbermen, bratticemen and 75c. an hour for carpenters.

Steps also have been taken by the Paisley interests, who control mines in the northern Panhandle of West Virginia, in eastern Ohio and southern West Virginia, to operate the Murray mine of the Morgantown Gas Coal Co. on a lower wage scale, several cars having been loaded last week. The understanding is that an agreement has been entered into with the men employed at the mine to pay at a rate about 20 per cent lower than the Jacksonville scale.

With the Pursglove and Paisley interests operating independent of a union agreement the Gilbert-Davis Coal Co. is about the only firm of any size in northern West Virginia that continues to work under the Jacksonville scale.



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British Mine Owners Discuss Coal Situation with Premier

In an effort to arrive at an amicable settlement of Britain's coal difficulties in accordance with the findings of the Royal Commission the operators called at 10 Downing St., London, for a conference with Stanley Baldwin, the Prime Minister. Left to right: W. A. Lee, C. B. Crawshaw, Sir Adam Nimmo and Evan Williams.

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Witnesses Say Runner of Open-Type Cutter Ignited Gas at Eccles Mine; Jury Declares Cause Undetermined

Failure of a machine runner to test for gas before taking his machine to the face of a place in the Eccles mine of the Crab Orchard Improvement Co., at Eccles, Raleigh County, W. Va., was declared by witnesses as probably the most vital factor in the explosion which occurred in that mine on March 8. Testimony set forth as possible contributing factors an accumulation of gas in the place resulting from the collapse of a three-day old canvas stopping in the next to the last crosscut, probably due to a fall of roof, and an arc from an open cutting machine. This theory was many times repeated by witnesses at the inquest of this explosion, which was held at the mine on April 7.

On the other hand, the jurymen with due caution expressed their view in a verdict that the nineteen victims of the explosion "came to their death by a gas and coal-dust explosion and afterdamp. We are unable to find, from the evidence produced, how the gas was ignited."

Best Runner on Job

William Dickey, the machine runner in question, was the best runner on the job, according to J. P. Horn, acting general superintendent. In the opinion of other witnesses who were more closely associated with him, however, he was the best only as a "coal-getter." Each witness when asked whether he believed this cutter had examined the place carefully before allowing the machine to approach the face answered in the negative.

Harry Nisbet, fireboss, remarked on the stand that complaints came to him that this man frequently omitted the preliminary inspection of his places. Mr. Nisbet said he warned Mr. Dickey repeatedly not to omit this precaution. This fireboss added, when questioned, that he had no authority to discharge this alleged careless man. He admitted that he had not at any time reported this alleged willful violation of the mine law to anyone in authority.

Four years ago Mr. Dickey and his son ignited gas at the face of a place in the Eccles mine, as a result of which the latter was burned. The mine at that time belonged to another company. On this occasion Mr. Dickey did not carry a safety lamp with him.

Marshall Loving, section boss, said that shortly before the occurrence of the explosion he met Mr. Dickey with his machine near the place where the explosion is believed to have originated. The cutter's safety lamp was not lit. A tracklayer later told Mr. Loving that he saw the cutter light his lamp.

On the day of the explosion he found a trace of gas at the faces of Third Left off the aircourse in Section A-1, where the explosion seemingly originated. In addition to bossing, his duties consisted of bratticing and shotfiring. The canvas in the places inspected that day was in fair condition, but in spots it was more or less worn.

Fireboss Nisbet asserted that the place where Dickey was cutting in Section A-1 gave off much gas. A line brattice had been hung in this place to a point within about 12 ft. of the face. In his run on the day of the explosion, he found the ventilation good and the places visited clear of gas. Although the last crosscut in the place had been completed three days, the crosscut next to the last had not yet been sealed with a permanent stopping. A canvas brattice hung in this crosscut.

Section Boss Loving remarked that the top in this vicinity was none too good. He thinks the temporary canvas stopping in the next to the last crosscut may have been torn down by a slate fall. An accumulation of gas also might have followed a disarrangement of the line brattice already mentioned. He made his last inspection of this place three and one-half hours before the explosion and found no gas. Several falls had occurred in the vicinity, but these were not sufficient, in his opinion, to interfere with ventilation to any great extent.

About 70 per cent of the coal was mined by pick from pillars. Narrow places were cut by three machines—a permissible undercutter, an open-type arcwall and an open-type turret or center-cutting machine. The last-mentioned machine was believed to have been responsible for the ignition of gas. It had reached the face, but none of the tools had been removed from it, and the controller was shut off. A safety lamp hung from the rear headlight of the machine. The bodies of the two runners were found about 40 ft. from the machine. It is believed that after the gas was ignited they ran outby until they were overcome.

Wanted Dust Removed

Robert Lilly, state mine inspector of the district, made with W. L. McGinnis, state inspector of an adjoining district, a joint inspection of the Eccles mine on Jan. 25, 26 and 27. As a result of this inspection they recommended that a large quantity of dry coal dust in Section A-1 be removed and that timbers be set. Otherwise the mine was in excellent condition.

C. A. Sine, superintendent, did not believe that much of the dust that accumulated was dangerous inasmuch as it was mixed with a large quantity of sand that had been ground fine under the wheels of the locomotives. Chief R. M. Lambie, of the West Virginia Department of Mines, said that when such a mixture is suspended in the air most of the sand would fall away from the coal dust to the ground. He drew from Mr. Sine an opinion that an inert, pulverized material, preferably limestone dust, would have stopped the propagation of the flame.

The changes recommended by State Inspectors Lilly and McGinnis after their last inspection were being made according to J. P. Horn, acting general superintendent. The Eccles mines were taken over by the Stonega Coke & Coal Co. on Sept. 15, 1923. Since that time, to the best of his knowledge, no other gas ignition had occurred in this mine. Sixty cars of refuse had been removed from the haulway of Section A-1.

Much Brake Sand

The grades of the track in this section are heavy—as much as 10 per cent—and on these the locomotives used an average of two-thirds of a carload of sand per day. In contradiction to hints made by several witnesses to the effect that brattice cloth was not always available when needed, Mr. Horn testified that more than sufficient canvas always was on hand. The company expected its men to tear down canvas where it was not needed and to use it over again so long as it was serviceable. Some men were reluctant to do this.

All machine runners and their assistants had been examined for competency—a step in advance of the mine law, which requires examination of runners only. Gas samples were taken and analyzed each week. The mine was sprinkled at regular intervals by water boxes. Section A-1 was thoroughly sprinkled the day before the explosion.

All evidence as to the origin of the explosion indicated that the place mentioned and the facts stated were the cause of the disaster. The fact that coal dust played the biggest part in the explosion was definitely established—first by the distance traveled and second by the evidence of coking. Inspector Lilly believes that the main force of the explosion in Section A-1 traveled outby through the aircourse. Less force was exerted in the haulway because here the pressure was relieved by expansion into the many rooms that connected with it. He believed that the two split paths of the explosion met at the junction of the two headings of Section A-1 with No. 1 West headings. The blast was boosted and receded in intervals until it finally spent itself through a relief of pressure. Manifestations of force were noted as much as 2¼ miles from the seat of the explosion. Where the suspected cutting machine was in operation little evidence of violence was seen.

Miners Sign Scale and Give Employer Scarfpin

James Moore, owner and operator of the Sunnyside mine, at Evansville, Ind., is wearing a diamond stickpin, presented him by his employees when they renewed their wage contract last week.

Loyalty of Moore's miners to their employer was one of the chief obstacles in the way of southern Indiana union miners in their recent attempt to unionize that field. The Sunnyside miners refused to quit work despite the appeal of the union men when Moore asked them to remain.

Moore's contract with his men calls for 90c. a ton or $6 a day for mining this year. This is the same wage paid them last year.

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Mine Accidents Claim 164 Lives in February; Fatality Rate Recedes

Accidents at coal mines in the United States in February, 1926, caused the death of 164 men compared with 318 in the preceding month, according to information received from state mine inspectors by the U. S. Bureau of Mines. The total fatality rate for the month, based on a production of 48,660,000 tons of coal, was 3.37 per million tons, as compared with 4.25 for February, 1925. Of the 164 lives lost in February, 157 were at bituminous coal mines, only 7 fatalities occurring in the anthracite field, the anthracite mines being closed until operations were resumed Feb. 18. The fatality rate for bituminous mines in February was 3.37 per million tons based on an output of 46,577,000 tons of coal, and the rate for anthracite was 3.36, based on a production of 2,083,000 tons. In February, 1925, the rates were 3.77 and 6.83 respectively.

Two major disasters—that is, accidents causing the loss of five or more lives—occurred during the month. On Feb. 3 a mine explosion at Horning, Pa., caused the death of 21 men. On Feb. 16 an explosion, caused by shot-firing, killed 8 men at the Nelson mine, at Nelson Creek, Ky.

Accident records covering the first two months of the year show a loss of 482 lives, which is 51 more than for the same period in 1925. The rate per million tons for the period was 4.70 as compared with 4.08 last year. The rates for major disasters alone for these periods were 1.67 in 1926 and 0.55 in 1925.

An analysis of the principal causes of the 482 fatalities in 1926 shows a reduction in the per-million-ton death rates for all of the principal causes except explosions of gas and coal dust. A comparison of the rates for the first two months of the two years is shown by the following figures:

	Jan.-Feb., 1925	Jan.-Feb., 1926
All causes	4.085	4.703
Falls of roof and coal	1.810	1.756
Haulage	0.749	0.663
Gas or dust explosions	0.701	1.785
Explosives	0.274	0.098
Electricity	0.142	0.127

Shaw Invests in Project To House Miners

George Bernard Shaw, Irish playwright and socialist, has lent £30,000 at 5½ per cent interest to the rural District Council of Easington, near Durham, England, which is to be used to help finance a big housing project, according to a London dispatch to the New York *World*, dated April 2. When questioned by newspaper men Britain's most prolific commentator refused to comment on the loan other than to state that it was "a purely private investment." Easington is a populous coal-mining district.

Glen Rogers Plant Passes to Old Ben for $3,000,000

Since the recent announcement by the Old Ben Coal Corp., of Chicago, that it had acquired some coal properties and connections in the non-union fields of West Virginia and Kentucky confirmation has been forthcoming that the company purchased the Glen Rogers (W. Va.) plant of the Raleigh-Wyoming Coal Co. on April 1, although Carl Scholz, vice-president and general manager of the latter company, had denied the first report of the sale.

Approximately $3,000,000 is said to have been involved in the deal, which includes 9,000 acres in Wyoming County. The Glen Rogers plant is said to be one of the best equipped in southern West Virginia, output in 1925 totaling 250,095 tons.

Preparing Safety Statement

A comprehensive statement of the attitude of the Bureau of Mines on matters pertaining to safety and health in coal mines is being prepared by George S. Rice, the Bureau's chief engineer. This statement will contain 10,000 words and will be published in the form of a bulletin. It will be fully annotated and will be used as a text book for the safety extension service.

Sealed Proposals Will Be Opened by the Supt. of Lighthouses, Philadelphia, Pa., 2 P. M., May 18, 1926, for anthracite and bituminous coal, acetylene and acetone, and fuel oil for fiscal year 1927. Information upon application.

Coal-Mine Fatalities During February, 1926, by Causes and States

(Compiled by Bureau of Mines and Published by *Coal Age*)

State	Underground												Shaft					Surface							Total by States	
	Falls of roof (coal, rock, etc.).	Falls of face or pillar coal.	Mine cars and locomotives.	Explosions of gas or coal dust.	Explosives.	Suffocation from mine gases.	Electricity.	Animals.	Mining machines.	Mine fires (burned, suffocated, etc.).	Other causes.	Total.	Falling down shafts or slopes.	Objects falling down shafts or slopes.	Cage, skip or bucket.	Other causes.	Total.	Mine cars and mine locomotives.	Electricity.	Machinery.	Boiler explosions or bursting steam pipes	Railway cars and locomotives.	Other causes.	Total.	1926	1925
Alabama	1	....	1	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	2	5
Alaska	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Arkansas	....	1	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	3
Colorado	2	....	1	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	3	3
Illinois	7	1	5	....	....	....	3	....	....	....	....	16	....	....	....	....	....	....	....	....	....	....	....	....	16	10
Indiana	3	....	....	....	1	....	....	....	....	....	....	4	....	....	....	....	....	....	....	....	....	....	....	....	4	54
Iowa	2	....	....	....	1	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	3	3
Kansas	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	0
Kentucky	3	....	2	8	....	....	....	....	....	....	....	13	....	....	....	....	....	....	....	1	....	....	....	1	14	7
Maryland	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	1
Michigan	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	0
Missouri	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	0
Montana	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	1
New Mexico	....	....	....	....	....	....	1	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	2
North Dakota	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Ohio	6	....	1	1	....	....	....	....	....	....	....	8	....	....	1	....	1	....	....	....	....	....	1	1	10	4
Oklahoma	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	1
Pennsylvania (bituminous)	11	3	5	21	1	....	....	....	....	....	....	41	....	....	....	2	2	....	....	....	....	....	....	....	43	20
South Dakota	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Tennessee	1	....	....	....	2	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	3	3
Texas	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Utah	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	3
Virginia	1	....	2	....	....	....	....	....	2	....	....	5	....	....	....	....	....	....	....	....	....	....	....	....	5	0
Washington	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	....	....	....	1	3
West Virginia	28	1	11	....	....	....	2	....	1	....	..	43	....	....	....	....	....	....	....	....	....	....	1	3	4	47	24
Wyoming	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Total (bituminous)	69	6	28	30	5	....	6	...	3	....	1	148	....	....	1	2	3	....	....	1	.....	....	1	4	6	157	147
Pennsylvania (anthracite)	4	....	1	1	1	....	....	....	....	....	....	7	....	....	....	....	....	....	....	....	....	....	....	....	....	7	49
Total, February, 1926	73	6	29	31	6	....	6	...	3	....	1	155	....	....	1	2	3	....	....	1	.....	....	1	4	6	164	....
Total, February, 1925	69	5	28	58	9	1	6	....	....	....	5	181	1	....	1	....	2	....	4	1	.....	....	2	6	13	.....	196

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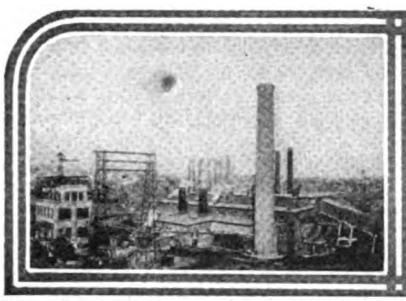
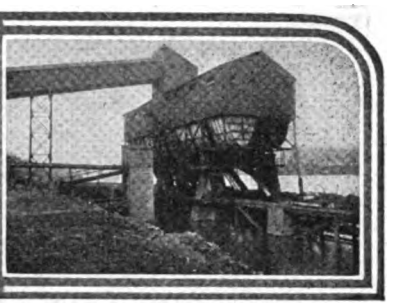


News Items From Field and Trade



ALABAMA

Fire of unknown origin broke out in abandoned workings in the Flat Top mines of the Sloss-Sheffield Steel & Iron Co. on March 26. The blaze was confined to a restricted area a mile or more from the portion of the mine being worked and was extinguished without injury to workers and caused only a nominal property damage. This mine is operated by the State of Alabama under lease and is worked with convict labor, the coal being delivered to the owners at a stipulated price per ton.

Work-Train Collision Kills Seven.—A passenger train operated on the Birmingham Southern R.R., a subsidiary of the Tennessee Coal, Iron & Railroad Co., transporting employees of the latter to and from Birmingham and other points to the Bayview and Edgewater coal mines, collided head-on with a work train of the same line March 30, resulting in the death of seven employees and the injury of twenty-one others. Those killed were all negroes. Only two of the others were injured seriously.

The Birmingham Southern R.R. has ordered 100 gondolas from the Tennessee Coal, Iron & Railroad Co.

ILLINOIS

The Republic Coal & Coke Co., Chicago, will henceforth exclusively distribute Roxana Petroleum Corporation's entire production of petroleum coke from its Kansas, Illinois and Indiana refineries.

Magnetically locked safety lamps have been introduced into thirteen mines in southern Illinois. The move was the result of the explosion several months ago at West Frankfort which was caused by a miner tampering with a lamp in one of the passages.

Claim Illinois Record.—A record for two-man coal mining in southern Illinois is being claimed for Jack Pierson and Albert Kun at Ledford, southeast of Duquoin. From March 1 to 15 they loaded 461 tons of coal. Pierson was then taken ill, and during the next ten days Kun working alone loaded 240 tons.

INDIANA

Panhandle Mine No. 5, at Bicknell, which closed its general workings Feb. 25 to work new entries, has resumed hoisting with a full force. A shortage of rooms was caused a few months ago by the squeezing and caving of a number of working places on the east side of the mine. A night and day struggle for new rooms to replace the loss was maintained. All the mines in the Bicknell field have been working for the past month, which is considered rather exceptional for this season of the year.

The Standard mine, at Wheatland, which has been working steadily for the last few months, is increasing its daily tonnage by the addition of much new loading machinery.

The Warren Coal Co., of Terre Haute, has filed a certificate of dissolution with the Secretary of State.

KENTUCKY

Representative Kirk (Rep., Ky.) has introduced H. R. 10769, to establish a mine rescue station at Hazard. The bill was referred to the mines and mining committee.

NEVADA

Developing Nevada Coal Mine.—While Nevada produces nearly every known metal and many of the nonmetallics, no commercial body of coal has yet been developed. Herman A. Darms, who for several years has persisted in his efforts, although handicapped by lack of funds, to open up a coal prospect at Coaldale, about seventy-five miles west of Tonopah announces, however, that he is now financed to complete his development plans. He has already ordered a carload of timbers to be used in framing the old shaft to a depth of 280 ft. on top of the first coal structure, which was opened up three years ago. When work of timbering the shaft has been completed, it is his plan to extract 150 tons of the coal for use in the boilers of the diamond drills. The drills are good for 2,500 ft. and the ground will be thoroughly explored.

NEW YORK

The contract for furnishing 85,000 tons of fuel to the Great Lakes Transit Corp. (Conners Line) was let last week to Consolidation Coal Co. for 55,000 tons, to be delivered at Buffalo, and to the N. A. Hanna Co. for 30,000 to be delivered at Erie, Pa. Prices are withheld.

OHIO

The Johnson mine of the Cleveland & Western Coal Co., Dilles Bottom, employing 250 men was closed down indefinitely April 6 on orders received from Cleveland headquarters. The Franklin mine of the same company, at Stewartsville, idle since March 31, resumed operations the same day, and the Pipe Creek mine, largest in eastern Ohio, employing 700 men, is working.

Nearly 50 per cent of eastern Ohio mines are in operation at present, according to an official report issued by C. J. Alberson, commissioner for the Pittsburgh Vein Operators' Association. The report shows daily production of 33,800 tons, which is 29 per cent of the maximum capacity of 113,100 tons. Forty-six of the 108 mines in the field are working.

Resume Strip Mining.—Strip mining has begun in eastern Ohio due to an increased demand attributed to the opening of the lake season. The Central Mining Co. has put two steam shovels to work on its properties along the Lincoln highway in Columbiana County. Other mines in the district report good prospects for steady work.

Papers have been filed increasing the authorized capital of the Byesville Coal Co. from $12,500 to $25,000. Alex Ramage is president and H. P. Muhlbach, secretary.

Bids will be received by the Board of Public Affairs of Barnesville on April 27 for about 1,500 tons of three-quarter screened or forked coal, Pittsburgh No. 8 vein, for the Water Works Department, to cover the period from May 15, 1926, to May 15, 1927.

At the annual stockholders' meeting of the Hocking Valley Railway Co., held April 6, W. J. Harahan, Richmond, Va., K. D. Steere, Cleveland, and Willis D. Wood, New York, were elected directors to serve until April, 1929. Other directors continued in office. Routine business only was transacted.

PENNSYLVANIA

Reading Revenues Unhurt by Strike.—In his annual report as president of the Reading Company, A. T. Dice stated that the recent anthracite strike did not curtail the revenues of the company. On the contrary, due to the diversified business the company actually enjoyed an increase in traffic, much of the loss from anthracite movement being offset by the movement of bituminous coal and coke. Prior to 1897 about half of the road's entire tonnage consisted of hard coal, and a strike in those days almost meant disaster. Now this is all changed, for whereas in 1895 anthracite constituted 55 per cent of the tonnage, fifteen years later it was only 38 per cent of the total, and two years ago it was 21 per cent. During the past year it was only 18 per cent.

Ship to Test Pulverized Fuel.—Under the auspices of the Navy Department tests are being arranged for at the Philadelphia Navy Yard, at League Island, of the use of pulverized fuel on merchant ships. A plant already has been set up at the yard and devices which have been developed by several manufacturers are to be tried out. It

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Mine No. 261, Consolidation Coal Co., Caretta, McDowell County, W. Va.

A group of company houses with the mine plant in the background. To date the coal is still being hoisted through the auxiliary shaft. The permanent tipple and screening plant is now being completed. In the foreground of the photograph is concrete-surfaced state road No. 66.

is asserted that, if necessary, a crusher can be erected on board ship to pulverize low-grade coals, and this powdered fuel can be utilized in oil-burner installations.

Seven employees of the Bethlehem Mines Corp. at Heilwood, have been granted certificates upon graduating from the two-year course of mine instruction sponsored by the Vocational Education Board in co-operation with the School of Mines of Pennsylvania State College. The successful students, all of Heilwood, are Charles Covalesky, Eugene Croyle, Fred Haas, Ralph Muffley, Michael W. Thomas, W. T. Trinkley, and Blair Muffley. The certificates were presented by W. G. Duncan, associate professor of industrial education of Pennsylvania State College. Blair Muffley was the instructor of the class.

At the Royal Mine of W. J. Rainey, Inc., at Royal, Fayette County, which closed down three weeks ago for electrification, the installation of the electric hoist and haulage system has been finished and operation resumed. Some electric pumps are still being installed.

More than 400 acres of coal land in Hamilton County Ohio, owned by the Harmon Creek Coal Co., in which John A. Bell was a heavy stockholder, were held to be within the terms of a mortgage issued to the Colonial Trust Co. in an opinion filed last week in common pleas court at Pittsburgh by Judge John D. Shafer. The trust company brought suit against the coal company, asking the court to order the directors of the latter company to make a deed for the Ohio coal land so as to include it within a mortgage executed on June 18, 1917, when $1,500,000 of bonds were issued.

Pittsburgh Terminal Profits — First-quarter earnings of the Pittsburgh Terminal Coal Corp. were between $125,000 and $150,000 after all charges, but before federal income taxes. Last year there was a net loss of $97,000. Production of 379,000 tons in March of this year compares with 223,000 last year. The company is well sold ahead, practically all of its contracts expiring April 1 having been renewed for another year.

Bituminous coal (revenue) transported by the Reading Co. during February, 1926, totaled 2,489,400 gross tons, compared with 1,659,753 tons in the corresponding month of 1925.

Open-shop miners of the Pittsburgh Coal Co., loaded a higher coal tonnage at 10 mines in the Pittsburgh district April 7, than in any single day since operations were resumed last August, independent of the United Mine Workers, the company reported. The total was 7,084 tons, The company passed the 2,000 mark in the number of men working under the November, 1917, wage scale, for the first time when 2,106 men reported for work.

Many Mines Idle.—Of the 643 coal mines on the Pennsylvania R.R. in the central Pennsylvania field 370 were idle last week, 49 working one day a week; 63 two days; 58 three days; 33 four days; 27 five days; 42 six days. Loadings for the week ending April 3, totaled 11,723 cars, as against 14,631 for the preceding week. March loadings were 70,245 cars, as against 82,648 in February.

The Century Coke Co., near Brownsville, has closed down, as has the Mt. Sterling plant of the Consolidated Coke Co. The Gray's Landing plants of the Consolidated Coke Co. and the plants of the Husted-Semans Coal & Coke Co. at East Middlesboro, both in Fayette County, are running very short time.

The Jones & Laughlin Steel Co., Pittsburgh, will start work at once on the construction of ten gondola type barges for the Vesta Coal Co., one of its subsidiaries. They will be used in carrying coal from the mines to the mills and to ship steel to Southern ports.

John A. Bell, Carnegie banker and coal operator, under sentence for embezzlement, who suffered a stroke March 26, was reported little improved last week. This is the second stroke Bell has suffered since his business affairs got him into difficulties. Last summer a stroke paralyzed his left side. Bell, who is 72 years old, was sentenced Feb. 1 to six and one-half years in the county jail for embezzlement in connection with the conduct of the Carnegie bank. He is out on bond while his appeal to the state Superior Court is being considered.

Cosgrove-Meehan Earns $162,839

Net earnings of the Cosgrove-Meehan Coal Co., of Johnstown, Pa., reported for 1925, were $162,839.27, after all charges, including preferred dividends, but before federal taxes, or 68c. per share on 239,467 shares of no par common stock. Total assets were $12,727,065.45, including current assets of $1,947,462.02, and fixed assets of $10,375,406.70. Deferred charges and prepaid expenses totaled $404,196.73.

The suit of the Hercules Cement Co., of Philadelphia, against Hall Bros. & Co., Inc., of Baltimore, was tried in the Court of Common Pleas at Philadelphia, April 5. The plaintiff claimed about $3,700 damages for non-shipment on an order for Fairmont coal to be supplied in April, 1922, during the strike of the United Mine Workers. The jury rendered a verdict in favor of the defendant.

UTAH

New Spur to Coal Region.—The Interstate Commerce Commission has authorized the Denver & Rio Grande Western R. R. to abandon the Kenilworth & Helper R. R., 3.75 miles long, in Carbon County, chief coal producing section of the state, and at the same time gave permission to construct a spur of 6.25 miles from Spring Canyon Junction eastward into a rich coal field now in part served by the road to be abandoned. It was stated that the old road was expensive because its grades are 6 per cent and more, while the new spur will have a maximum grade of but 3 per cent westward and 1.5 per cent eastward. Construction will start at once and it is expected that the new line will be ready for use Oct. 1. It will serve a new mine to be opened soon by the Independent Coal & Coke Co. and at the same time will continue to serve that company's present mine. It is said the new spur will take care of 600,000 tons of coal the first year of its operation, increasing within five years to a million tons. The construction of the spur will involve an outlay of $469,000.

VIRGINIA

The name of the Blue Diamond Coal Co. has been changed to the Bonnie Blue Coal Co., with headquarters at Diamond. James Dupup is the general manager. This company is owned by H. C. Williams and associates of Middlesboro.

The average weekly production of coal in the Virginia field for eleven weeks of the calendar year 1926, end on March 13, was 233,800 tons, representing about 90 per cent of the producing capacity of the field. Out of a total of 156 mines in the field 75 were idle and 81 active. Production to the

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end of the second week of March this year was 2,572,400 tons, against 2,157,000 tons in 1925 and 1,934,000 tons in 1924.

WEST VIRGINIA

The Talbot-Chambers Coal Co., 1708 Union Trust Building, Cleveland, recently filed a certificate at the office of the Secretary of State, in Charleston, which shows that the name of the corporation has been changed to the Dragon Coal Co.

In order to make improvements the Fordson Coal Co. has suspended operations at Nuttallburg for a few weeks. The company is engaged in installing a new retarding conveyor which will reduce breakage in loading coal into the cars.

Col. T. E. Houston, with interests along the Norfolk & Western, and Capt. R. R. Smith, of the R. R. Smith Coal Co., of Huntington, operating mines in the Logan and Pocahontas fields and the Elkhorn field of Kentucky, have become interested in the transportation of coal by water down the Ohio River and have acquired a frontage on the river at Kenova for the purpose of installing river loading equipment.

The Whiteley Creek Coal Co., of Monongalia County has surrendered its charter at the office of the Secretary of State in Charleston.

The Farley Coal Co. has changed its plan of capitalization from 3,000 shares of common stock to 2,000 shares of preferred stock at $100 and 4,000 shares of common stock at $1 a share, reducing its total capitalization from $300,000 to $204,000.

The Meadow Creek Coal Co. has increased its total capitalization from $200,000 to $400,000.

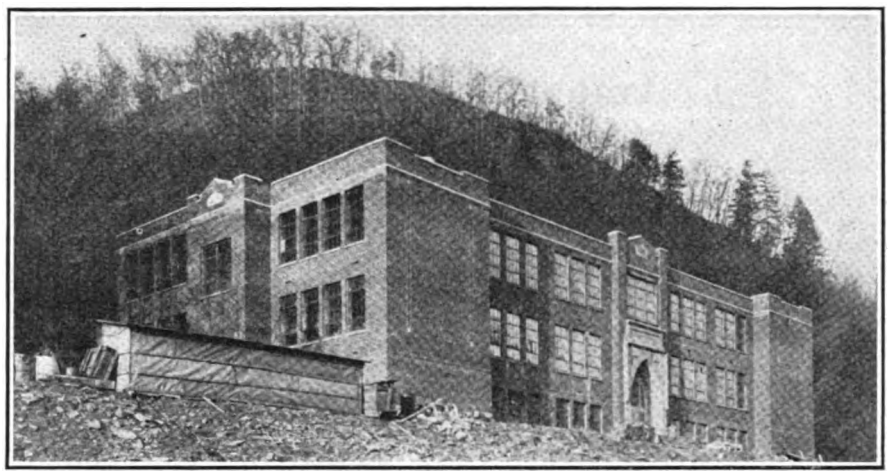
A petition in voluntary bankruptcy was filed last week in the office of the U. S. deputy court clerk at Huntington by the Kentucky Elkhorn By-Products Coal Co., of Huntington. Thomas F. Bailey, vice-president of the company, appeared as the petitioner. Assets are listed at $124,106.25 and liabilities at $144,649.17.

The Buckeye Coal Mining Co., Warren, Ohio, a West Virginia corporation, was dissolved and surrendered its charter at the office of the Secretary of State in Charleston April 1.

The United States Coal & Coke Co., operating in the McDowell County field, has announced in a safety bulletin that there has not been a single fatal accident at Gary within the last four months and that during those four months the company mined 1,300,531 tons of coal.

The Wentz Corporation, Philadelphia, Pa., a West Virginia corporation, recently filed amendments to its charter at the office of the Secretary of State in Charleston.

The state Department of Mines last week issued certificates for mine rescue and first aid work to 10 seniors in the mining engineering school of West Virginia University, at Morgantown. Those who received certificates were Harry G. Kennedy, Percy H. Gillie, C. A. Ray, Russell W. King and Patrick D. McMurrer, all of Charleston; Iva A. Given, Sutton; R. W. Wotring, Morgantown; G. E. Fish, Buckhannon; N. R. McGinnis, Fairmont, and C. H. Farmer, Bolt. The training was given recently at the University by state mine department officials.



New High School at Coalwood, W. Va.

Approximately $100,000 is being expended on this building, erected on property of the Consolidation Coal Co., in McDowell County. Besides the usual complement of recitation rooms there is included a combination gymnasium and auditorium seating 550, a chemical laboratory, physical laboratory, study hall, library, teachers' rest room, and so forth. Nothing is lacking to make the high school all that is to be desired. Among the special courses are domestic art, domestic science, and manual training.

Information has been received by the state Department of Mines, in Charleston, that the seals over mine No. 63 of the Consolidation Coal Co., at Monongah, which has been afire, were removed last week. There is considerable fire apparent, but this will be fought direct, according to reports.

The estate of the late W. M. Puckett, president of the Cabin Creek Consolidated Coal Co., is valued at $114,628.80, according to a report filed in Charleston March 23 by appraisers. He owned 952 shares of Cabin Creek Consolidated Coal Co., which is valued at $95,200.

Because of the large number of bidders and inability to inspect all of the mines, the Chesapeake & Ohio Ry. has deferred letting coal contracts until May 1.

The Stover Coal Co., located at South Nuttall, Fayette County, has closed down its mine temporarily.

The Consolidation Coal Co. has rock-dusted its Carolina mine, on the Western Maryland Ry. in Marion County, according to reports received by the state Department of Mines.

Recently on Keeney's Creek in the Lookout section, oil drillers reached a new coal seam 500 ft. below the measure now being worked there. It means a new development in these coal fields, it is reported.

Pocahontas Has Big Year.—Earnings of the Pocahontas Coal & Coke Co. in 1925, according to the annual report, were the largest in the company's history. Royalties on coal mined and coke manufactured were $1,546,451.10 and other income was $84,566.04, or total earnings of $1,631,017.14, compared with $1,410,581.45 in 1924. Operating expenses were $158,357.06 and taxes $185,837.65, leaving net earnings of $1,286,822.43. The company neither mines nor sells coal itself, being a land-owning company, all of whose capital stock is owned by the Norfolk & Western Ry.

Grant Town No. 1 and Lowesville No. 3 mines of the New England Fuel & Transportation Co., produced 132,000 tons of coal in March and established a new daily record on April 1 with an output of 5,100 tons.

In order to reduce the danger of explosions to a minimum, the Landstreet-Downey Coal Co., operating on the Rockhouse Fork of Pigeon Creek, in Mingo County, is having its mines rock-dusted. The Leckie Colliery Co., operating near Williamson, also expects to rock-dust its mine, a spraying machine having been received.

The Marion Division of the Bethlehem Mines Corporation smashed all production records in March, when the mines at Dakota and Barrackville exceeded the former peak daily, weekly and monthly loadings. During March the Dakota mine loaded 114,032 tons in 27 working days, an average of 4,223 tons daily.

Engineers have begun the installation of a device in the Dakota mine of the Bethlehem Mines Corporation which is expected to prevent short-circuits in the air currents. The idea is said to be revoluntionary, but as it has been worked out only theoretically, its success will not be known until it has been in actual use for some time. Company officials will not reveal details of the plan until it has been thoroughly tested.

CANADA

A new field of high-grade lignite has been found by William Woodend, who for the last few years has been slowly developing the Copsey mine, some forty-five miles south of Moose Jaw in the Ardill district, on the west bank of the Lake of the Rivers. It is estimated that the deposit will yield approximately 4,000 tons of fuel per acre, and the area of the coal, while yet undetermined, will be several square miles at least. The main seam is over 4 ft. thick and only 80 ft. below the surface.

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Among the Coal Men

Joseph D. Zook, who for the last eight years has been vice-president of the Nason Coal Co. and has taken an active part in its management as well as of the Illinois Coal Corp., has joined the forces of the O'Gara Coal Co., Chicago, as vice-president, effective April 1. He also is a director of the Illinois Coal Operators' Association and has an enviable reputation in the industry.

L. E. Young, general manager of the Union Colliery Co., St. Louis, Mo., is kept pretty well on the jump between attending meetings of the scale committee of the Illinois operators, besides investigating recent developments in mine production costs, which take him all the way from St. Louis to Pittsburgh.

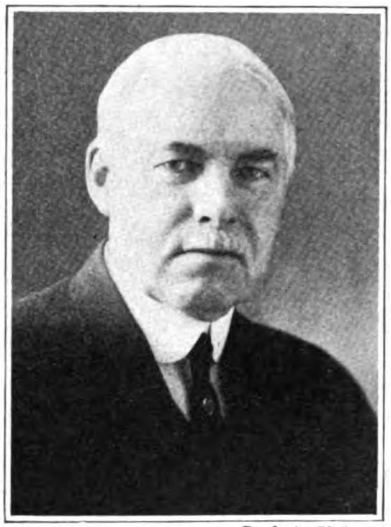
J. B. Marks, vice-president and assistant to President J. F. Welborn, was made a new Colorado Fuel & Iron Co. director at the annual meeting. Other directors, re-elected, are George B. Berger, Thomas M. Debevoise, Fred Farrar, William V. Hodges, S. G. Pierson, Albert A. Reed, M. D. Thatcher, E. H. Weitzel, J. F. Welborn, E. T. Wilson and Arthur Woods. Members of the executive committee who also were appointed are J. F. Welborn, Thomas M. Debevoise and Arthur Woods. The officers are J. F. Welborn, president; Arthur Woods, vice-president; J. B. Marks, vice-president and assistant to president, in charge of sales, traffic and purchases; E. H. Weitzel, vice-president and general manager; S. G. Pierson, vice-president and treasurer.

M. B. Mitchell has resigned as superintendent of the Bower mines of the West Virginia Coal & Coke Co. to become general superintendent of construction for the Fairmont Mining Machinery Co. Before going with the West Virginia Coal & Coke Co. Mr. Mitchell was for several years general superintendent of the Marion division of the Bethlehem Mines Corporation.

Stephen Downs, Lansford, Pa., fuel engineer for the Lehigh Coal & Navigation Co., delivered an address in the Chamber of Commerce Building, Philadelphia, on April 7 in the lecture course on "Combustion" being conducted by the Anthracite Economy Service. Mr. Downs detailed the methods of the campaign entered into by his company in Lansford, Allentown and Easton in its direct to the consumer plan of inducing the burning of anthracite buckwheat in household heating plants, with the results obtained. He also displayed types of grates used in the heaters of the consumers who gave the scheme a trial.

U. S. Senator Fred M. Sackett, one of Louisville's leading coal men, has returned to Louisville for three or four weeks, after some time spent in Washington. Mr. Sackett is an operator, jobber and retailer.

H. A. McAllister, who had been manager of mines of the Logan division of the West Virginia Coal & Coke Co., has been made manager of mines of the Thurmond Consolidated Coal Co.



P. & A. Photos.

Samuel W. Parr

In recognition of his distinguished achievements in chemical science, Samuel W. Parr, professor of applied science in the University of Illinois and one of America's greatest experts in the chemistry of coal, is the winner of the Chandler gold medal for 1926, it has been announced at Columbia University, New York City. Dr. Parr, known chiefly to Illinois people as the inventor of the Parr low-temperature coking process for coking Illinois coal, is well known nationally for other reasons. He perfected a new alloy, ilium, used in many ways as a substitute for platinum, although costing only a fraction as much. He has also presented the scientific world with many valuable instruments.

E. M. Showalter, of the Continental Coal Co., is ill with influenza at his home in Fairmont, W. Va.

Charles M. Paisley, treasurer of the Kelly's Creek Collieries Co., Charleston, W. Va., and Carl Scholz, vice-president and general manager of the Raleigh-Wyoming Coal Co., Charleston, are among the active spirits in the recently organized and chartered Charleston Business Men's Club.

Charles Whiting Baker, formerly editor of *Engineering News*, has become associated with Baker, Simonds & Co., Inc., investment bankers, 115 Broadway, New York.

Obituary

James A. Abraham of Sonterfield, Pa., died March 27 from a complication of diseases, aged 50. He formerly was employed by the Whyel Coke Co., of Uuniontown, as a superintendent for one of the Whyel plants for a number of years.

W. L. Malone, of Philippi, W. Va., World War veteran and coal operator, passed away April 2 at a hospital in Clarksburg, W. Va., following a five weeks' illness. Mr. Malone was well known in the Barbour County coal field and in adjacent coal territory, having been engaged in the coal business for several years.

William Henry Brasfield, a pioneer developer and owner of coal properties in Walker and Jefferson counties, Alabama, died at his home near Burnwell, Walker County, March 26, at the age of 82 years. Mr. Brasfield was widely known in industrial circles in the Birmingham district. He is reported to have left a valuable estate.

Phillips W. Hoskins, an old resident of Birmingham, Ala., who claimed to have been the pioneer coal miner of the district, died in Nashville, Tenn., March 27 at the age of 91 years. Mr. Hoskins assisted in opening the McIllwain mines, near Birmingham, prior to the Civil War. He is survived by seven sons and one daughter.

Traffic News

New N. Y. Coke Rates Approved

The New York Public Service Commission has approved rates of the New York Central (East) on coke, coke breeze and coke dust from Geneva to Boston & Albany stations as follows: Brookview to Ghent, inclusive, $3.02 (reduction 26c.); Pulvers, Mellenville, Claverack, East Chatham and Canaan, $3.16 (reduction 15c.); Hudson Upper, $3.15 (increase 25c.). Also rates from Solvay and Syracuse to these Boston & Albany stations: Canaan, Claverack, East Chatham, Ghent, Hudson Upper, Mellenville, Pulvers, $2.90 per net ton (increase to Hudson Upper 38c. and to other points 13c. per net ton)—Effective April 20, 1926.

Hard-Coal Rates Attacked

The Erie R.R. has filed a complaint with the Interstate Commerce Commission contending that the present division of rates on anthracite to points in Illinois beyond the Chicago switching district is unreasonable.

The Big Vein Anthracite Collieries, Inc., of McCoy, Va., has attacked rates on coal from McCoy to points in Pennsylvania, New York, Indiana, Illinois, Michigan, Missouri, Iowa, Wisconsin and Minnesota. Existing rates, it is declared, are unduly preferential to other mines located on the Virginian Ry.

The Brackett Coal Co. has filed a complaint with the Interstate Commerce Commission against rates of $4.54 per gross ton on anthracite and $4.66 on prepared sizes from the anthracite region in Pennsylvania to Newton, Mass.

The Electric Service Co., of Dodge City, Kan., complains against rates of $2.68 from Irma and $4.41 from Dawson on carload shipments of coal to Dodge City.

The Illinois Coal Traffic Bureau has attacked the rates on coal from Illinois mines to points in the St. Louis switching district and has asked the Interstate Commerce Commission to consolidate its complaint with that of the Perry Coal Co.

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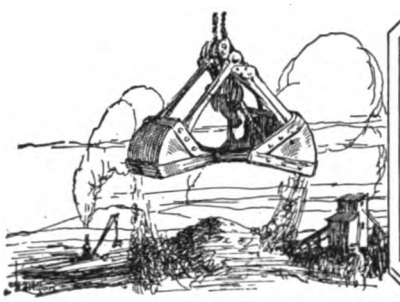
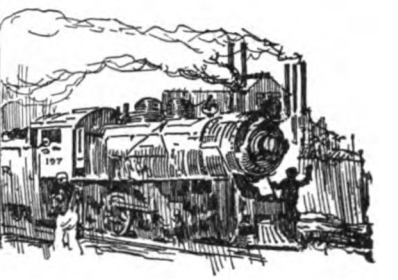


Production And the Market



Coal Trade's Quest for Firm Basis Marked by Striking Territorial Contrasts

Efforts of the bituminous trade to reach solid ground for business in the new coal year are marked by sharp territorial differences in conditions. These are particularly noticeable in the steam-coal contract situation. In Illinois and Indiana, for example, industrial consumers have abandoned their attitude of indifference. Many of the agreements now being signed give the shipper the option of supplying non-union coal if union mines are closed down. The Birmingham district also reports activity in contract renewals at higher prices.

Along the Atlantic seaboard, on the other hand, contracting is backward. What business is closed is closed so quietly that it has no effect upon the market. Distress tonnage still blocks the attempts of Eastern producers to persuade buyers to sign up agreements at prices that will not mean a loss to the shipper. The record in the Southwest and in Rocky Mountain territory is no more encouraging. And railroad renewals are an uncertain quantity in all districts.

The situation in the Eastern fields is further complicated by the backwardness in the lake season. Some tonnage has been loaded at the lower ports, but no vessels have cleared. Congestion between the mines and the docks at Sandusky and Toledo has forced the railroads to embargo further shipments until the blockade has been broken. This means that the great safety valve for the Appalachian Region at this season of the year is somewhat choked.

Downward Movement of Prices Continues

Under such conditions, and with production still above the seasonal averages for the two preceding years, it is hardly surprising that the downward trend in spot prices continues unchecked. *Coal Age* Index on April 12 stood at 158 and the corresponding price was $1.91. Losses were registered by Eastern coals generally; even slack, which was stronger in some markets, did not wholly escape. The greatest stability in prices was shown in the Middle West.

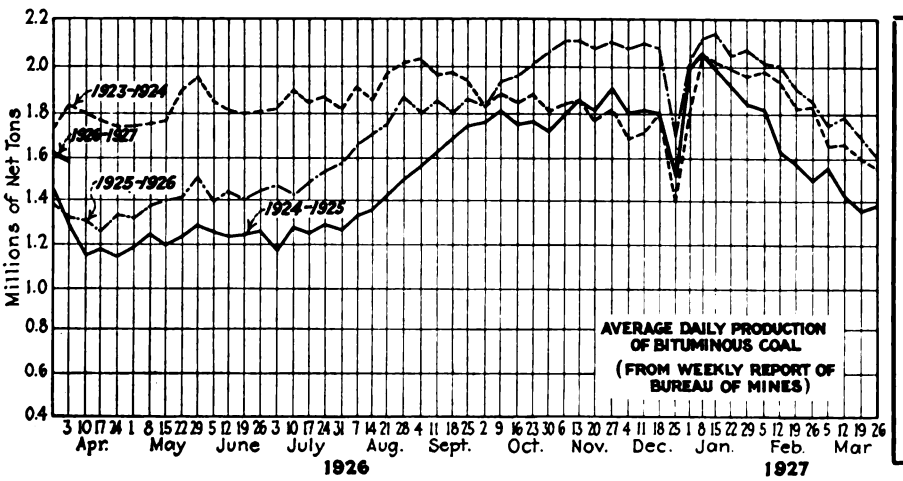
Notwithstanding the holidays, bituminous production the week ended April 3 was estimated at 9,034,000 net tons by the Bureau of Mines. This was 592,000 tons less than in the preceding week. Most of this decline was due to the observance of Mitchell Day in the union fields. Contrary to past performance, output on Good Friday and Easter Saturday was ahead of the preceding week. Loadings on Easter Monday were less than 12 per cent under those for March 29.

Criticize Anthracite Price Policy

The larger anthracite producers are meeting no difficulty in effecting a prompt disposition of their output of domestic sizes. Retail distributors, however, do not try to conceal their disappointment over the failure of the operators to make the old-time spring reductions. They also find that this failure is bitterly resented by some householders who are now withholding fill-up orders. In some cases the retailers themselves have cut their prices to induce consumer storing.

Independent tonnage at high premiums is finding hard sledding. Not only does the retailer refuse to pay over 50 or 75c. premium, but he is becoming more discriminating in the sizes he will accept. Chestnut still leads in demand. Egg and stove are struggling for second place in New York, but egg is less popular in Philadelphia. Complaint continues that pea is scarce. The steam sizes are easy and prices are being shaded to move tonnage which cannot be put in storage.

The spot market in Connellsville coke is close to stagnation, but production is being closely regulated.



Estimates of Production

(Net Tons)

	1926	1925
BITUMINOUS		
March 20	10,263,000	8,283,000
March 27 (a)	9,626,000	8,353,000
April 3 (b)	9,034,000	7,547,000
Daily average	1,593,000	1,348,000
Cal. yr. to date (c)	150,311,000	131,001,000
Daily av. to date	1,906,000	1,662,000
ANTHRACITE		
March 20	1,963,000	1,513,000
March 27	1,991,000	1,640,000
April 3	1,549,000	1,438,000
Cal. yr. to date (c)	11,510,000	22,387,000
BEEHIVE COKE		
March 27	250,000	220,000
April 3	234,000	220,000
Cal. yr. to date (c)	4,056,000	3,335,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalise number of days in the two years.

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Interest in Contracts Revives

Renewed interest on the part of purchasing agents for big industrial consumers is leading to more contract renewals in the Middle West. The uncertain outlook for the last year of the Jacksonville agreement in the union fields has made buyers less cocksure of the open market. Many Illinois and Indiana operators are writing contracts which give them the option of shipping western Kentucky coal if their own output is shut off. Railroad fuel agents, however, still pursue a policy of watchful waiting.

Broken running time is the rule in the mining fields. Steam coal is the backbone of the present movement. The rush-order business in domestic sizes, due to the blizzards, has subsided. Two to three days a week is the average for southern Illinois proper. Mt. Olive and Belleville are in worse shape and Indiana and central Illinois also find it difficult to keep up production. The ubiquitous "no bill" is no snob.

The end of the storm flurry hit Eastern coals as hard as the Illinois and Indiana sizes. Chicago territory has been absorbing much less West Virginia and eastern Kentucky offerings. Anthracite, on the other hand, has been freely accepted. In St. Louis the prospects of early consumer buying of either anthracite or smokeless coals are slight. The principal demand in that market has been for Mt. Olive and Standard district coals.

Kentucky Movement Slowing Down

Prepared sizes of Kentucky coals were easier last week. Weather demand had lightened and, in the eastern part of the state, the lake movement had not begun to have any effect upon the market. At the same time, commitments on fine coal forced screening. All of these factors worked toward a weakening in the prices on the prepared sizes—particularly in the western district. Screenings were stronger. Western Kentucky block was $1.65@$1.85; lump and egg, $1.40@$1.65; nut, $1.35@$1.60; mine-run, $1.15@$1.35; screenings, 90c.@$1.15. Eastern Kentucky block was held at $1.85@$2.25; lump, egg and nut, $1.75@$2; mine-run, $1.50@$1.60; slack, $1@$1.10.

Considering the season of the year, however, the Kentucky situation is unusually good. Operators in the eastern part of the state expect to participate heavily in the lake movement. The recent sales agreements with Illinois operators lead western Kentucky producers to look forward to a substantial movement of their coal to the Middle West and Northwest. Some railroad business has been closed, it is reported, around $1.50, mine-run basis.

Operations at some of the docks at the Head of the Lakes again are on a part-time basis. March loadings were 14,836 cars, as compared with 16,388 cars a year ago. A reduction of stocks to 2,000,000 tons by the opening of navigation is the goal set by the dock men at Superior and Duluth. The first

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	Apr. 13 1925	Mar. 29 1926	Apr. 5 1926	Apr. 12, 1926†
Smokeless lump	Columbus	$2.85	$3.10	$2.85	$2.75@$3.00
Smokeless mine run	Columbus	1.85	2.00	1.95	*1.85@ 2.00*
Smokeless screenings	Columbus	1.30	1.15	1.15	*1.00@ 1.25*
Smokeless lump	Chicago	2.85	2.60	2.60	2.50@ 2.75
Smokeless mine run	Chicago	1.85	1.85	1.80	1.65@ 2.00
Smokeless lump	Cincinnati	2.60	2.75	2.75	2.50@ 3.00
Smokeless mine run	Cincinnati	2.00	2.10	2.00	*1.85@ 2.00*
Smokeless screenings	Cincinnati	1.50	1.35	1.35	1.25@ 1.50
*Smokeless mine run	Boston	4.35	4.25	4.15	**4.10@ 4.35**
Clearfield mine run	Boston	1.95	1.95	1.85	1.75@ 2.00
Cambria mine run	Boston	2.25	2.15	2.15	2.00@ 2.25
Somerset mine run	Boston	2.10	2.00	2.00	*1.80@ 2.10*
Pool 1 (Navy Standard)	New York	2.60	2.75	2.70	*2.50@ 2.85*
Pool 1 (Navy Standard)	Philadelphia	2.65	2.80	2.80	2.65@ 3.00
Pool 1 (Navy Standard)	Baltimore	2.10	2.05	2.00@	2.00@ 2.10
Pool 9 (Super. Low Vol.)	New York	2.05	2.30	2.25	2.15@ 2.35
Pool 9 (Super. Low Vol.)	Philadelphia	2.00	2.35	2.35	2.20@ 2.50
Pool 9 (Super. Low Vol.)	Baltimore	1.90	1.90	1.90	1.85@ 1.95
Pool 10 (H.Gr.Low Vol.)	New York	1.80	1.95	1.85	1.70@ 2.00
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.65	2.05	2.05	1.90@ 2.25
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.75	1.75	1.75	1.70@ 1.80
Pool 11 (Low Vol.)	New York	1.55	1.70	1.65	*1.50@ 1.80*
Pool 11 (Low Vol.)	Philadelphia	1.55	1.80	1.70	1.55@ 1.85
Pool 11 (Low Vol.)	Baltimore	1.50	1.60	1.60	1.60@ 1.65
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.45	1.45	1.45	1.35@ 1.55
Pool 54-64 (Gas and St.)	Philadelphia	1.45	1.45	1.45	1.35@ 1.55
Pool 54-64 (Gas and St.)	Baltimore	1.70	1.30	1.30	1.30@ 1.35
Pittsburgh st'd gas	Pittsburgh	2.40	2.45	2.40	2.35@ 2.50
Pittsburgh gas mine run	Pittsburgh	2.00	2.05	2.05	2.00@ 2.15
Pittsburgh mine run (St.)	Pittsburgh	1.80	2.00	1.95	1.90@ 2.00
Pittsburgh slack (Gas)	Pittsburgh	1.65	1.45	1.55	1.50@ 1.60
Kanawha lump	Columbus	2.10	2.10	2.05	*1.85@ 2.25*
Kanawha mine run	Columbus	1.40	1.55	1.55	1.40@ 1.70
Kanawha screenings	Columbus	1.10	.85	1.10	*.75@ .95*
W. Va. lump	Cincinnati	2.00	1.85	1.85	1.75@ 2.00
W. Va. gas mine run	Cincinnati	1.30	1.40	1.50	*1.40@ 1.50*
W. Va. steam mine run	Cincinnati	1.25	1.35	1.40	*1.25@ 1.40*
W. Va. screenings	Cincinnati	1.10	.85	.90	**.90@ 1.10**
Hocking lump	Columbus	2.25	2.35	2.35	2.25@ 2.50
Hocking mine run	Columbus	1.40	1.50	1.55	1.40@ 1.70
Hocking screenings	Columbus	1.15	1.05	1.10	*1.00@ 1.15*
Pitts. No. 8 lump	Cleveland	2.30	2.25	2.25	*1.85@ 2.60*
Pitts. No. 8 mine run	Cleveland	1.75	1.85	1.85	*1.80@ 1.85*
Pitts. No. 8 screenings	Cleveland	1.40	1.40	1.55	**1.55@ 1.65**

Midwest	Market Quoted	Apr. 13, 1925	Mar. 29, 1926	Apr. 5, 1926	Apr. 12, 1926†
Franklin, Ill. lump	Chicago	$2.60	$3.00	$2.60	$260
Franklin, Ill. mine run	Chicago	2.35	2.40	2.40	2.35@ 2.50
Franklin, Ill. screenings	Chicago	2.10	1.90	1.85	1.75@ 2.00
Central, Ill. lump	Chicago	2.35	2.35	2.30	2.25@ 2.40
Central, Ill. mine run	Chicago	2.10	2.10	2.05	2.00@ 2.10
Central, Ill. screenings	Chicago	1.90	1.40	1.30	1.25@ 1.40
Ind. 4th Vein lump	Chicago	2.85	2.75	2.40	2.25@ 2.60
Ind. 4th Vein mine run	Chicago	2.10	2.15	2.15	2.10@ 2.25
Ind. 4th Vein screenings	Chicago	2.05	1.70	1.70	1.65@ 1.75
Ind. 5th Vein lump	Chicago	2.10	2.15	2.15	2.00@ 2.35
Ind. 5th Vein mine run	Chicago	1.90	1.95	1.95	1.85@ 2.10
Ind. 5th Vein screenings	Chicago	1.50	1.30	1.30	1.25@ 1.35
Mt. Olive lump	St. Louis	2.50	2.75	2.50	2.50
Mt. Olive mine run	St. Louis	2.25	2.15	2.15	2.15
Mt. Olive screenings	St. Louis	1.75	1.40	1.40	1.40
Standard lump	St. Louis	2.25	2.50	2.50	2.50
Standard mine run	St. Louis	1.80	1.80	1.80	1.75@ 1.85
Standard screenings	St. Louis	1.70	1.15	1.15	1.15@ 1.20
West Ky. block	Louisville	1.85	1.85	1.85	*1.65@ 1.85*
West Ky. mine run	Louisville	1.35	1.30	1.30	*1.15@ 1.35*
West Ky. screenings	Louisville	1.25	.95	1.00	**.90@ 1.15**
West Ky. block	Chicago	1.85	1.75	1.75	1.65@ 1.85
West Ky. mine run	Chicago	1.30	1.15	1.15	.80@ 1.50
South and Southwest					
Big Seam lump	Birmingham	2.25	2.00	2.00	1.75@ 2.25
Big Seam mine run	Birmingham	1.75	2.00	2.00	1.75@ 2.25
Big Seam (washed)	Birmingham	1.85	2.25	2.25	*1.75@ 2.25*
S. E. Ky. block	Chicago	2.10	2.35	2.25	2.00@ 2.50
S. E. Ky. mine run	Chicago	1.55	1.65	1.65	1.50@ 1.85
S. E. Ky. block	Louisville	2.00	2.00	2.00	**1.85@ 2.25**
S. E. Ky. mine run	Louisville	1.35	1.50	1.55	1.50@ 1.60
S. E. Ky. screenings	Louisville	1.10	1.00	1.00	**1.00@ 1.10**
S. E. Ky. block	Cincinnati	2.00	2.10	2.10	2.00@ 2.25
S. E. Ky. mine run	Cincinnati	1.30	1.50	1.50	*1.25@ 1.65*
S. E. Ky. screenings	Cincinnati	1.10	.90	.95	**.90@ 1.15**
Kansas lump	Kansas City	4.25	4.35	4.35	*4.00@ 4.50*
Kansas mine run	Kansas City	2.85	2.85	2.75	**2.75@ 3.00**
Kansas screenings	Kansas City	2.75	2.50	2.50	2.50

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	April 13, 1925 Independent	April 13, 1925 Company	April 5, 1926 Independent	April 5, 1926 Company	April 12, 1926† Inuependent	April 12, 1926† Company
Broken	New York	$2.34	.....	$8.00@$8.50	.....	$8.15@$9.25	.....	$8.15@$9.25
Broken	Philadelphia	2.39	.....	9.15	$9.00	9.00@ 9.25	**$9.25**	9.00@ 9.25
Egg	New York	2.34	$8.25@$8.50	8.25@ 8.50	9.50@10.25	8.75@ 9.25	*9.25@10.25*	8.75@ 9.25
Egg	Philadelphia	2.39	8.50@ 9.20	8.30@ 8.50	9.25@ 9.90	9.15@ 9.25	*9.25@ 9.85*	9.15@ 9.25
Egg	Chicago*	5.06	7.76@ 8.40	7.42@ 8.08	8.75	8.13	8.75	8.13
Stove	New York	2.34	8.50@ 8.75	8.50@ 8.90	9.50@10.25	9.25@ 9.50	*9.25@10.25*	9.25@ 9.50
Stove	Philadelphia	2.39	9.10@ 9.55	8.75@ 8.90	9.60@10.00	9.35@ 9.50	**9.60@10.10**	9.35@ 9.50
Stove	Chicago*	5.06	8.12@ 8.50	7.82@ 8.00	8.88	8.58	8.88	8.58
Chestnut	New York	2.34	8.25@ 8.75	8.25@ 8.50	9.50@10.25	8.75@ 9.15	*9.25@10.25*	8.75@ 9.15
Chestnut	Philadelphia	2.39	8.50@ 9.35	8.40@ 8.50	9.25@10.25	9.00@ 9.15	*9.25@ 9.75*	9.00@ 9.15
Chestnut	Chicago*	5.06	7.94@ 8.25	7.59@ 8.00	8.88	8.33@ 8.53	8.88	8.33@ 8.53
Pea	New York	2.22	4.25@ 5.00	5.00@ 5.50	6.50@ 7.50	6.00@ 6.35	*6.25@ 7.50*	6.00@ 6.35
Pea	Philadelphia	2.14	5.00@ 5.75	5.25@ 5.30	6.50@ 7.00	6.00@ 6.50	6.50@ 7.00	6.00@ 6.50
Pea	Chicago*	4.79	4.91@ 5.36	4.69@ 5.00	5.65	5.65@ 5.80	5.65	5.65@ 5.80
Buckwheat No. 1	New York	2.22	2.00@ 2.50	2.50@ 3.00	2.10@ 2.60	3.00@ 3.50	*2.00@ 2.50*	3.00@ 3.50
Buckwheat No. 1	Philadelphia	2.14	2.00@ 2.25	2.50	2.50@ 3.00	3.00	*2.50@ 2.75*	3.00
Rice	New York	2.22	1.75@ 2.00	2.00	1.50@ 2.00	2.00@ 2.25	1.50@ 2.00	2.00@ 2.25
Rice	Philadelphia	2.14	1.75@ 2.00	2.00	2.25	2.25	2.25	2.25
Barley	New York	2.22	1.35@ 1.50	1.50	1.30@ 1.50	1.60@ 1.75	*1.25@ 1.50*	1.60@ 1.75
Barley	Philadelphia	2.14	1.50	1.50	1.50@ 1.60	1.75	1.50@ 1.60	1.75
Birdseye	New York	2.22	1.40@ 1.60	1.60	1.60@ 1.75	2.00	1.60@ 1.75	2.00

*Net tons, f.o.b. mines. †Advances over previous week shown in **heavy type**; declines in *italics*.

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arrivals of coal from the East are not expected much before May 1. Current retail buying is on a hand-to-mouth basis. Industrial buying is well sustained.

Domestic Call for Dock Coal Softer

Demand for fuel for domestic use at Milwaukee has fallen off sharply with the return of milder weather. Industrial requirements, however, are normal for this season of the year and little out of the ordinary is promised in steam buying for some time to come. Prices are unchanged. Aside from a tag-end business in the retail division of the trade, the market at the Twin Cities has been featureless. In the steam section, buyers again are dictating the terms of sale, although price levels have shown no violent reactions in the past few weeks.

The accumulation of orders brought about by the reappearance of winter conditions in the Southwest late in March kept most of the Kansas mines still working fairly busy last week. These orders, however, were not an unmixed blessing. Although they cleaned up the "no bills" of prepared sizes, they also resulted in a slight surplus of screenings. Prices on fine coal, however, were nominally unchanged. In Arkansas and Oklahoma there was little activity. April storage prices of $5 on Paris (Ark.) lump, $5.25 on McAlester and $4.50 on Wilburton lump were announced last Friday.

Colorado, too, benefited by the weather demand, which quickly absorbed the unbilled loads. These latter, estimated at between 500 and 600 cars, were proving a serious menace to continued operations. In some cases, the mines were compelled to work extra shifts to catch up with rush orders. Utah also reported a better demand for lump and stove than for several weeks past. Steam coals, however, were draggy. Prices at Salt Lake City were firm, despite the recent reductions by the C.O.D. distributors of fuel.

Smokeless Prices Slump Unchecked

Attempts to check the downward movement in prices in the Cincinnati market are meeting with scant success. Prepared sizes of smokeless were pounded again last week, forcing some lump down to $2.50, although one producer is sold up for the month at $3. Egg also weakened and nut dropped to $2. Some sales of mine-run were shaded 15c. under the $2 base. Slack he'd firmly at $1.25@$1.50.

The high-volatile coals withstood the onslaught against prices better than the smokeless grades. Quotations already are on such low levels that few producers are willing to make further reductions. This policy has actually increased spot prices on slack 10c. Coal movement through the Cincinnati gateways last week was 8,893 cars, or 2,543 cars less than in the preceding week, but 1,971 cars more than a year ago.

Even these figures indicate that production still is too far ahead of demand to support profitable prices. The late opening of the lake season also is having a depressing effect upon spot quotations and contributes materially to the underlying weakness. Local retail business at Cincinnati jogs along unchanged. High waters have hampered river movement.

Contract Situation Still Unsettled

The steam-coal contract situation in central Ohio is still very much unsettled. Most of the larger consumers are buying in the open market. No decision has been announced on railroad business and some of the carriers are taking in supplies on a 30-day basis. The spot market is fairly active, with screenings stronger because of reduced lump output. Retailers are buying only for immediate requirements.

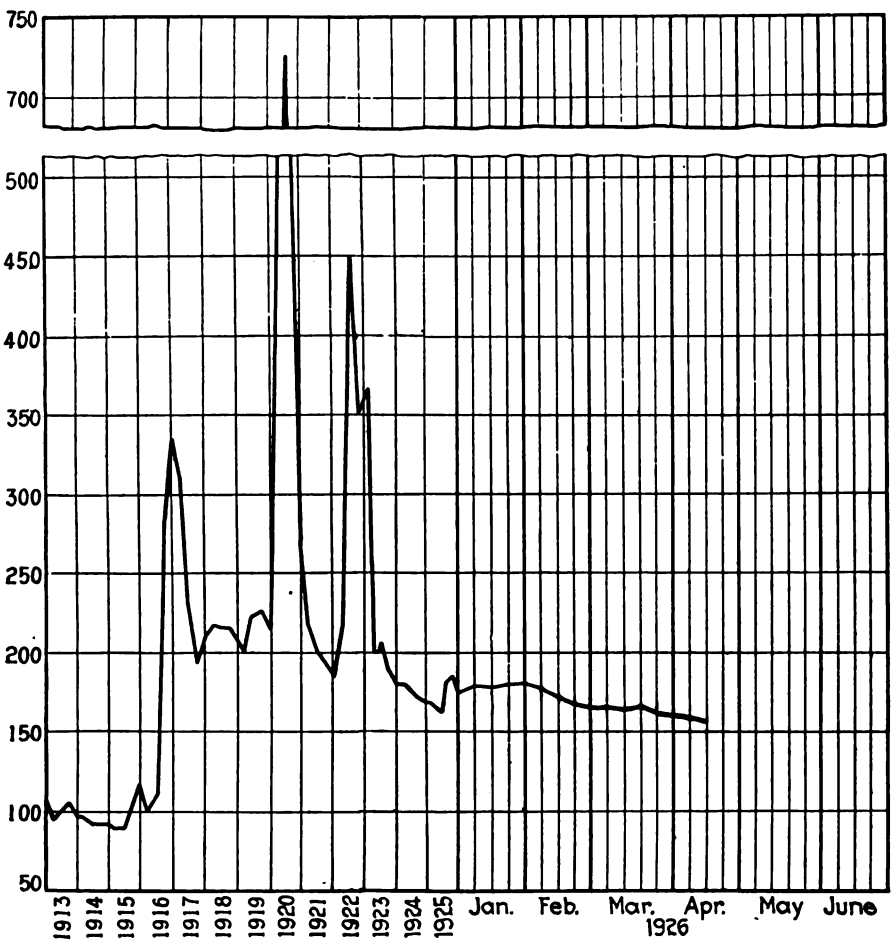
Embargoes on shipments to Sandusky and Toledo have blocked lake movement. There are several thousand loads between Toledo and the mines and the yards have been badly congested. It is not expected that boats will begin to clear the lower ports much before May 1. Some lake business has been closed around $1.50, mine-run. Southern Ohio, which will share little in lake business this year, is producing about 17 per cent of capacity.

Eastern Ohio output during the week ended April 3 approximated 191,000 tons, or 32.7 per cent of capacity, as compared with 217,000 tons the preceding week and 200,000 tons a year ago. The outstanding feature of the Cleveland market is the growing strength in nut-and-slack and slack quotations, which have increased 5 to 10c. per ton in the past week. Other sizes are dull. New additions are being made to the list of idle mines.

Union Blight on Pittsburgh District

The pessimism which descended upon the Pittsburgh district several weeks ago is unrelieved. Prices are unchanged because the volume of spot trading is so small. Less than 25 per cent of the normal commercial output of the district is being produced and a great part of that tonnage is credited to operations which have broken away from the union scale carried in the Jacksonville agreement.

Central Pennsylvania has settled down for a period of idleness. By far the greater number of the mines in the district are either down completely or working only a few days a week. Pool 1 coal is quoted at $2.75@$2.85; pool 71, $2.60@$2.75; pool 9, $2.40@$2.50; pool 10, $1.85@$2; pool 11, $1.70@$1.85; pool 18, $1.60@$1.65. These quotations are 25 to 40c. higher than those of the preceding week on pools 1, 9 and 71 and 5 to 15c. higher on the other pools.



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926				1925	1924
	Apr. 12	Apr. 5	Mar. 29	Mar. 22	Apr. 13	Apr. 14
Index	158	160	163	167	161	172
Weighted average price	$1.91	$1.93	$1.97	$2.02	$1.95	$2.08

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average of the twelve months ended June 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.

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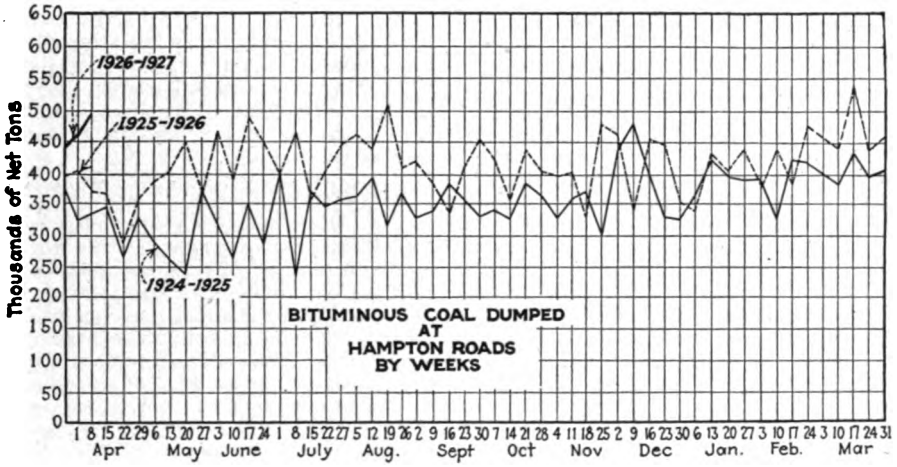


The industrial market at Buffalo shows no improvement. Slack is somewhat scarce because there is little screening at the mines. Nominal quotations are: Fairmont lump, $1.60@$1.75; mine-run, $1.40@$1.50; slack, $1.25@$1.40; Youghiogheny gas lump, $2.15@$2.40; Pittsburgh and No. 8 steam lump, $1.85@$2.10; slack, $1.20@$1.50; Allegheny Valley mine-run, $1.60@$1.85. In the domestic market the only serious contender against anthracite is coke. The weather has kept Toronto retailers busy. Stove is retailing at $15.75; egg and nut, $15.25, and pea, $12.50.

New England Steam Horizon Dark

The New England steam-coal market is without favorable development. Prices are more or less nominal because spot buying is so scattered. In many cases large consumers are protected by unexpired contracts and have no interest in the spot market. Others are waiting for breaks before adding to their reserves. Salesmen are combing the territory for stray orders and are making many inducements to wean away buyers from accustomed sources of supply.

There is too much coal standing at the southern loading piers to make prices stable. The situation is further complicated by the small volume of tonnage sold in the spot market and by occasional offers of distress coal. Nominally the range on Navy Standard per gross ton f.o.b. vessel at Norfolk and Newport News is $4.10@$4.35. Some No. 2 coal is to be had at less than $4.

Inland Prices Weak

For inland delivery coal on cars at Boston and Providence is around $5.50. The market is so uncertain that there is little attempt to force coal upon reluctant buyers. Central Pensylvania coals show no appreciable change from conditions which have prevailed for over a month.

Improvement in the New York bituminous market is still held back by sales of distress tonnage. Last week it was reported that there were more than 250 boats anchored in the East River waiting for buyers. Enough distress tonnage has been cleaned up, however, to stiffin the resistance of shippers when buyers try to name their own prices. Contracting is not keeping pace with other years. During the past week another cargo of foreign coke arrived. Domestic coke is slow at $3.25@$3.75, ovens.

Philadelphia Market Dull

The Philadelphia spot market is as dull as that of New York. Sellers appear to have abandoned their efforts to force contracts on buyers and are letting the trade drift along on a day-to-day basis. With more mines closing down, the pressure of spot tonnage is lessening. Slack, in particular, is less freely offered and some large consumers are turning to mine-run.

Privately the policy of the railroads is being sharply criticized by the coal men. Some carriers have been endeavoring to establish a going price to be paid for coal on the basis at which they picked up distress tonnage after the end of the anthracite strike. These figures, say the producers, are so far below the cost of production that they are absurd. The Philadelphia tide trade is quiet.

Baltimore Situation Unchanged

The new coal year has brought none of the active contracting for steam and gas coals that once marked the advent of spring in the Baltimore bituminous market. The spot price range is so low that it discourages long-term orders and daily receipts negative any fear of a shortage in supply. On the export side there are faint signs of betterment. March exports were the largest in two years. During the first week of April 14,869 tons was loaded for foreign shipment.

Spot demand in the Birmingham field is less active, but continues to absorb all the free coal of medium and high grade offered. It is the lower grades that suffer, although accumulations have been kept down to a minimum. Little difficulty is being experienced in renewing steam coal contracts and, in most cases the prices show advances over those carried in the 1925-26 agreements. Contract movement, as a matter of fact, is taking care of the bulk of the current production.

There is very little demand for spot domestic coal because weather conditions do not encourage heavy consumption of fuel. Most of the high-grade coal, however, is sold ahead on contracts which will take the greater part of the output off the market for the next three or four months. White-ash coals are in disfavor with buyers. Movement of domestic coke also is slow, with egg and nut quoted at $4.50@$5. Spot and contract foundry coke is firm at $5.50@$6.50, ovens.

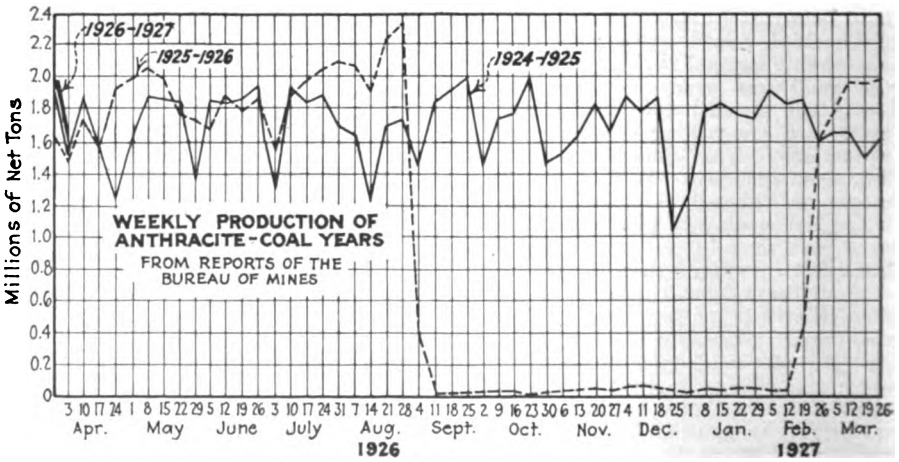
Company Anthracite Readily Absorbed

The New York trade is buying domestic company anthracite freely, but independent shippers are seldom able to book orders at premiums exceeding 75c. Consumer buying has dropped off and some of the tonnage now being received is going into storage at the dealers' yards. Chestnut still holds first place in demand, but stove and egg are running it a close race. Pea continues scarce. Steam sizes are slow. Some of the large shippers are contracting No. 1 buckwheat at $2.50. Rice is holding its own, but some barley is going into mine storage.

On the whole, the anthracite situation in Philadelphia is a counterpart of that in New York. If there is any reluctance on the part of the retailers to take in domestic coal from company shippers it is shown in egg and, occasionally, in stove. Current movement to the householder is good, but not heavy enough to create a premium wholesale market except in pea. All steam sizes are soft and some independent contracts on No. 1 buckwheat have been closed at $2.35.

Householders Hold Back

The retail trade is much disturbed because householders in many cases have refused to place their usual fill-up orders at the present prices. These prices are generally about $1 above the



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Car Loadings and Supply

	Cars Loaded — All Cars	Cars Loaded — Coal Cars
Week ended March 27, 1926.....	967,838	171,413
Preceding week.....	977,209	183,205
Week ended March 28, 1925.....	931,395	140,889

	Surplus Cars — All Cars	Surplus Cars — Coal Cars	Car Shortages All Cars	Car Shortages Coal Cars
March 31, 1926.	246,549	104,280	.....	.....
March 22, 1926.	213,780	79,551	.....	.....
March 31, 1925.	344,959	185,724	.....	.....

prices in effect last April. Some price-cutting has been resorted to on desirable business, but for the most part the householder announces that he will postpone his buying indefinitely.

Cut Retail Prices at Baltimore

Baltimore retailers are offering hard coal to the householder at a cash discount of 50c. per ton. The new cash prices are: Broken coal, $15; egg, $15.50; stove, $16; nut, $15.50; pea, $12. These prices represent reductions of 50c. to $1 per ton from the winter basis. The experiment is frankly announced as a move to reduce the number of slow accounts on the dealers' books.

Stagnation threatens the Connellsville market in spot coke. Contract deliveries are taking care of the furnace demand and most of the foundries are protected until June 30. Demand from miscellaneous consumers is small. Spot furnace coke last week was $3@$3.25, with the top price ruling only on small lots. Spot foundry coke has dropped to $4.25@$4.75.

Production is closely regulated to orders and there is little surplus at the ovens. Output for the week ended April 3, according to the Connellsville *Courier* totaled 180,850 tons. Furnace oven production was 102,000 tons, a decrease of 2,800 tons when compared with the preceding week; merchant oven output was 78,850 tons, a decrease of 3,980 tons.

Self-Regulation in Business To Engage U. S. Chamber

Representatives of more than 1,400 business organizations located in every state in the Union have been invited to attend the three-days' annual meeting of the Chamber of Commerce of the United States to be held in Washington May 11 to 13.

The major subject, around which all the discussions of the meeting will center, will be "Self-Regulation in Business." Prominently featured on the program are two additional subjects, namely, "Local and State Taxation and Budgeting," and "Relations of the States to the Federal Government."

High government and state officials and business men of national prominence will take part in the discussions. Among the speakers will be Governor Albert C. Ritchie, of Maryland; John W. O'Leary, president of the Chamber of Commerce of the United States; Fred I. Kent, vice-president, Bankers Trust Company, New York; Julius H. Barnes, formerly head of the United States Grain Corporation, New York; Dr. Julius Kline, director of the Bureau of Foreign and Domestic Commerce; S. W. Wade, Superintendent of Insurance, Raleigh, N. C.; A. L. Humphrey, president, Westinghouse Air Brake Co., Pittsburgh; Milton E. Marcuse, president, Bedford Pulp & Paper Co., Richmond, Va.; John B. Miller, president, Southern California Edison Co., Los Angeles; E. T. Meredith, former Secretary of Agriculture, Des Moines, Iowa; A. J. Brosseau, president, Mack Truck Co., Inc., New York, and R. Goodwyn Rhett, president, Peoples National Bank, Charleston, S. C.

With a view to facilitating the discussions, the conference will be divided into nine group meetings, each representing a particular branch of American business. These groups are as follows: Agriculture, civic development, domestic distribution, finance, foreign commerce, insurance, manufacture, natural resources production and transportation and communication. The natural resources production group will discuss "Hydro-electric Power"; "Coal, Lumber and Oil"; "Desirability of Self Government in Industry—How to Accomplish it in These Industries."

World's Coal Production During 1925 Exceeds That of Two Preceding Years

World's total production of all coal in 1925 is estimated by the U. S. Bureau of Mines at approximately 1,368,000,000 metric tons. This output, when compared with the revised figures of production for 1924 is an increase of 13,400,000 metric tons. There were some notable increases in certain of the coal-producing countries, and rather pronounced decreases in others. In the United States, while there was a great decline in the anthracite output for the year, amounting to 23,400,000 tons, when compared with 1924, this was more than offset by the production of bituminous coal, which amounted to nearly 36,000,000 more than a year ago. Countries, other than the United States, which showed greatly increased production in 1925 over 1924 were France, Germany and Russia, while Canada, Czechoslovakia, Hungary, Poland and the United Kingdom showed decreases. The following table summarizes information received by the Bureau of Mines up to March 13, 1926:

Coal Produced in Principal Countries of the World, Calendar Years 1923, 1924 and 1925

(In metric tons of 2,204.6 lb.)

Country	1923	1924	1925
North America			
Canada — Coal	12,163,901	9,138,841	8,626,000
Canada — Lignite	3,249,605	3,233,459	3,284,723
United States: Anthracite	84,675,282	79,765,491	56,350,000
United States: Bituminous and lignite	512,161,770	438,790,754	474,455,000
Other countries	(a)	(a)	(a)
South America	1,807.000	2,106,000	(a)
Europe			
Belgium	22,922,340	23,361,910	23,133,160
Czechoslovakia: Coal	12,347,251	15,178,942	12,550,323
Czechoslovakia: Lignite	16,265,530	20,459,690	18,041,040
France — Coal	37,682,235	44,011,240	48,033,564
France — Lignite	861,435	944,180	
Germany — Coal	62,316,134	118,768,748	132,729,097
Germany — Lignite	118,784,997	124,637,201	139,789,714
Saar *b*	9,192,275	14,032,120	*c* 12,940,000
Hungary	7,688,033	7,077,680	6,200,000
Netherlands — Coal	5,595,478	6,180,182	6,850,000
Netherlands — Lignite	54,185	191,202	
Poland — Coal	36,079,997	32,224,680	*c* 28,800,000
Poland — Lignite	171,035	88,038	*c* 62,000
Russia	*d* 14,504,300	*e* 13,918,000	*c* 19,000,000
Spain — Coal	5,971,446	6,127,586	*c* 6,100,000
Spain — Lignite	394,268	411,773	*c* 400,000
United Kingdom — Great Britain	280,430,369	271,405,414	250,630,000
United Kingdom — Ireland	(a)	(a)	(a)
Other countries	(a)	(a)	(a)
Asia			
China	19,955,000	20,969,000	20,000,000
India, British	19,972,376	21,516,491	*c* 20,100,000
Japan (inc. Taiwan and Karafuto): Coal	30,417,012	31,617,277	(a)
Japan (inc. Taiwan and Karafuto): Lignite	151,462	176,764	
Other countries	(a)	(a)	(a)
Africa			
Rhodesia, Southern	559,999	591,526	689,200
Union of South Africa	10,810,897	11,331,125	12,996,000
Other countries	(a)	(a)	(a)
Oceanica			
Australia: New South Wales	10,646,693	11,804,688	11,200,000
Australia: Other States	2,190,406	2,303,156	(a)
New Zealand	2,001,450	2,116,642	(a)
Total	1,359,900,000	1,355,000,000	1,368,000,000

(*a*) Estimate included in total. (*b*) Territory under French control. (*c*) Estimated from monthly figures as follows: The Saar and India, 11 months; Poland and Spain, 10 months; Russia, 9 months. (*d*) Russia in Asia included under Russia in Europe. (*e*) Data for operating year, Oct. 1, 1923 - Sept. 30, 1924.

Encouraging Fuel Research

Walter Barnum, of New York City, president of the Pacific Coast Co., operating large bituminous coal mines in the State of Washington, has been appointed to represent the National Coal Association on the advisory committee of the Massachusetts Institute of Technology in respect to a graduate course in gas and fuel engineering. The growing realization of the bituminous coal industry that fuel research activities should be encouraged is reflected not only in this appointment but in the financing by the National Coal Association of a graduate research fellowship in low-temperature distillation at Carnegie Institute of Technology for the academic year 1925-26.

The experimental investigations in gas and fuel engineering which will be made in connection with the graduate course at Massachusetts Tech embrace a list of twelve major subjects.

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Foreign Market And Export News

Welsh Loadings Heavier; Future of Industry Hurts Sales for May Deliveries

London, England, March 30.—Shipments of coal from the Welsh ports have been on a heavier scale during the past few days on account of the Easter holidays, and the improved weather conditions have enabled ships to arrive at the docks on schedule. At most of the docks better working has enabled the large standing stocks of coal to be cleared, with the result that nearly all of the collieries are again operating on full time. Deliveries for the most part have been in the nature of clearing off arrears, and new business has been only moderate.

For shipment after Easter the trade has fallen off a little, though this may be put down largely to the uncertainty existing as to what will happen in the industry at the end of April. Because of this uncertainty, operators are showing little tendency to enter into fresh obligations except at greatly advanced prices.

There is a popular feeling, however, that the difficulties expected at the end of April will be satisfactorily tided over and that there will be no national stoppage. How these difficulties will be dispensed with without the aid of a subsidy or "temporary assistance," as the current phrase has it, is not explained.

Contract inquiries on the market include one for 150,000 metric tons for the Egyptian State Rys. and the Uruguayan Electricity Department is inviting tenders for supply until June, 1927. Prices generally are stronger.

The Newcastle market is uncertain on account of the difficulties which are expected on a national scale on May 1. There is plenty of inquiry for April shipment, though little business is being done. Prices are steady. Orders include 40,000 tons of gas coals for Genoa, 12,000 tons of gas coals for Malmo and 10,000 tons of gas coals for Gothenburg.

Output by British collieries during the week ended March 27, according to a special cable to *Coal Age*, totaled 5,415,000 gross tons, compared with 5,370,000 tons the preceding week.

British Coal Exports Decline

British coal exports in February totaled 4,349,000 tons, which is 4,000 tons less than in February, 1925. The decrease of 176,000 tons in shipments to France was the largest decline. The increase of 195,000 tons in sales to the United States was the principal gain. Sweden, Spain, Algeria and Gibraltar bought in substantially reduced volume.

Argentine Coal Imports High In February

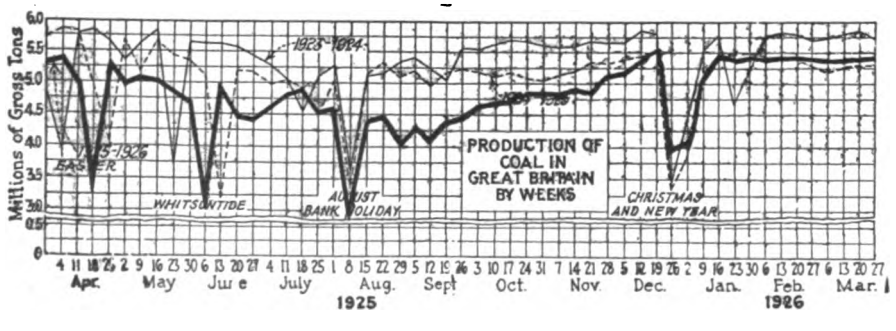
During the four weeks ending Feb. 19 Argentine coal imports reached 220,195 metric tons as compared with 342,047 received during the thirty-one days preceding, cables Commercial Attaché Edward F. Feely, Buenos Aires, to the Department of Commerce. Although not so large during the period just ended as in the foregoing four weeks, the weekly average is higher than it has been for several months.

Of the quantity received during the period covered by the cabled report, 189,484 tons came from Great Britain, 26,719 from Germany and 3,992 from the United States. Quotations c.i.f. Buenos Aires are as follows: British, 36s. ($8.75); German, 38s. ($9.24) and American—no quotations.

Austrian Consumption Declines

The 1925 consumption of coal in Austria declined more than 250,000 metric tons from the 1924 total, according to provisional figures recently issued by the Austrian Ministry of Commerce. These figures show a 1925 total of 8,429,416 tons, of which 3,157,736 tons, including 3,012,558 tons of lignite, was produced within the country. Consumption of domestic coal, however, was more than 235,000 tons in excess of that for 1924.

Austrian coal and coke imports totaled 5,271,680 metric tons in 1925. Of this quantity, 4,252,789 tons was bituminous, 505,483 tons, lignite and 513,408 tons, coke. This represented a decrease of 493,175 tons from the 1924 importation. Bituminous and lignite imports decreased 285,130 tons and 242,050 tons respectively. Imports of coke increased 134,005 tons.



Soviet Coal Output Gaining

Figures received by the Russian Information Bureau from the State Planning Commission show heavy gains in coal output by the Soviet Union during January, 1926, as compared with the corresponding month a year ago. Coal production was 45 per cent greater than in January, 1925, standing at 2,007,000 tons in January, 1926, as against 2,093,000 tons in December. Petroleum output of 636,000 tons was 10,000 tons less than in December, but 21 per cent heavier than in January, 1925.

Export Clearances, Week Ended April 8

FROM HAMPTON ROADS

	Tons
For Brazil:	
Br. Str. Betwa, for Rio de Janeiro	4,986
Br. Str. Trevanion, for Rio de Janeiro	6,134
Br. Str. Scoresby, for Rio de Janeiro	5,461
Br. Str. Eastgate, for Santos	5,982
Br. Str. Lady Kathleeen, for Rio de Janeiro	4,998
For British West Indies:	
Br. Str. Orangemoor, for Barbados	6,500
For Italy:	
Ital. Str. Mincio, for Porto Ferrajo	6,760
For Danish West Indies:	
Br. Str. Teesbridge, for Curacao	5,673
For Bermuda:	
Swed. Str. Scania, for Hamilton	764
For Egypt:	
Br. Str. City of Salisbury, for Port Said	2,083
For Dominican Republic:	
Nor. Str. Elna II, for Santo Domingo	283
For Argentina:	
Br. Str. Harpalion, for Buenos Ayres	5,898
For Costa Rica:	
Nor. Str. Hovland, for Port Limon	1,006

FROM BALTIMORE

For Italy:	
Ital. Str. Valdirosa, for Naples	6,633
For Gibraltar:	
Jap. Str. Jufuku Maru	7,610

Hampton Roads Coal Dumpings*

(In Gross Tons)

	Apr. 1	Apr. 8
N. & W. Piers, Lambert's Pt.:		
Tons dumped for week	172,261	169,964
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	91,945	107,355
C. & O. Piers, Newport News:		
Tons dumped for week	146,982	168,578

* Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS

	April 3	April 10†
Pool 1, New York	$5.50@$5.75	$5.50@$5.75
Pool 9, New York	5.10@ 5.25	5.10@ 5.25
Pool 10, New York	4.75@ 5.00	4.75@ 5.00
Pool 11, New York	4.50@ 4.75	4.50@ 4.75
Pool 9, Philadelphia	5.10@ 5.40	5.10@ 5.40
Pool 10, Philadelphia	4.80@ 5.15	4.80@ 5.15
Pool 11, Philadelphia	4.25@ 4.50	4.25@ 4.50
Pool 1, Hamp. Roads	4.25@ 4.35	4.40@ 4.50
Pool 2, Hamp. Roads	4.15@ 4.25	4.20@ 4.30
Pools 5-6-7, Hamp. Rds.	3.95@ 4.00	4.00@ 4.10

BUNKERS

Pool 1, New York	$5.75@$6.00	$5.75@$6.00
Pool 9, New York	5.35@ 5.50	5.35@ 5.50
Pool 10, New York	5.00@ 5.25	5.00@ 5.25
Pool 11, New York	4.75@ 5.00	4.75@ 5.00
Pool 9, Philadelphia	5.35@ 5.65	5.35@ 5.65
Pool 10, Philadelphia	5.05@ 5.40	5.05@ 5.40
Pool 11, Philadelphia	4.50@ 4.75	4.50@ 4.75
Pool 1, Hamp. Roads	4.35	4.50
Pool 2, Hamp. Roads	4.25	4.30
Pools 5-6-7, Hamp. Rds.	4.00	4.10

Current Quotations, British Coal, f.o.b. Port, Gross Tons

Quotations by Cable to *Coal Age*

Cardiff:	April 3	April 10†
Admiralty, large	24s.6d.	24s.6d.@25s.
Steam smalls	14s.3d.	14s.6d.
Newcastle:		
Best steams	18s.	18s.
Best gas	20s.	20s.@22s.
Best bunkers	16s.6d.	17s.

Advances over previous week shown in **heavy type**; declines in *italics*.

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Coming Meetings

Virginia Coal Operators' Association. Annual meeting, April 17, Norton, Va. Secretary, C. B. Neel, Norton, Va.

American Welding Society. Annual convention, 29 West 39th St., New York City, April 21-23. Secretary, M. M. Kelly, 29 West 39th St., New York City.

California Retail Fuel Dealers Association. Thirteenth annual convention at Del Monte, Calif., April 22-24. Secretary, J. B. Muir, Oakland, Calif.

Mine Inspectors' Institute of America. Annual meeting, Seventh Avenue Hotel, Pittsburgh, Pa., May 11-13. Secretary, G. B. Butterfield, Hartford, Conn.

International Railway Fuel Association. Eighteenth annual convention, Hotel Sherman, Chicago, Ill., May 11-14. Secretary, J. B. Hutchinson, Omaha, Neb.

National Retail Coal Merchants' Association. Ninth annual convention, New Willard Hotel, Washington, D. C., May 17-19. Resident vice-president, Joseph E. O'Toole, Transportation Bldg., Washington, D. C.

Electric Power Club. Convention at The Homestead, Hot Springs, Va., May 24-27. Secretary, S. N. Clarkson, B. F. Keith Bldg., Cleveland, Ohio.

The American Mining Congress. Annual Exposition of Coal Mining Equipment, May 24-28, at Cincinnati, Ohio, in conjunction with the annual meeting of practical operating officials. Assistant secretary, E. R. Coombes, Washington, D. C.

International Geological Congress. The fourteenth congress will be held in Madrid, Spain, commencing May 24, 1926. From May 5 to 22 excursions of interest to the visiting delegates will be arranged. Information concerning the congress can be obtained from the secretary of the organizing committee, Enrique Dupuy de Lome, Plaza de los Mostenses, 2, Madrid, Spain.

Midwest Retail Coal Merchants Association. Annual meeting, May 25 and 26, at Kansas City, Mo. Secretary, James P. Andriano, St. Joseph, Mo.

Western Canada Fuel Association. Annual meeting at Winnipeg, Manitoba, Can., May 27 and 28. Secretary, W. H. Morrison, Winnipeg.

American Wholesale Coal Association. Annual meeting at Toledo, Ohio, June 7-9. Treasurer, R. B. Starek, Union Fuel Bldg., Chicago, Ill.

Association of Iron & Steel Electrical Engineers. Exposition and convention at Hotel Sherman, Chicago, Ill., June 7-10. Secretary, J. F. Kelly, 1007 Empire Bldg., Pittsburgh, Pa.

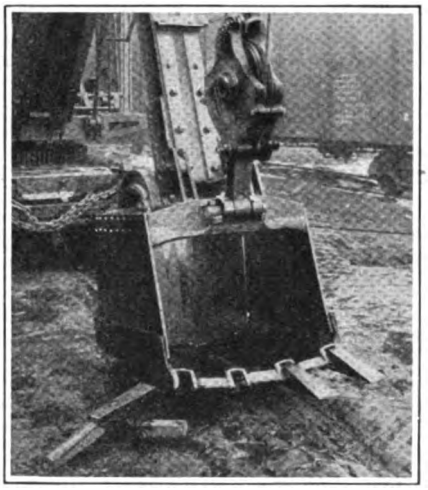
National Coal Association. Ninth annual meeting, June 9-11, at Drake Hotel, Chicago, Ill. Executive secretary, Harry L. Gandy, Southern Bldg., Washington, D. C.

American Institute of Electrical Engineers. Annual convention, White Sulphur Springs, W. Va., June 21-25. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

New Equipment

Wedge-Shaped Tooth Sockets Part of Dipper Front

The new ¾-yd. dipper of the Erie Steam Shovel Co., Erie, Pa., features four tapered sockets for the teeth cast as integral parts of the manganese steel lip, which is 1 in. thick and extends 9 in. up on both sides. The placing of the outside teeth at the extreme corners is claimed to be a considerable advantage when side cutting on heavy banks. The teeth are reversible and made of chrome manganese steel. No bolts or rivets are necessary to hold the teeth, which are fastened by firmly wedging them against soft steel shims. The teeth are easily removed by driving a small drift wedge under them through a hole provided in the back of the socket for this purpose.



Flush Outer Teeth Clear Wider Path For Edge of Bucket

Tapered sockets cast as integral parts of the manganese steel lip permit teeth to be set in bucket and removed with ease.

Synchronous Motors with High Starting Torque

Heretofore, synchronous motors have had a low starting torque. The General Electric Co. of Schenectady, N. Y., has, however, designed and is now marketing a line of these machines for general-purpose application. These motors are recommended to drive loads, the torque requirements of which have been heretofore met by standard squirrel-cage induction motors. The new machines known as types TS and QS of the 7,500 series, range from 20 to 150 hp. at speeds of 1,200, 900, 720, and 600 r.p.m. at 60 cycles.

These motors meet all the Electric Power Club requirements for general-purpose machines and give satisfactory starting characteristics. They are of strong construction and with minor changes will operate at either unity, 90-per cent or 80-per cent power factor. They are rated at 40 deg. continuous load at unity power factor and at 90- and 80-per cent power factor, the temperature of the stator will not exceed 40 deg., with 50 deg. on the rotor.

Adequate starting torque is the most important factor in the design of the new motors, each machine being guaranteed to deliver the same starting torque with the same inrush current as will a standard squirrel-cage induction motor of similar rating. At full-line voltage the motor will accelerate and synchronize a load whose torque is 100 per cent of the rated full-load torque of the machine.

Revolving fields are employed on these motors. These are of the salient-pole type and are separately excited, ordinarily by means of direct-connected exciters. One of the principal advantages inherent in these machines lies in the fact that the amortisseur windings are not limiting factors upon the temperature rating. These starting windings will not become dangerously hot before the primary motor coils are overheated. Thus adequate overload protection in the alternating current lines will also protect the amortisseur windings from overheating whether as a result of failure to start or because of operation without excitation.

Semi-automatic control is recommended for these motors. In this control field excitation is automatically applied. The motor is started by means of a manually operated, self-contained compensator. The manipulation necessary to start one of these machines is, therefore, identical with that entailed in starting a squirrel-cage induction motor.

Powder in Pellets Safer and Better Than in Grains

A new form of explosive, known as pellet powder, which tends to make coal mining safer, has been developed by E. I. du Pont de Nemours & Co., Inc., of Wilmington, Del. In substance it is the same product as black blasting powder but instead of being in granular form, is made up in pellets which are wrapped in a thin paraffined paper shell similar to a dynamite cartridge which is then packed in a wooden box. It has been extensively tested in the field and when used the danger of the steel keg in which black blasting powder is packed is eliminated. Steel is a good conductor of electricity. In the past many fatal accidents have occurred because such kegs came in contact with electric wires or cables causing the contents to explode.

Many miners are in too big a hurry to open a metal keg by turning back the lugs and removing the bung as designed by the manufacturers. To save time they drive a pick through the top and pour the powder out through the opening thus made. Occasionally enough heat is developed by the pick to ignite the powder and an explosion results. Ignitions have also taken place from

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driving a wooden point through the top of the keg.

Ordinary black blasting powder is granular, and in the small sizes, especially, is quite free running. Thus there is always danger of a charge leaking down the borehole and becoming ignited at the collar by the spit of the fuse or from the miner's squib.

Transferring powder from keg to jack or from jack to cartridge if an open light is present is dangerous because an air current may carry the dust from the powder to the light thus causing an explosion. Sparks dropping into a keg or jack of blasting powder have caused similar accidents.

NEW POWDER NON-RUNNING

Pellet powder is said to have practically none of these disadvantages. While it is not a permissible explosive, and consequently is not safe for use in gaseous mines, its being packed in wooden boxes renders it free from the hazard of firing from accidental contact with charged wires. There is no temptation to drive a pick through a box of pellet powder as the lid can be pried off quickly and safely. The pellets are wrapped in paper and, being used in this condition do not tend to run down the bore hole to the collar, thus laying a train along which fire may run back to the main charge. They are not dusty and do not require to be transferred into a powder jack as they are already made up into cartridge form. Moreover, being of a uniform size, it is possible to gage the quantity of explosive needed to bring down the coal much more accurately than is possible with a granular explosive that is poured into a cartridge made by rolling paper over a pin which, in size, may be anything from a tamping stick to a pick handle. It is said that much explosive can be saved because a charge of pellet powder is easier to gage than is one composed of granular powder.

Experiments indicate that much less smoke is evolved from pellet than from granular powder. No explanation can now be given to account for this phenomenon.

It is said that the production of lump coal when pellet powder is used has been highly satisfactory. Although in some beds of coal its action was little or no better than that of granular powder, these were much in the minority. By far the greater number of reports show a readily noticeable increase in the quantity of lump produced by the use of pellet powder.

This new explosive can be fired by means of either fuse or electric squib, the latter being the ideal method as it permits of closer confinement. The electric squib also has the advantage in that the loader has control of the exact time when the shot is to be fired and there is much more freedom from smoke than when fuse is employed. The holes through the middle of the pellets are so made that when used with fuse, this can be inserted in one end of the hole, turned over upon itself and jammed into the other end of the hole, making a hitch that holds fast so that the fuse will not pull out. Pellet powder can be fired by means of miners' squibs but this method is not recommended.

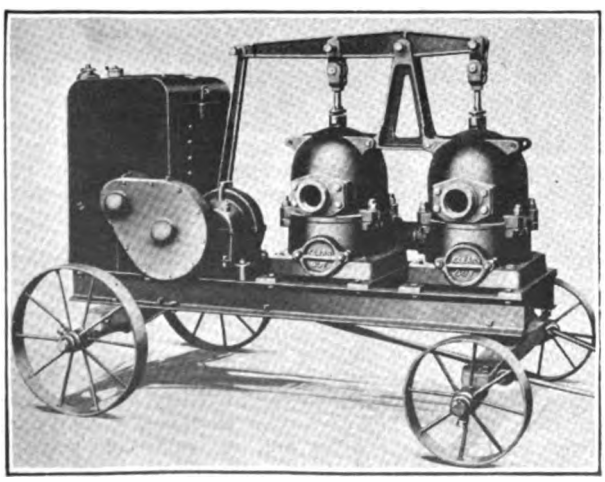
Pellet powder heretofore never has been made in the United States except experimentally, although it is extensively used in France and Great Britain. In 1912 some experimental lots were tried in some of the coal fields of West Virginia. Though the results were promising, the necessity for concentrating every effort during the war on standard explosives put an end to these experiments. Last fall, however, further experimental work was done with this explosive and as a result two mills have been equipped for its manufacture. At the present time it is made in pellets of 1⅛, 1¼ and 2 in. diameter.

It is claimed that no combination gives greater safety than pellet powder and an electric squib except as regards the liability to ignite gas or coal dust.

A Portable Diaphragm Pump For Construction Work

Portable pumping outfits, such as the one shown in the accompanying illustration, can be used to advantage on construction jobs, where it is necessary to keep an excavation free from water. The illustration shows a double 4-in. closed-top diaphragm force pump having a capacity of 16,000 to 20,000 gal. per hour against a head of 60 to 70 ft. The pump is made by the Novo Engine Co., of Lansing, Mich., and is operated by a Novo UF two-cylinder 3- to 6-hp. gas engine. This engine has a 180-deg. opposed-throw counterbalanced crankshaft running in tapered roller bearings.

Diaphragm pumps usually work under conditions not conducive to long life of wearing parts. The self-oiling speed-reducing unit used on the pumps shown completely incloses and protects all gearing, eliminating many disadvantages of the open-geared type pumps. These pumps are surplus-powered and smooth running, thus minimizing the strain upon the engine and pump, and lengthening the life of the outfit.



Diaphragm Pump

Truck carries its own gas engine of 3 to 6 hp. The pumps have a capacity of 16,000 to 20,000 gal. per hour against a head of 60 to 70 ft. Said to have unusually long life.

Industrial Notes

The Chicago Pneumatic Tool Co. recently acquired **George Oldham & Sons Co.** of Baltimore. The manufacture of the Oldham products which are continued will be conducted at the Detroit plant, 6201 Second Boulevard. The sales will be combined and handled from the Chicago Pneumatic Tool Co.'s branches as well as through their domestic and foreign agency connections.

R. J. Quinlan is now a sales engineer for Street Bros. Machine Works, Chattanooga, Tenn., makers of hoists, cableways, derricks, draglines, skidders, etc. Mr. Quinlan was previously with the Bluefield Supply Co. for four years as manager of the electrical supply department. Before this, he was for a number of years with Fairbanks, Morse Co. in the sales department. Mr. Quinlan has a wide knowledge of the coal fields.

The Trico Fuse Mfg. Co., Milwaukee, Wis., has rebuilt and enlarged its electrical testing laboratory, with latest and best equipment installed. The offices also have been enlarged and in the factory new lighting equipment has been installed and production facilities considerably increased. The sales organization has been increased by the appointment of Herbert E. Hartstein as eastern sales manager; Philip Rypinski as central sales manager, and Fred C. Geiler as western sales manager.

The Hazard Manufacturing Co., Wilkes-Barre, Pa., announces the appointment of **Laurence W. Bevan** as general manager; **William S. Hart** as special representative in the oil fields of the United States, with headquarters at Wilkes-Barre, and of **Thomas A. Keefe** as district manager at Chicago.

Headquarters of the Western district of the **Graybar Electric Co.** has been transferred from St. Louis to Kansas City, and **H. N. Goodell** has been appointed as district manager and manager at Kansas City.

Lawrence E. Buzard has been appointed general sales manager of the **Fate-Root-Heath Co.**, manufacturers of Plymouth gasoline locomotives, Plymouth, Ohio, succeeding H. R. Sykes, who recently resigned. Mr. Buzard, who was formerly assistant sales manager, has been with the company a number of years. He will have direct charge of locomotive sales and thirty-four district sales representatives.

H. C. Osman, sales manager of the Nugent Steel Castings Co., Chicago, has been elected secretary of the company. He will continue to have charge of the sales for the company. **C. A. MacDonald**, formerly secretary, has been elected treasurer.

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Battery Levels Peaks and, Strangely, Saves Power, page 561

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COAL AGE

The World's Accepted Authority on Coal Mining

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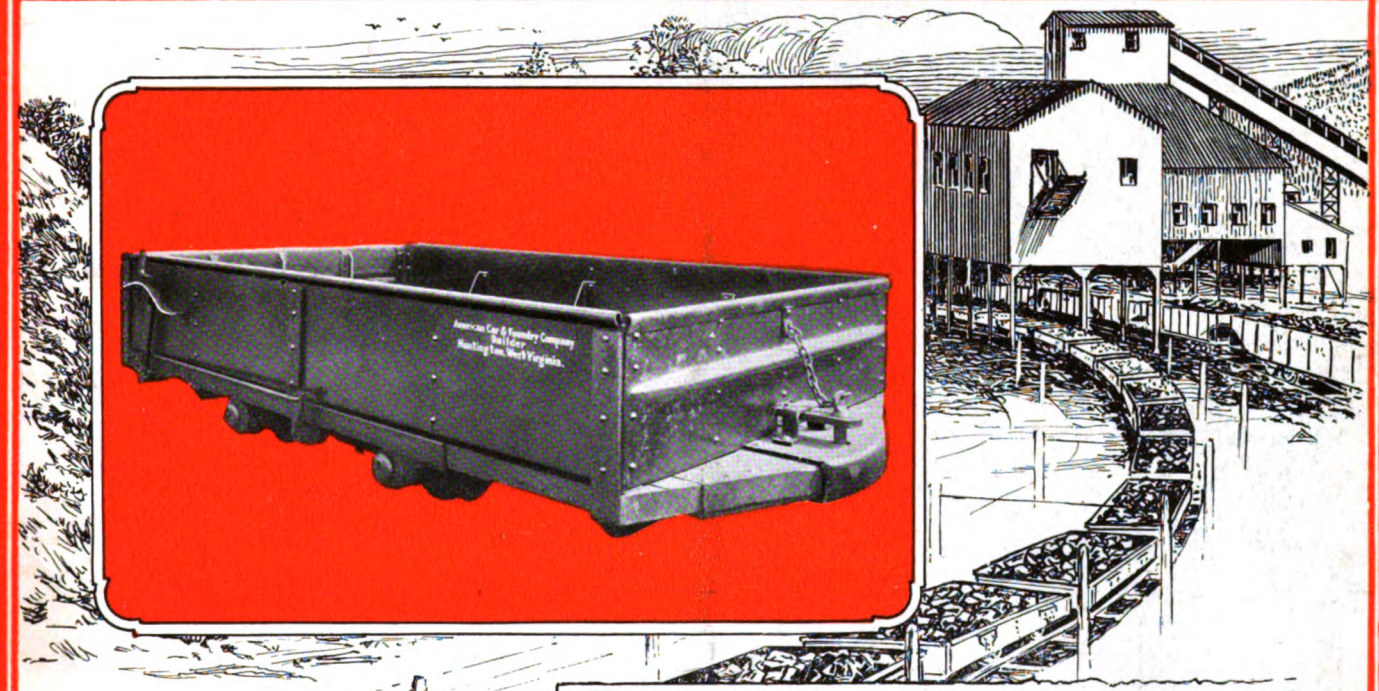

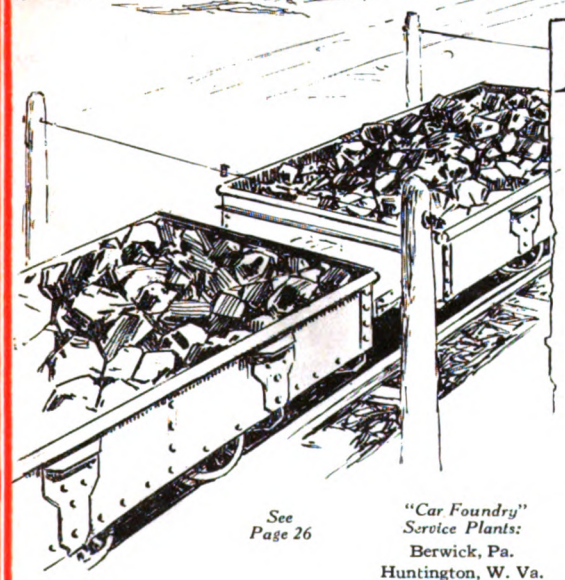

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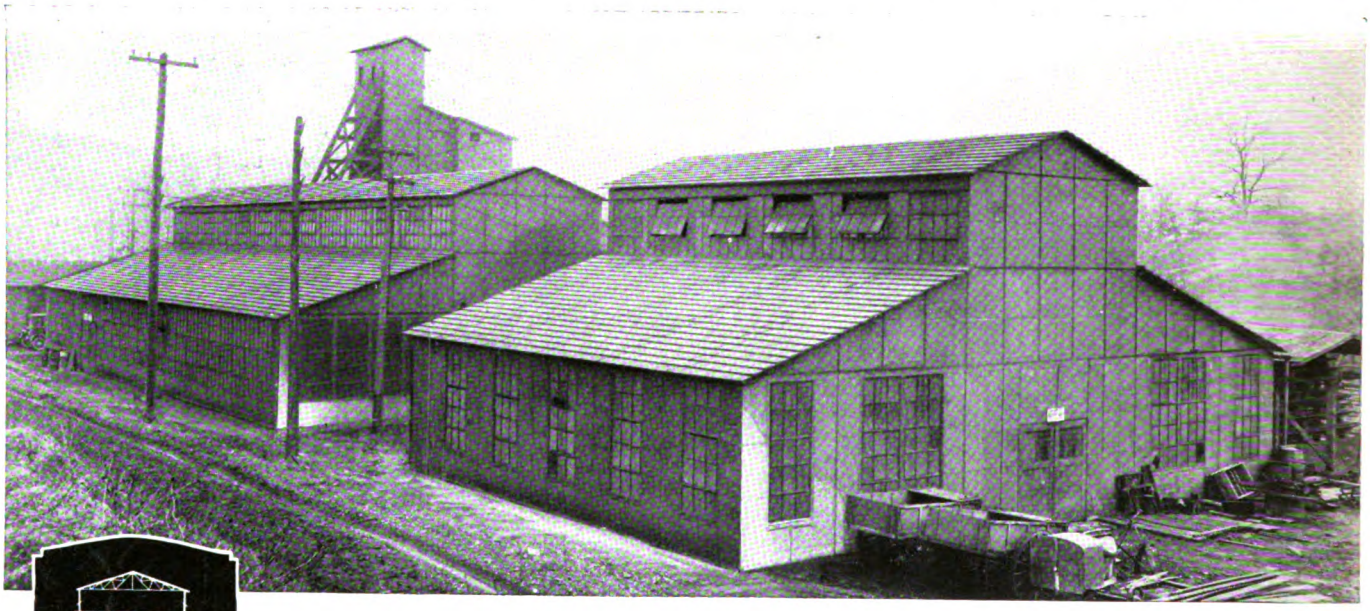

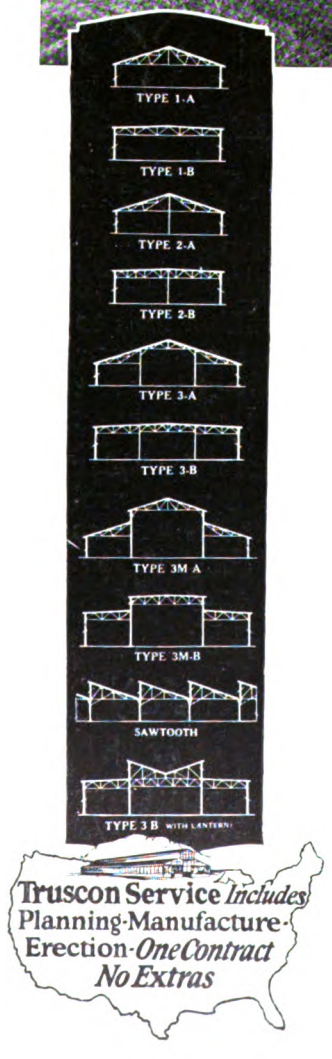

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 29 — New York, April 22, 1926 — *Number* 16

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Storage Battery Lowers Motor-Generator Peaks 561
BY J. H. EDWARDS.

Ford Provides for Entertainment of Employees 565

Why Don't Engineers Land Executive Positions? 568

Union Balks at Arbitration in Any Form; Permanent Fact Finding Bureau Conditionally Approved, Says Murray 576

Cabinet Confers with British Miners and Operators as Strike Impends; Commission Report Roundly Scored 579

Petroleum Institute Figures Reveal Influence of Oil Competition on Worldwide Slump in Coal Industry 580
BY PAUL WOOTON.

Insurance Company Insists on Rock Dusting 577
Interesting Talks at Meeting of Fayette Institute 577
Penna Resigns, Then Accepts Another Term 577
Ohio Union Officials Scorn West Virginia Wages 577
Urges Subsidy to Encourage Nova Scotia Coal Industry 578
Break Off Wage Parley on Kansas Shovel-Mine Labor 578
Alaska Colliery Destroyed in $500,000 Fire 578
American Federation of Labor Opposes Plan for Federal Industrial Court to Settle Strikes 578
C. & O. to Acquire Stock of Island Creek R.R. 578
Resumes Work of Unifying Electrical Terms 579
Open-Shop Miners Earn More Than Union Men 579
Offer Coal Fellowships at University of Washington 579
Further Hearings Ordered in Lake Cargo Rate Cases 580
Hearing on Permanent Rates from South to Northeast 580

Editorials 559
Consultation 569
Underground Operation 570
Practical Pointers 572
Viewpoints of Our Readers 574
News Items from Field and Trade 576
Traffic 584
Weekly Review and the Market 585
Foreign Market and Exports News 590
New Equipment 591

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Storage Batteries

This week *Coal Age* describes an installation of storage batteries to cut down peaks. Incidentally it makes it possible to keep things moving when power fails or the generator is not working.

That ability to run, night and day, Sundays and holidays, regardless of trouble anywhere along the line or of circuit breakers kicking out is what we want if, in gaseous workings, we are going to drive such single entries as C. H. Trik will advocate in next week's issue. The battery will assure us that the auxiliary fan will not stop even if the line is severed between the battery and the substation. Breakers may go out, power may fail; but the fan will take care of the gas. The equipment should be such as will be safe in an explosive mixture.

Mr. Trik's suggestions are all worthy of careful consideration. We must have safe conditions in mines, but it is not certain that we cannot have just such conditions with auxiliary fans which give much more positive air circulation than we have too often today.

Purchased Power

Another article will show what central-station power has done for Illinois operators. Because most Illinois mines are shafts up which the coal must be raised, their power consumption per ton of product may be high, but practically all of the load comes on in the daytime. The load factor of the mine is therefore low, whereas that of the central station, because of the diversified load served is much higher. The central station also relieves the mine of the water problem which in Illinois may be serious.

Advertising Index—Alphabetical, 48; Classified, 45; Consulting Engineers, 43; Searchlight Section, 40-41

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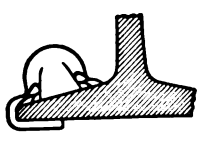

By enabling the bond to be clamped firmly to the rail base before welding is started, the hook feature illustrated above insures a more solid weld in less time. It is just flexible enough to conform to the shape of the base, and stiff enough to grip tightly. A tap of a hammer sets it in place.

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Devoted to the Operating, Technical and Business
Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 29 NEW YORK, APRIL 22, 1926 Number 16

Rock Handling

ONE OF THE MOST important of mine problems is rock disposal. We have no difficulty in dumping coal, because as fast as it is dumped the railroad hauls it away, but rock when dumped into a pile grows in bulk, and the dump has to be moved forward repeatedly, the rock being laboriously prepared for the reception of the track extension by hand. There have been many ways provided of disposing of rock to better advantage, by the use of a bin for transference to slate lorries, cableways, conveyors and other means of transportation; but many think the cheapest installation good enough.

If they would calculate the cost of thus placing rock, duly considering the time lost in mine operation, they would find that a good rock-disposal plant would pay good interest on the investment and make it profitable to remove the rock cluttering airways. In many cases the wedging or shooting of drawrock would not only reduce air resistance, but would make the maintenance of roadways and airways less costly. In any thin seam the same care should be taken of the problems of rock disposal as is given to the dumping of coal and in some mines more care should be given to rock than to coal handling. Because rock is waste and coal is the profitable product it is difficult to induce the management to see that both are engineering problems to be solved in the most economical manner. For this reason, the rock problem is usually attacked by strong-arm methods with their accompanying waste of effort. In some mines this rock-handling is a bigger problem than coal handling, and far more costly, because of the lack of railroad co-operation.

Bigger Cars, Larger Profits

IN FOUR YEARS the railroads have increased the average capacity of their cars from 42.5 to 44.7 tons. This is one of the important sources of railroad economy. This fact should not be forgotten by the coal industry. Nothing holds back mine operation more than its pigmy equipment, especially as coal is now being loaded mechanically and without the meticulous care that used to be shown in building up the car by the use of lumps.

As cars are now moved by power over heavy rails and long distances they can and should be made bigger than they were when they were propelled by hand or animal power over wood rails and for short distances. Heavier equipment will inevitably replace light, and until it does mechanical loading will be placed at a disadvantage. Only those who recognize that a new era in loading methods means a new era in the transportation equipment will prosper. We are prevented from developing by the narrower standards of earlier years, which we find difficult to outgrow.

A pension list for antiquated cars is much needed. "The class 1 railroads in 1925 retired 117,021 freight cars, having an average capacity of 38.77 tons or an aggregate of 4,537,287 tons, and installed 125,760 cars, having an average capacity of 47.37 tons or an aggregate capacity of 5,956,930 tons. The net gain in car units," says the Bureau of Railroad Economics, "was only 8,739 cars, but the net gain in aggregate capacity was 1,419,643 tons." This is an increase in the size of the new cars as compared with those they replaced of 22.2 per cent. The older cars at the mines are not only deficient in capacity but in type of construction, and many even if not worn out, should be relegated to the scrap heap.

Will Use Coal to Generate Gas in California

IN RECENT YEARS petroleum has been the sole source of the commercial gas production in California although before the intensive development of petroleum deposits coal was used for gas manufacture, as it is now used in those regions where petroleum is at a disadvantage on account of cost. Gas plants in which petroleum and its products are used admit of a relatively simple and economically operated unit, and the gas produced is low in cost where "cheap" petroleum can be obtained. The fluctuating price of petroleum and the prospect of a gradually increasing price are now definitely turning the attention of the important gas-producing companies in California to a consideration of the future and the probability of having to rely upon coal as a source of gas.

Although no official announcement has been made it is understood that one of the large gas companies supplying many of the communities in California is experimenting with California coals in an endeavor to use them in gas manufacture. Two new gas generators that will produce 3,000,000 cu.ft. of gas per day are to be erected in one of the interior towns. They are to be designed for the utilization of coal. Certain coal deposits in Shasta County are now supplying the fuel for experimental purposes.

The return to coal as a more stable commodity is especially significant in a state like California, for petroleum has displaced coal for most purposes and has reduced the demand for this fuel to relatively small dimensions. It means no doubt that in California and other Western States is being seen the beginning of the end of the dominance of petroleum for gas and fuel purposes. In time a greater utilization of coal is to be expected.

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Dangers of Negation

THE COAL INDUSTRY has been in the shadow of government regulation more than a decade. During the Frelinghuysen and the Calder investigations and in the days immediately preceding the creation of the United States Coal Commission the shadow bulked so large that to many it seemed the herald of impending reality. Whether the hearings now going on before the House committee on interstate and foreign commerce at Washington will again give the shadow the touch of immediacy appears doubtful. The desire for an early adjournment and a Congressional program which leaves little time for extended consideration of new legislative proposals are working for the coal industry.

It would be poor policy, however, to treat the situation lightly merely because the danger is a future rather than a present peril. The agitation of the past ten years cannot be put out of mind. That agitation has been symptomatic of conditions which the industry must face squarely if it is to find the remedy that will end the demand to broaden the field of federal activity. Political ambitions, false theories of the function of government, unsound economics and out-and-out demagogism have contributed to this agitation and have helped to keep it alive. But there also has been an intermittent public insistence that some action be taken.

To protect itself from the threatened assaults upon its business independence the industry has relied largely upon a program of negation. It has, for the most part, devoted its energies to laying bare the constitutional weaknesses of the various legislative schemes offered. Some attention, it is true, has been given to demonstrating the impracticability of the legislative remedies. By and large, however, the spokesmen for the coal trade have contented themselves with arguing that suggested governmental activities would be an invasion of the rights of the industry and would contravene the organic law of the land.

The Constitution of the United States is an instrument which should command universal respect. Representatives of the industry would be failing in their duty if they did not point out the constitutional pitfalls in the path of federal regulation of the coal trade. And yet an appeal to constitutional guarantees is at best an uncertain defense. Eminent counsel disagree. The scorned *obiter dicta* of yesterday are frequently the fixed precedents of today. Where the public is determined to take control, the skill of the lawyer in explaining how the statutes conflict with the Constitution only leads to a reframing of the laws to cure the defects disclosed. That was the history of the development of the Act to regulate commerce. There is no reason to believe that history cannot be repeated.

The comforting thought that it was never supposed that the coal miner and the wood chopper, along with the butcher, the baker and the candlestick maker, were to be drawn under the cloak of governmental regulation is less comforting than it was when some of the more recent decisions of the Supreme Court of the United States are examined.

Chief Justice Taft's opinion in *Stafford vs. Wallace*, in which the constitutionality of the Packers and Stockyards Act of 1921 was sustained gave to the implications of the interstate commerce clause a breadth which a few years ago would have been considered revolutionary. In *Avent vs. United States*, 226 U. S. 127, and in the still more recent companion case, *Koenig Coal Co. vs. United States* (decided April 12, 1926), the power of Congress to regulate the distribution of coal through a regulation of the instrumentalities of transportation was held not inconsistent with the Fifth Amendment. Moreover, *Wilson vs. New*, 243 U. S. 332, referred to in the first Kansas Industrial Court decision, *Wolff Packing Co. vs. Court of Industrial Relations*, 262 U. S. 522, as on the border line in upholding government interference, becomes only one of several cases cited in affirmation of federal power in the *Avent* case.

The real task confronting those who would keep business free from unreasonable interference is to teach the public the unwisdom of such restrictions. The successful accomplishment of that task calls for more than the establishment of the unconstitutionality of specific legislative proposals. It calls for more than a demonstration, however convincing, that these proposals, even if legal, are no adequate solution of the problems they purport to attack. The coal industry must be ready to offer a constructive program which will meet, insofar as it is humanely and legally possible, the problems which form the basis for the demand for legislative action. The coal industry should not only claim the right to self-government: it must be prepared to prove that it has the organization, the machinery and the program for the exercise of that right in the interest of the public—and the will to so exercise it.

"Open Confession—"

SOME HOMELY TRUTHS were told by C. Willing Hare, vice-president and general manager of the Anthracite Coal Service, in a recent talk to New England retailers. Discussing the competitive situation, he declared that other fuels, notably oil, had been making inroads upon anthracite, not because of any intrinsic superiority, but because of superior engineering salesmanship. It was to overcome that handicap that the Anthracite Coal Service was established. The fact that in the first nine months of its existence it was able to hold or regain 900,000 tons of business, stamps the wisdom of the undertaking.

Modern merchandising demands that the buyer shall receive the greatest possible value for his money. In coal that means selling him the size and grade best adapted to his plant and operating conditions. That, of course, presupposes an accurate knowledge of these conditions. But knowledge alone is not enough. To this the seller must add the engineering skill which can interpret the facts and the merchandising courage to apply them for the buyer's benefit. Sometimes that means recommending a cheaper coal, carrying a smaller profit to the seller.

Simple and elemental as these principles are, there has been a reluctance in some quarters to recognize them. There have been coal-company executives and subordinates who have clung to the theory of *laissez-faire* as the only workable rule. Fortunately the number who still insist that whatever was is right is diminishing and the number who, like Mr. Hare and his associates, are ready to frankly confess that outmoded ideas must yield to modern methods, is increasing. This change is a hopeful sign in a troubled industry.

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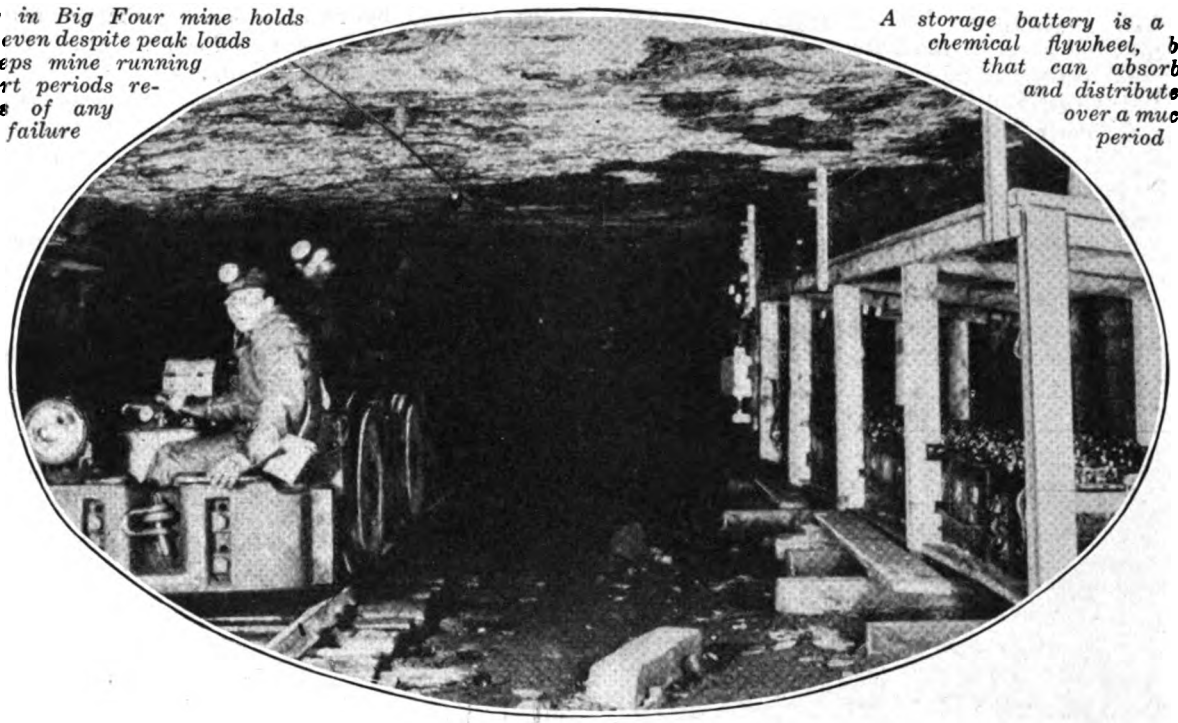
Battery in Big Four mine holds voltage even despite peak loads and keeps mine running for short periods regardless of any power failure

A storage battery is a sort of chemical flywheel, but one that can absorb, store and distribute energy over a much longer period of time



Storage Battery Lowers Motor-Generator Peaks

Draws Current When Demand Is Low, Returning It When Peak Is Reached—Charging Method Almost Ideal—Power Cost per Ton Lowered—Battery Will Perform Light Duty When Substation Is Idle

By J. H. Edwards
Associate Editor, *Coal Age*, Huntington, W. Va.

MOMENTARY PEAKS rather than average loads usually limit the tonnage-producing capacity of direct-current generating equipment. It is not at all uncommon to find substations which are subjected to peaks 200 to 300 per cent above the nominal capacity and yet have an average day load less than one-half the rated capacity.

This condition has caused many engineers to dream of installing a battery to float across the line, taking energy from the substation when the mine load is below the generating capacity and discharging to the line during times of high demand, thus assisting the substation to carry the load. The ability of a battery to deliver energy at a tremendously high rate appeals to the imagination as a method of "chopping off" the high spots of the substation load curve.

In a few instances batteries have been utilized in this way, but for the most part, such installations were of a temporary nature using comparatively small batteries. Though the idea makes a strong appeal from one standpoint, it has never gained headway, because of two outstanding factors. First, there is a loss of approximately 20 per cent, or more, of the energy supplied to the battery, and second, every cycle of charge and discharge reduces the remaining battery life, and therefore, in a definite degree, destroys its value.

Despite these inherent disadvantages a large battery has been in regular use since last October, at Big Four, McDowell County, W. Va. This is arranged for taking the peaks imposed by the direct-current mine load. This mine is operated by the By-Products Pocahontas Co., a subsidiary of the Pond Creek Pocahontas Co., which latter firm has one of the few wireless or battery-operated mines of the country.

Escapes New Demand Charge

The conditions which prompted the installation of a "line-floating" battery at Big Four were: (1) The substation was overloaded, that is, it would not handle the peaks. It could, however, sustain a much higher average day load. (2) It was desirable to delay the installation of a new substation as long as possible in order to determine more definitely what size of unit to install and what would be the best location. (3) The mine served is of a limited size and production. (4) A new 110-cell cutting-machine battery was available from an associated mine and could be utilized there later, if desired. (5) It was estimated that if an additional substation unit was to be installed it should be of 200-kw. capacity. This would automatically add over $3,100 per year to the demand charge of the power company. The rate in this territory is $1.92 (less 10 per cent for cash) per month per half of the connected horsepower.

Other conditions, not influencing the decision to install a battery but having a bearing on the results obtained, were as follows:

(1) The opening is a slope. On account of the hoisting and pumping loads this mine requires inherently more power per ton of coal produced than does the

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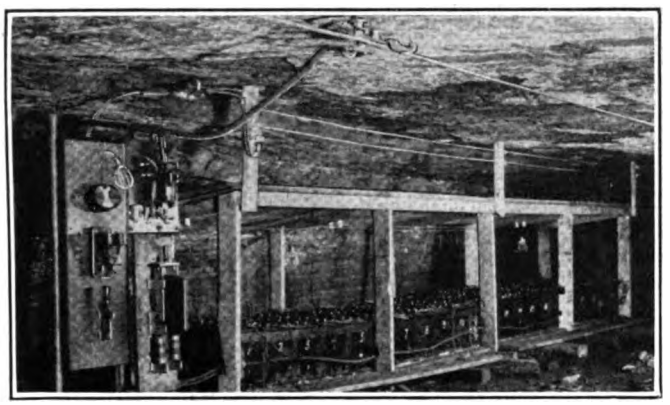
average mine in southern West Virginia. (2) The substation, which contains one 100-kw. induction motor-generator set, is located above ground. (3) All coal is undercut, the cutting being done at night with electric machines. Gathering is performed with cable-reel locomotives and haulage with 10-ton trolley locomotives. (4) The larger pumps are operated on alternating current, but several small gatherers are connected to the direct-current circuit.

The accumulator used is a 31-plate lead battery, having a capacity of approximately 91 kw.-hr. It is installed in a wide place on the main haulway and is connected to the 4/0 trolley (the main feeder from the substation) at a point 1,750 ft. from the motor-generator. W. F. Hossfield, chief electrician of the company, explains as follows his reason for setting this distance in seeking the proper location of the battery:



Battery Acts as Flywheel to Reduce Peaks

The 110-cell 31-plate battery is installed in a wide place on the main haulageway about 1,750 ft. from the substation. It is connected between the trolley line and the rail. Due to its closer proximity to the load than the substation, it relieves the motor-generator of the high peak demands and automatically recharges whenever the mine load drops below the full rated load of the substation.

"The full-load rating of the generator is 365 amp., so it was decided to allow it to carry 400 amp. continuously. The open-circuit voltage of a 110-cell lead battery is 220. This subtracted from 275, the full-load generator voltage, leaves 55 volts as the approximate drop desired between the generator and battery. The length of 4/0 copper circuit which gives this drop at 400 amp. is 1,450 ft. But as the battery voltage decreases as the rate of discharge increases, it evidently was necessary to have a drop somewhat greater than 55 volts. Twenty per cent was estimated as the increase necessary, so this added to the 1,450 ft. gave the distance as 1,750 ft.

BREAKER OPENS IN CASE OF NO VOLTAGE

The accompanying diagram shows the wiring arrangement. To the substation panel was added a voltage-failure relay *C* which causes the generator reclosing circuit breaker *A* to open in case of no voltage on the motor leads. This prevents motoring of the substation from the battery.

On the battery panel is mounted a relay *E* which prevents automatic reclosing of the breaker *B* in case of no voltage on the motor leads. The object of this is to prevent the draining of the battery at a high rate if the substation stops during the period of heavy load during the day.

As now arranged, the battery will continue to feed the mine if the motor-generator stops, but in case battery breaker *B* is opened by an overload it will have to be reclosed by hand unless in the meantime the motor-generator has been started, in which case this breaker will close automatically.

If the motor-generator stops, the relay *D* in the substation causes a bell to ring in the hoist house, 2,500 ft. distant. This provision is necessary because it might be some time before the men in the mine became aware that the motor-generator had stopped, and consequently the battery would lose an excessive quantity of energy before they could phone to the hoistman to have the substation started.

The only new equipment purchased for the control was the reclosing circuit breaker in the battery circuit. The relays, *C*, *D*, and *E* were made from old contactors, and the battery panel was assembled from old parts. The range of the volt-ammeter on this panel was changed and the current scale recalibrated with a zero center so as to indicate the rate of charge and discharge.

VOLTAGE DROPS A LITTLE AS LOAD INCREASES

On the motor-generator, several strips of German silver were added to the series-field shunt to reduce the tendency toward compounding. The voltage drops somewhat as the load increases. If the potential is adjusted to 275 volts at no load, it drops to approximately 265 volts at 400 amp., which is about 10 per cent overload.

As can be seen from one of the illustrations, the battery was installed in an inexpensive manner. The twenty-two trays of five cells each were placed side by side on a platform 36 in. wide by 24 ft. long. A wooden canopy cover was placed over this platform to protect the battery from small slate falls. The total installation cost was roughly $4,300.

This may seem like a large sum to put into a piece of equipment, the life of which is definitely determined by the quantity of work performed. The results obtained, however, have more than justified the installation

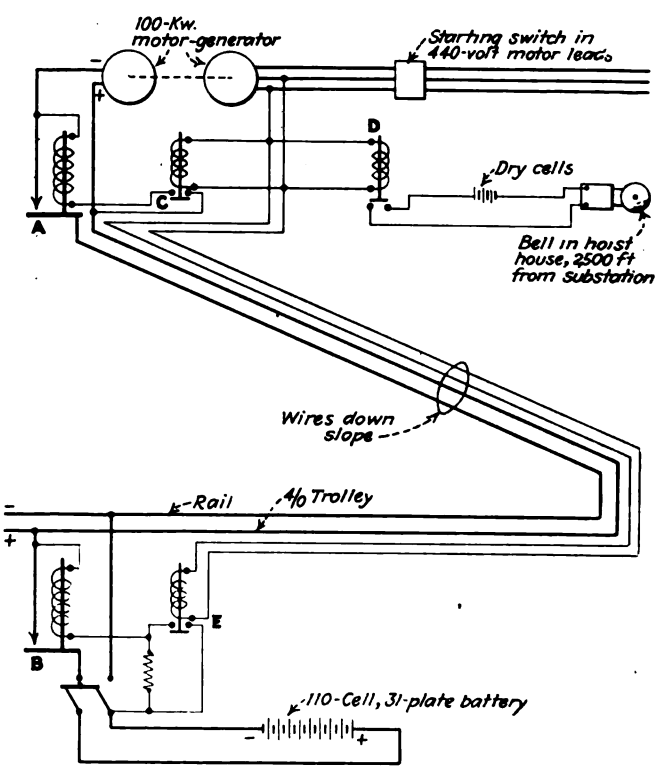


Diagram of Battery and Substation Connections

The only additional lines installed were those of the control circuit of the relay *E*. The battery is 1,750 ft. from the substation by way of the 4/0 feeder circuit. This provides sufficient voltage drop so that the battery will take the peak loads.

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to the management of the mine. It is not known what will be the life of the battery in this service, but should it last only 17 months from the date of installation it will have paid for itself in the saving of the $3,100 per year extra demand charge which was in prospect.

Garner Fletcher, manager of the company, states that the 5 months of operation with this battery has revealed many advantages. There are few interruptions to the power supply on the direct-current mine circuit. The average voltage is greatly improved with the same quantity of copper in use, and this is reflected in a higher tonnage produced with the same equipment and at a relatively lower cost for maintenance.

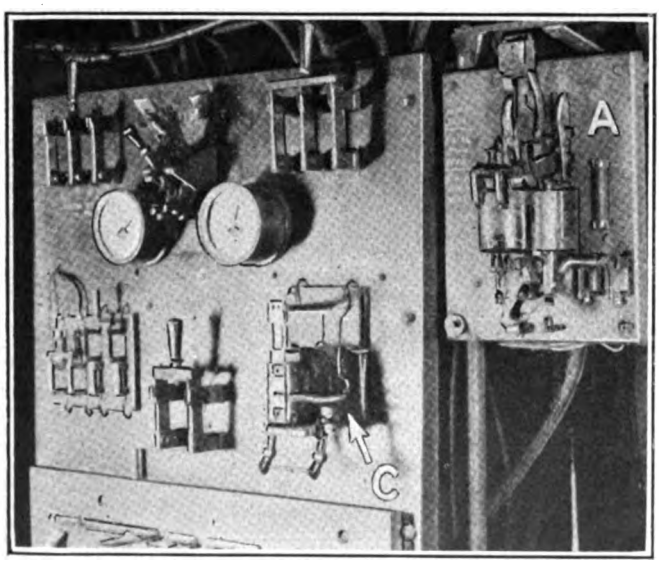
Power Failed, So Cut Coal with Battery

On two occasions prolonged failures of purchased power both occurring at night failed to prevent the cutting of all of the places for the next day's run. In one of these instances, however, before the cutting was finished the battery was discharged to a point far below that recommended as good practice.

Power and Production Data Before and After Installation of Storage Battery

1924	Kw.-Hr.	Production Tons	Kw.-Hr. Per Ton
October	98,760	13,753	7.2
November	96,850	12,298	7.9
December	105,350	12,410	8.5
1925			
January	104,964	12,288	8.5
February	109,230	12,828	8.5
July	107,150	14,929	7.2
August	118,930	16,619	7.1
September	113,710	15,923	7.1
October	112,210	17,859	6.3
(Battery put into use Nov. 1, 1925)			
November	123,340	18,212	6.8
December	127,860	18,976	6.7
1926			
January	135,230	20,968	6.5
February	127,160	18,700	6.8

The fact that a sizable proportion of all energy furnished to the battery is lost in heat, or by evaporation of the electrolyte, would indicate that perhaps the mine might require more power per ton of production after the battery was installed. The accompanying table indicates that this has not been the case at Big Four. The months of battery operation show a noticeable reduction in kilowatt-hour consumption per ton.

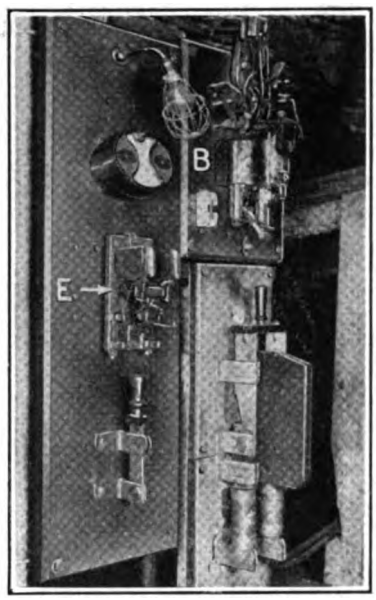


Motor-Generator Switchboard in the Substation

The only change made to the switchboard was to add the relay *C* in the right center which was built from an old contactor. In case of failure of the alternating current or in case the motor-generator starting switch is opened, this relay opens the reclosing circuit breaker on the little switchboard at the right, thus preventing the "motoring" of the power unit from the battery.

Battery Control

If the circuit breaker, *B*, has opened by reason of an overload, the relay *E*, will prevent it from closing if at the same time the substation stops. In such a case if the mine is to be operated from the battery, the breaker must be closed by hand.



It should be stated here that whenever a higher production is obtained from any given equipment, a decrease in power per ton can be expected. For this reason it is difficult to say just how much effect the battery has had in the reduction shown, especially as the months of battery operation are in the season of heavy pumping and lighting load, which condition tends to counteract any showing favorable to the accumulator.

The ammeter charts taken at the mine show the division of load between the substation and the battery. They show considerable similarity from day to day. Thus during an afternoon and evening, at about 4:15 p.m. when the day mine load falls off the battery begins to take a charging current sometimes amounting to as much as 180 amp., but by 6 p.m. this has decreased to about 60 amp.

The night load consisting as it does of pumps, mining machines and a few locomotives indicates that the battery is surprisingly active. It would appear that a more ideal arrangement would be to so adjust the installation at night as to make the substation take a larger part of the peaks, thereby somewhat relieving the battery. However, inasmuch as the loads are well proportioned during the day, it is presumed that to secure a different distribution at night would require the addition of expensive automatic apparatus or frequent hand adjustment.

Shut Down Sunday and Use Battery

Somewhat of a variation to the normal is introduced by the advent of Sunday which naturally is a day of little or no activity in the mine. By 6 a.m. the decreasing mine load allows the battery to charge to a point such that the voltage rises to approximately that of the substation, causing the battery to float on the line taking little current.

From 7 a.m. until about 9 a.m. the gathering-pump and mine-lighting load of 45 amp. is supplied by the motor generator. The presence of the battery makes it possible to shut the substation down on Sunday. This is done at about 9:20 a.m., after which time the small mine load is supplied by the battery. Being able to shut the substation down during periods of light load

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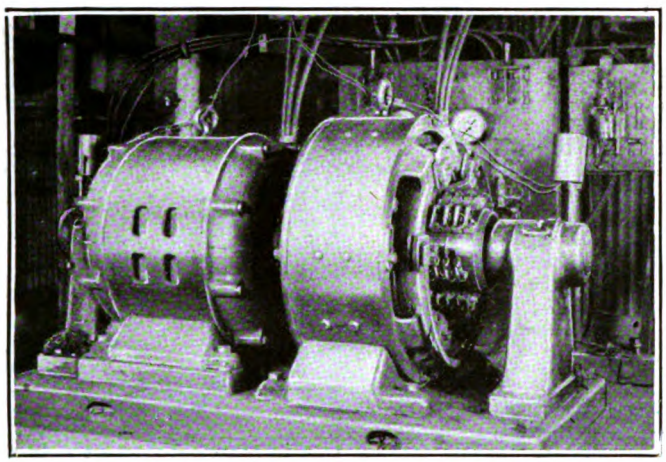


This Unit Supplies All the Direct-Current

The 100-kw. generator is driven by a 440-volt squirrel-cage induction motor. When the mine was producing 17,000 tons per month, overloads caused the circuit breaker to open frequently. After the battery was connected to the line the breaker seldom came out even though the equipment in the meantime had been speeded up to a production of 21,000 tons.

is an advantage from the standpoint of substation maintenance as well as from that of power consumption. Battery deterioration and loss is less than is incurred in operating the substation at extremely light loads.

Normally the substation is started at about 5:30 p.m. From this point onward the battery-charging current tapers off to zero. By about 8 p.m. both the battery and generator curves indicate the existence of a small fluctuating load in the mine.

Because of the resistance of the 4/0 circuit between the generator and battery, charging is accomplished practically by the modified constant-potential method, often recommended as being ideal. This condition coupled with the fact that the battery is located where it will require less attention and is more accessible than if it were installed in a locomotive or mining-machine power truck, point to the possibility of greater life.

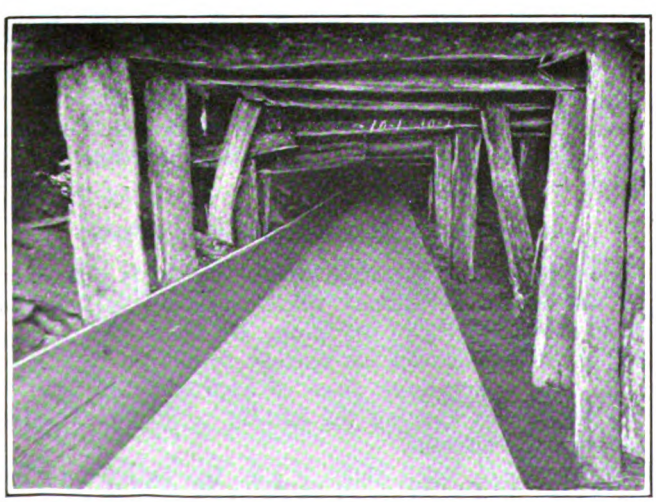
Still another condition indicating greater longevity is that the battery is stationary and therefore free from jolting and vibration. Batteries of this size have lasted 20 to 24 months in every-day service on mining-machine power trucks where the rated capacity, or more, is put in and taken out every day.

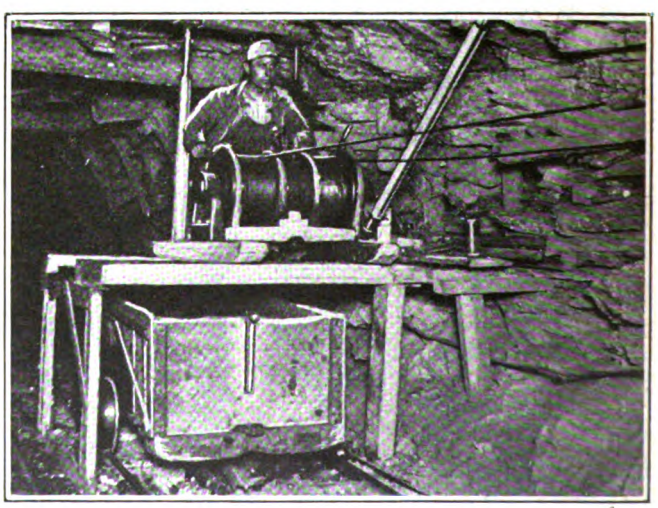
Although the battery at the Big Four mine was not installed as a permanent substitute for an additional substation, its performance to date indicates that its use will be continued for an indefinite time. It is seldom that a new item of mine equipment has "taken" so well as has this battery. Machinemen, motormen, the mine foreman, and in fact all concerned are loud in their praise of the better voltage and fewer interruptions experienced since its installation.

Gallup Coal District Half Century Old

THE COAL DEPOSITS and other mineral resources of the Gallup-Zuni Basin, in New Mexico, are the subject of a geologic report just issued by the Department of the Interior as Bulletin 767 of the Geological Survey, by J. D. Sears. This basin, which lies in McKinley and Valencia counties, has great economic value as well as geologic interest. Its commercial importance is at present centered in the Gallup coal district, the natural wealth of the rest of the basin having been almost untouched. The Gallup district, in which active mining has been carried on for nearly half a century, is now the second largest producing district in the State, and owing to the adaptability of the coal to certain uses, the convenient shipping facilities, and the nearness of the coal beds to the mining camps of Arizona it is one of the most important coal mining districts in the Southwest. The Gallup-Zuni report describes the geology and mineral resources of the whole basin in a general way, and the coal beds of the Gallup district and the Zuni Indian Reservation in greater detail.

GOLDEN AGE FOR COCKROACHES.—Sixty species of insects have been found in British coal measures, of which nearly twenty are cockroaches similar to those of today. Dr. Herbert Bolton has published a monograph on the fossil insects of the Carboniferous era.





Running the Hutch Conveyor in the Thin Coal of Spring Valley, Ill.

The picture at the left was taken along the conveyor—a trip of flat steel sheets on wheels, the sheets having 9¾-in. back plates, and coupled so closely as to constitute a continuous jointed surface—which was developed by the Spring Valley Coal Co. and used for a period with mechanical success, but without the co-operation of labor. The conveyor, on 19-in. track, was operated back and forth, shuttle-like, along a 400-ft. longwall face, discharging its load into cars on a depressed track at the midpoint. At the right is shown the hoist, located above the empty track of a double haulage line leading up to a turntable at the loading point. This installation was described in the Feb. 11, 1926, issue of *Coal Age*, Vol. 29, pages 225-229.

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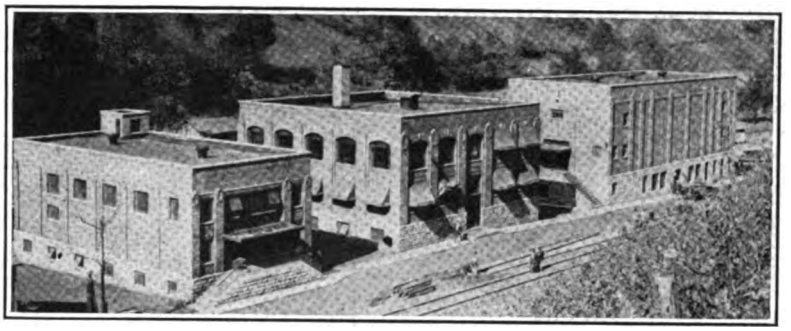
Ford Provides for Entertainment Of Employees



WHEN THE management of the Fordson Coal Co. decided to erect a new recreation building at its Stone plant in Kentucky, the following points were considered as bearing upon the design finally adopted and executed: Stone is the location of the general offices of the company, and the community included some forty officials' and office workers' families which might be expected to make use of the facilities of the recreation center to some extent, if it served the purpose for which it was planned. It was intended to be a meeting place for all the employees of the company where they could have amusement and relaxation and feel at home, whether they came in their Sunday best or in overalls.

At the Pond Creek mines of the company about 1,300 men were employed, the houses extending from Stone some four miles up the creek. The building had to accommodate everyone when necessary, though two smaller buildings of similar nature located on Pond Creek above Stone, were being used at the time.

In addition to the employees of the Fordson Coal Co. those of two other mines within half a mile employing about 425 men had to be considered, for the building was to be constructed not only for Fordson employees but also for the public in general.

The location available was alongside of, and in line with, recently constructed office and commissary buildings; hence the general type of structure and the style of architecture had to be in harmony. The two older buildings are fireproof—of concrete, brick and steel with the lower story of stone masonry. The demand, therefore, was for a theater of fireproof construction seating some 500 people with the usual auxiliary rooms on the lower floor and so designed that it could, and would, be kept absolutely clean.

Place for Correspondence

In addition to the theater, it was decided to include, on the lower floor, space for a post office, a two-chair barber shop and a writing room with desks where some place would be available at which stationery could be obtained and letters written. Such facilities for correspondence are usually not available in mine camp boarding houses. Furthermore, a lobby was to be provided with lounging chairs and a soda fountain, serving tables for ladies, places for selling magazines, candies and tobacco and a pool room, besides toilets, storage rooms and a room to hold the ventilating apparatus.

Much juggling was done with the lower floor to get a satisfactory arrangement of the rooms listed, and finally the plan shown was adopted. With this arrangement one man behind the fountain is able to handle everything in slack hours and has at all times everything under easy control.

The poolroom which has ample room for four tables is open to the lobby, yet it has the appearance of being separate. Being thus under full view the conduct of the players and spectators can be kept under proper control should any tendency toward rowdyism be manifested. The smoke also is kept out of the lobby by the location of the poolroom and by installing a ventilator so that the air will be drawn away instead of toward the lobby. "Old Hickory" furniture was installed in both lobby and poolroom, for all purposes. The serving tables of the soda fountain were, however, of another design. The writing room was furnished with three double desks, such as hotels use.

Dry and Clean Electric Refrigeration

The soda fountain, all white, was provided with electric refrigeration, thus the disorder consequent on the packing of cream was avoided. At the fountain everything is served which can be bought at similar places elsewhere. The floors of this lobby are made of tile in a combination design of brown, buff and ivory. The wainscot on all walls is of 4-in. ivory tile for a height of 56 in. above the floor. The toilet rooms have tile floors and glazed-tile wainscot. All radiators are placed near the ceiling so that the entire floor can be washed with a hose if necessary; thus there is no place to hold dirt.

When the design of the theater was discussed some proposed making the floor level with removable seats so that the room could be used as a gymnasium, but this idea was abandoned in favor of an elevated floor with easy vision from all seats, which were spaced for comfort rather than for maximum seating capacity. A stage was provided, of sufficient size to accommodate small companies, such as lyceum entertainers, lecturers, and such home-talent performances or church meetings as might need the theater from time to time. Two toilets and two dressing rooms were provided, one on each side above the stage. On this floor of the main auditorium are three hundred and eighty-two seats, as well as a manager's office and ticket seller's booth and a stairway to the balcony.

The balcony, having sixty-seven seats, is used for colored people, with a separate entrance at the side, but with provision for buying tickets from the one ticket seller. The projection booth has two motion-picture machines. The entrance to the theater is from

The headpiece shows, from left to right, the commissary, general offices and recreation building of the Fordson Coal Co., at Stone, Ky. Here is located the main operating office of the four divisions of the company.

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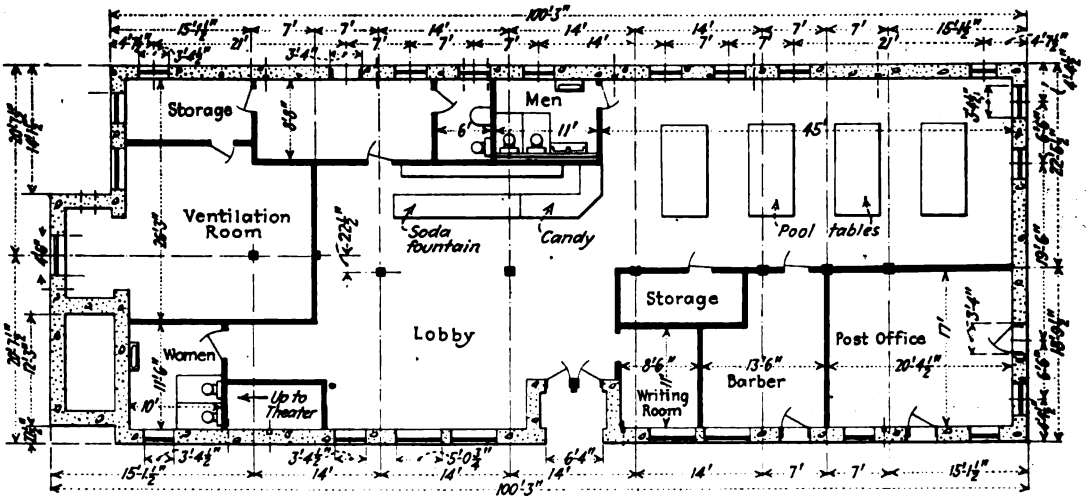
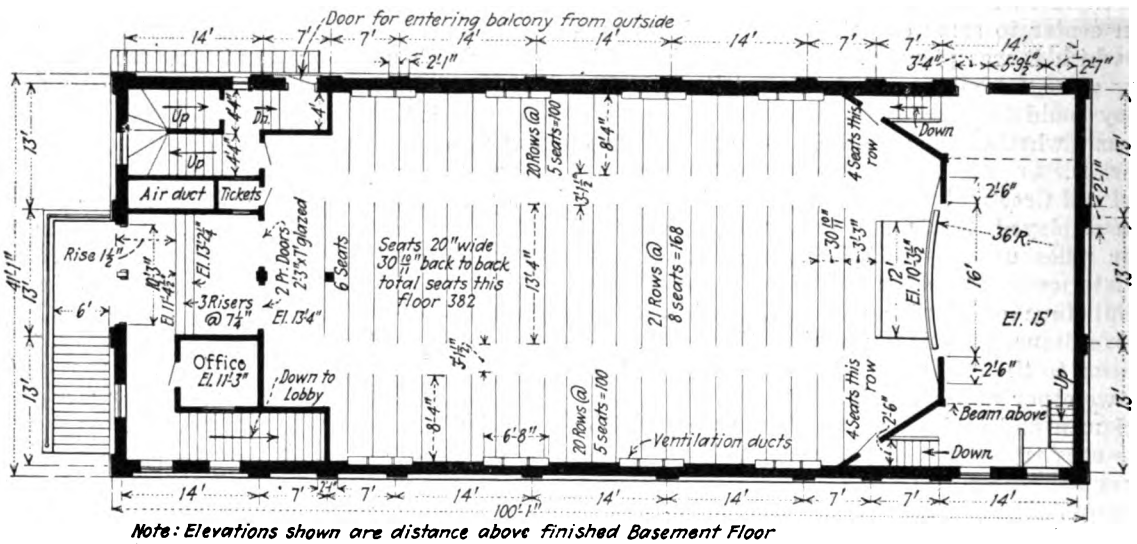
Plans of the Fordson Coal Co.'s Recreation Building

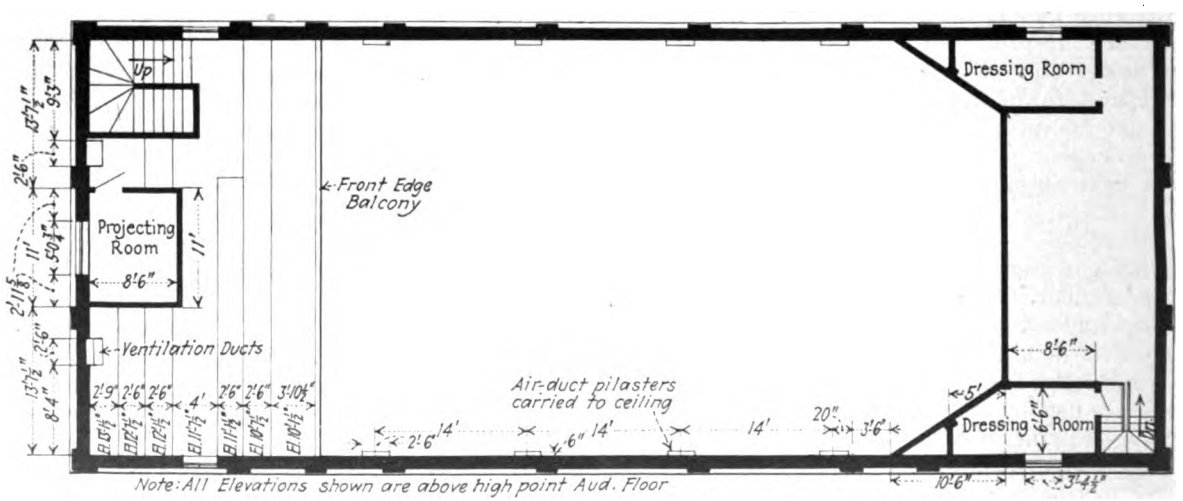


Basement Floor



Note: Elevations shown are distance above finished Basement Floor

First Floor



Note: All Elevations shown are above high point Aud. Floor

Upper Part Auditorium

The theater, which at one time was intended to serve as a dance hall, was finally given a pitch so as to make it better suited for use as an auditorium. In the ventilation room are installed two 5,000-cu.ft. multiblade fans and radiators for indirect heating of the theater. On the upper floor above the storage wings are located two dressing rooms and toilets.

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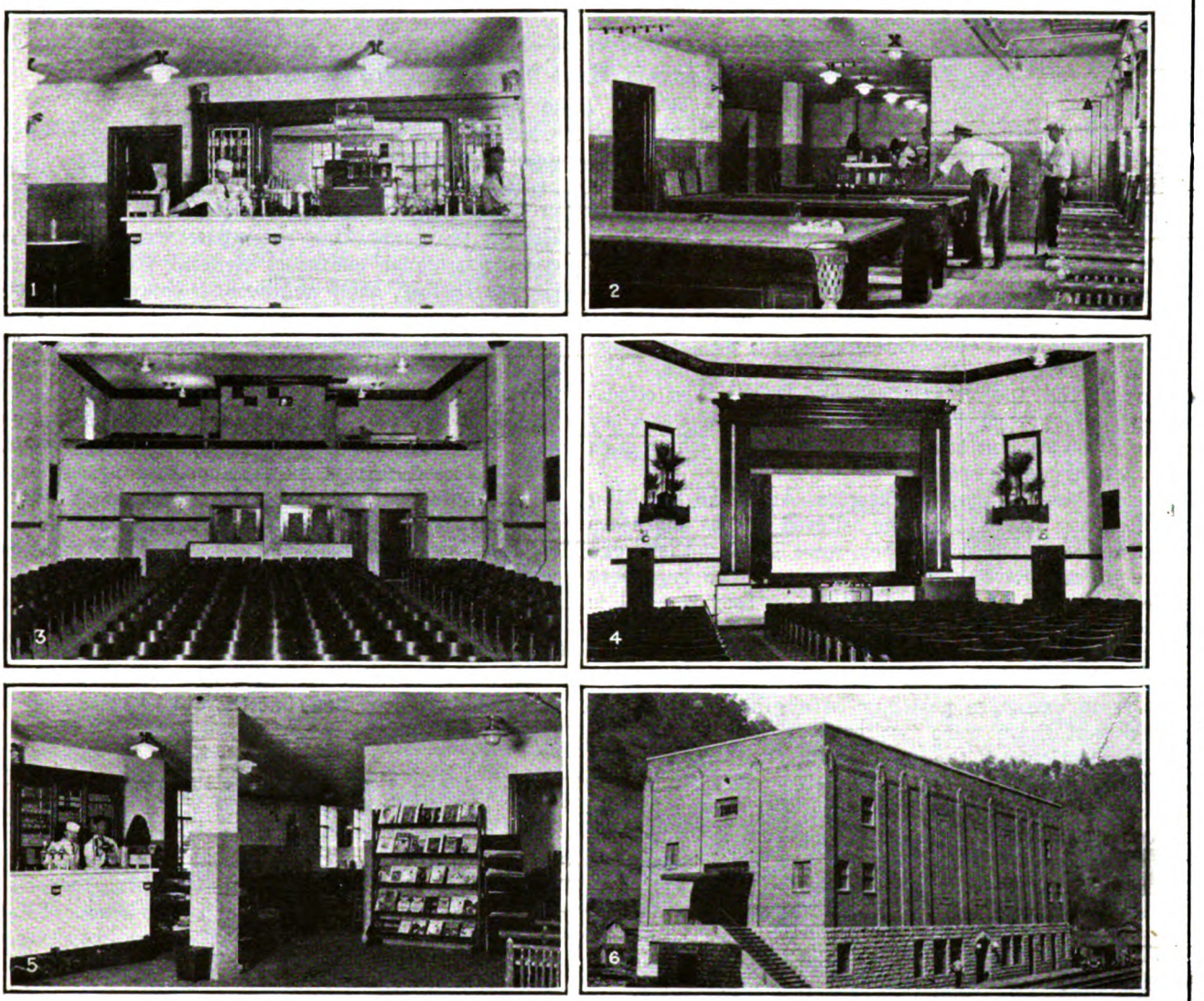

Community Center Erected by the Fordson Coal Co. for Its Mining Force

(1) Electrically refrigerated soda fountain, all white. By eliminating the necessity for packing ice cream with salt and ice the slop and disorder is avoided that is so general in such places. All the newest sodas, drinks and combinations served at this fountain. (2) Pool hall with soda fountain and lobby in background. Note radiator at ceiling and tile wainscot 56 in. high. (3) Theater from stage. On main floor are 382 seats, spaced for comfort and in the balcony 67 seats for the colored population. Heating and ventilating provide for change of air every 10 min. (4) Theater from back. Back of motion-picture screen is a stage 15 ft. deep to accommodate lecturers and others. On the pilaster on right is one of ten openings to admit warm air when heat is necessary. Stale air is exhausted through 18 openings 6 in. above floor. (5) One side of lobby with pool room visible in background. Door at extreme right leads to writing room. Pool room is visible but seems separated from lobby. One man, in slack times, can tend the whole building. (6) Rear view of recreation building. The fire escape at the left serves also as a stage entrance and the door on right, which is on a level with the village street, is used for the handling of supplies at the soda fountain.

the end of the building or from the lobby by an inside stairway.

The auditorium is provided with sufficient direct radiation which heats the room when not being occupied. This is placed in locations away from the patrons and where dirt will not be collected. The remainder of the heat and ventilation is supplied by two multivane fans, each having a capacity of 5,000 cu.ft. per minute, one supplying fresh air and the other exhausting air which has become stale. The fresh air, being arranged to pass over steam coils and thus supply the additional heat needed, enters the auditorium through ten openings 8 ft. from the floor, each 24x30 in. The stale air is exhausted through eighteen openings 6 in. from the floor, each 14x22 in. The ducts are carried between the floor of the auditorium and the ceiling of the first story to the fans on the lower floor, and thence to the exterior of the building. The floors in the auditorium are of concrete, with rubber runners on the aisles. The stage floor is of wood resting on concrete. Lights are controlled from either the projection booth or the stage. Music is furnished by an ordinary player piano.

One manager and two men at the fountain operate the building. They devote their entire time to this work. In addition, a ticket seller, musician, ticket taker and operator are employed who are kept on duty only when shows are in progress.

The entire building was designed in the engineering department of the company and the building was erected by employees of the company under the supervision of the company's engineers except that contracts were let for the tile work, heating and ventilation. It was opened Aug. 1. The attendance at the building shows that the community is much pleased with the arrangements that have been made by the Fordson Coal Co. for its entertainment, comfort and convenience.

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Why Don't Engineers Land Executive Positions?

Topic of Founder Societies—Not All Students Are Virtuosos—Engineers Have Their Full Proportion of Jobs—Some Won't Take Them When Offered

"TELLING THE STUDENT of engineering that executive ability is inborn and cannot be created out of nothing will no more discourage him than it does to tell a student of music that unless he has talent for music he cannot become a virtuoso or an operatic star," according to E. M. Herr, president of the Westinghouse Electric & Manufacturing Co. at a meeting of the Founders Societies in the Engineers' Societies' Building, New York City, April 14. Mr. Herr said that too materialistic and technical an education was dangerous, but colleges cannot build character without the student has the groundwork on which such a structure can be erected.

H. A. Guess, managing director, American Smelting and Refining Co., said that he believed that as engineers were not very numerous they were getting their due share of executive positions. Perhaps the engineers numerically are not as predominant as they would like to be. Still they did well enough as percentages ran. He assumed that there are three doctors to one engineer in this country and asked whether there were as many doctors in executive positions as engineers. He estimated that there were two lawyers to one engineer, yet he questioned if the number of lawyers in executive offices exceeded the number of engineers. He said that many business men who arrived at executive positions in companies were often college graduates themselves. On the whole he thought the engineer had more than his share of executive authority.

CHARACTER IS INBORN

Dr. F. B. Jewett, vice-president, of the American Telephone & Telegraph Co., said that character comes into the world with the man himself. It is part of his heritage. After all the fuss about the lack of recognition from which engineers are suffering, it must be admitted that some men don't want to leave technical work, but the number of engineers in executive positions is greater than the number of those from many of the other walks of life. Said Mr. Jewett, if a chief executive wants to train executives he must steer his technical assistants out of purely technical work. He believed that college too often laid too little stress on fundamentals and put too much emphasis on details. As many of the answers to business difficulties lay in the physics of the problems and not in business principles, the head of a large engineering corporation should be an engineer rather than a business man. A man had no chance if he had no knowledge of what might be at any time a matter of vital and major importance in solving his problems.

John C. Parker, vice-president and chief engineer, Brooklyn Edison Co., said that junior engineers were disposed to question whether engineers became executives because when the transformation took place it was so complete that the rank and file questioned whether the man so translated really ever had been an engineer; he no longer looked like one.

If engineers had no recognition, the fault was their own. They could, at least as a class, blame no one but themselves. Yet he thought engineers should make good executives, for an engineer could solve, by the processes he applied to technical questions, the economic problems with which he was confronted as an executive. Among those speaking extempore were, S. H. Libby, consulting hoist engineer, General Electric Co., and George L. Ray, chief engineer, Delaware, Lackawanna & Western R.R. The latter said that railroad practice varied greatly, some railroads advancing their engineers into all executive positions and others being disposed to leave them out of their calculations almost together. The operating men, who get in contact with the people have the best chance for advancement. He had in his employ a good railroad man, "who could lay out a switch so an engine could go over it without a derailment." He decided that this man should get away from the engineering department and he gave him a supervising job over the road foremen. The young man positively feared the job, and one year after he got it pleaded to be let off. But Ray made him stick it out, and he now is on his way up. Many technical men dread a transfer from the drafting room and the job of laying out tracks to a job of supervision, but therein lies the road to an executive position.

Even Coal Ash Has Its Industrial Uses

Dr. Lessing, in the Cantor lectures of the Royal Society of Arts, for 1925, "discoursed with his 'wonted fire' on his favorite topic" [the industrial wastes due to the presence of ash in coal], says *Fuel*. "He calculated that every year the [British] railway system is burdened with 25,000,000 tons of this useless material. It is indeed sad to think of so much waste labor but there are a few redeeming features about the situation even today. In the Portland cement industry, the coal ash increases the weight if not the quality of the product. Boiler clinker is useful for such purposes as making paths and on occasion as an ingredient of concrete. In the blast furnace any iron oxide or lime in the ash are turned to account and the slag is often converted into slag wool, which is useful as a heat-insulating material. Increasing quantities of quick-setting slag cement are also being made from it. Who knows what the future may bring forth? Perhaps the day will come when coal will be mined for the sake of its ash alone."



Main Office of Mines at Kemerova, Siberia

This property is owned by the Autonomous Industrial Colony, Kuzbas, a description of whose operations appeared in *Coal Age*, Nov. 26, 1925, and Jan. 28, 1926.

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Consultation

How Many Small Pipes Will Reservoir Keep Full?

A reservoir in the mine with which I am connected has a head of about 6 ft. with a 12-in. pipe taking the water off as fast as it enters. I want to replace this pipe with enough 2-in. pipes to carry this water for sprinkling purposes. How many such pipes will it supply? I estimate that it will fill 88 pipes basing my estimate on the fact that this is the square root of the fifth power of the ratio 6 between the pipes specified.

CHARLES J. LEWIS.
Reynoldsville, Pa.

Your method of calculating is quite correct providing your pipes are of the size stated. It must be remembered, however, that though a standard 12-in. pipe is exactly of 12-in. diameter, a standard 2-in. pipe has an actual inside diameter of 2.067 in.

$$\text{Ratio of capacities} = \sqrt[5]{\frac{12^5}{2.067^5}} = 81.2$$

Thus 81.2 standard 2-in. pipes would carry as much water under the same conditions as a 12-in. pipe when made of the same material. It is needless to say that the sprinkler discharge would greatly modify the resistance. Of course, if that resistance is sufficient there is no limit to the pipes that could be filled.

How Close May Head Sheave Be to Drum of Hoist?

Please advise the method of obtaining the distance a hoisting engine must be placed away from a sheave wheel in order to take care of the fleet of the rope, (1) when the top of the sheave wheel and the top of the drum are on the same level and (2) when they are on different levels?

The distance of the hoist drum from the sheave wheel should be the same whether the rope is horizontal or inclined. Experience has shown that the total angle between the two positions of the rope when leading toward the two extreme ends of the hoist drum should not exceed 3 deg. and this angle should be equally divided upon either side of the line between the center of the drum and the sheave wheel.

If the length of side travel on the drum is represented by l and the distance from the sheave center to the drum center by d and the fleet angle is 3 deg., then

$$\tan 1\tfrac{1}{2}^\circ = \tfrac{1}{2}\, l \div d$$
$$\text{or } 2d \tan 1\tfrac{1}{2}^\circ = l.$$

as $\tan 1^\circ 30' = 0.0262$; $d = 76.33$ ft., if the fleet of the rope is 4 ft.

Hydric Sulphide from Blasting Coal

What gases are formed by an explosion of powder and permissible explosive when fired in a borehole?

G. St. J. Perrott, assistant chief explosives chemist of the U. S. Bureau of Mines, answers this question as follows:

"The following is a typical analysis of the gases formed by the explosion of F granulation of black powder in the Bichel pressure gage:

		Per cent
Carbon dioxide	32.3	17.2
Carbon monoxide		8.6
Hydrogen		3.1
Nitrogen		30.4
Hydric sulphide		7.2

"The products of explosion of a permissible explosive may contain a trace of hydric sulphide, which comes from the sulphur in the electric detonators, as sulphur is not used in permissible explosives. The following analyses of samples from the Bichel gage show the variation in the gaseous products for different types of permissible explosives:

	Type A Per cent	Type B Per cent
Carbon dioxide	32.3	17.2
Carbon monoxide	3.5	36.3
Hydrogen	4.4	31.8
Methane	0.6	0.7
Nitrogen	59.2	14.0

"There are not sufficient data available to give the exact relation between gases formed in the greater confinement in mining operations and that obtained in the pressure gage.

"There is so little iron sulphide present in coal that the possibility of an appreciable amount of hydrogen sulphide being formed with the small charges of explosives that are used, is very remote.

"We have not found oxides of nitrogen in any of our tests. Some observers have reported noting the odor of these oxides after large blasts, but there are no data available showing a measurable quantity present after blasting operations in coal mines."

It may be added that if the explosion takes place near a "sulphur ball" or a mass of pyrite or marcasite a small quantity of hydrogen sulphide conceivably might be formed, though apparently no tests which might bear on this supposition, other than some with gelatin dynamite and in the metal mines of Arizona, have been made by the U. S. Bureau of Mines.

Coke Breeze Also Is Bettered By Air Cleaning

Do you know of any instance in which coke breeze is being cleaned by air or other dry method of separation?

Coke breeze has been treated by the regular pneumatic process on a coal-cleaning table at a testing plant and also at the Semet-Solvay Company's plant at Detroit, Mich. This commercial installation, we are informed has been in operation two years. It is believed to be giving entire satisfaction.

In treating, at the testing plant, coke breeze as received without any sizing and with the middlings mixed with the product, the ash was reduced from 17.37 to 9.34 per cent; that is, 47.2 per cent of the ash was removed. The refuse contained 75.23 per cent of incombustible.

In another instance in which coke breeze was received without sizing, the middlings were not returned and the following result was obtained: The ash was reduced from 17.12 to 9.06 per cent; that is, 47.1 per cent. The middlings contained 17.26 and the refuse 82.62 per cent of ash.

Coke breeze sized between ¼ and ⅜ in., with the middlings returned, had its ash content reduced from 16.87 to 9.24 per cent or 45.2 per cent. The ash in the refuse ran 81.96 per cent. With the material passing through a ⅜-in. mesh, with the middlings returned, the ash was reduced from 21.06 to 9.26 per cent or 56 per cent. The refuse contained 76.76 per cent of ash. These figures were obtained from a manufacturer of air-cleaner equipment, but are believed to accurately set forth the possibilities of air treating this material.

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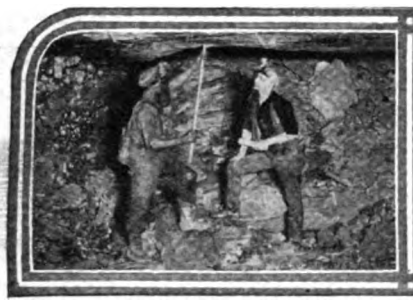
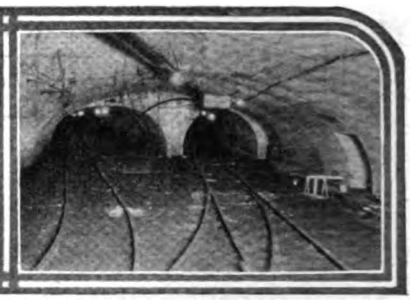


Underground Operation



Roof Control, the Big Problem in Mining; Some Factors in Its Solution

If the Mine Roof Rested on Red-Brick Masonry, If Its Thickness Was Not Less Than 100 Ft. and If the Open Area Was Half That of the Whole Mine Any Building Inspector Would Condemn the Structure

By Edward O'Toole
General Superintendent, U. S. Coal & Coke Co., Gary, W. Va.

To be successful in arranging that the pressure of the mine roof will break the coal loose from the seam of which it forms a part, the roof must be kept constantly under control. Roof control is the most difficult problem in mining and one of the most expensive and dangerous. It may be defined as holding up the roof of the mine during the process of mining and letting it down when its support is no longer necessary.

The problem is difficult of solution because the roof varies in composition and texture. The operation is dangerous, because at times the roof gets beyond control and falls without warning and injures the workmen. The control of roof is expensive because when the roof gets beyond control, it comes down before the mining of the coal is completed, and has to be moved or the covered coal is lost, adding to the expense. An additional expense is the cost of timber or other supports used for the roof control and the labor cost of placing and removing timber and other supports.

The strata overlying coal seams generally weigh about 160 lb. per cubic foot. Therefore, with a cover 100 ft. thick, the load on each square foot of the coal seam is 160x100 lb.; that is 16,000 lb., or 8 tons. This load would be increased in inverse proportion to the percentage of the coal left in the first workings. Thus if one-quarter of the coal is taken, three-quarters is left and this has to support the same weight as before, so the pressure is $\frac{4}{3}$ as great as at first; that is $\frac{1}{3}$ greater than its original value. If one-half of the coal in the bed is left in these preliminary operations this load will be doubled, which will give an average load of 16 tons per square foot, which exceeds the safe load for red brick in the wall of a building.

Safe Load Allowed on Brickwork

(Based on Chicago building ordinance quoted in Hool and Johnson's "Handbook of Building Construction," Vol. 1, page 611.)

Ordinary Construction	Lb. per sq. in	Tons per sq. ft.
Portland-cement mortar	175	12.6
Good lime and cement mortar	125	9.0
Good lime mortar	100	7.2

In operation the weight on the pillars left to support the roof becomes greater as mining progresses. The pressure per square foot on that portion of the coal seam adjacent to the open area will vary in proportion: (1) With the thickness of cover; (2) with the strength of the overlying strata; (3) with the distance between the pillars, for the pressure is carried from pillar to pillar, just as the weight of a bridge is carried on the piers and becomes greater as the length of the span or the distance between the supports becomes longer.

LIKE BRIDGE GIRDERS

The layers of the overlying strata are to the mine roof as the girders are to a bridge. They carry the weight from pillar to pillar over the excavated portion of the mine just as the girders of a bridge carry the weight and load of the bridge over the unsupported space between its abutments.

The strength of the strata overlying coal seams varies greatly in different localities. At places there are layers of massive sandstone 200 ft. thick overlying the coal seam. Where these occur a large area of the coal bed must be extracted before the weight of the stratum and the weight above it will break it down. The space between the mine pillars may have to be extended until it is three times as great as the thickness of the strongest band of rock in the overlying strata before the stratum will break and come down sufficiently to relieve the adjacent pillars from the weight of the roof above the excavated area.

THREE FOR ONE

For example: If the strongest band of rock overlying the coal is 200 ft. thick, the workings in the seam will have to be excavated for a width of about 600 ft. before the rock will break. If the thickness of the cover in such a case is 300 ft., the rupturing load on the coal pillars adjacent and surrounding the excavation would be as follows: 160 (the weight of strata per cubic foot) x300 (the thickness of the cover) x300 (one-half the distance from pillar to pillar) ÷ 2,000 lb. (one ton) = 7,200 tons, less the weight of the more friable portion of the strata lying between the coal seam and the predominating or load-carrying band of the overlying strata. This more friable material will fall to the height of the load-carrying band in the course of excavating in the seam an opening of the dimension stated.

When the girders of a bridge come to the rupturing point, the girder ruptures at, or about, the center, the ends bearing on the abutments rising in the air and drawing towards the center, so as to let the center go down; but in the rupturing of the roof of a coal mine, when the load on the stratum which is carrying the weight to the pillars becomes too great and reaches its rupturing point, the stratum cannot move towards the center of the opening as a bridge girder does, because it is held fast in place at both ends by the overlying strata on the unexcavated portion of the seam. As it must

Part of an address entitled "An Experiment in Combined Cutting, Mining and Loading in Coal Mines" delivered in New York City, March 11, at a meeting of the American Society of Mechanical Engineers, under the direction of the Materials Handling Section, the National Coal Association co-operating.

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fracture when the stress becomes too great for its strength, the moment the load on the center produces a deflection at or near the edge of the pillar, the load-bearing stratum comes down, and the pressure on the pillars adjacent is then reduced to about what it was before operation commenced.

No Vertical Break

Just before the stratum breaks is the critical moment in roof control. Thereafter, the pressure will be approximately that due to the thickness of the overburden. It would be reduced to exactly that pressure were it not for the fact that the strata will not break vertically, but generally at an angle about 15 deg. from the vertical, and overhanging the open area.

It is under this overhang of the pillar that the O'Toole cutting-and-loading machine works, and it is the pressure due to this overhang that brings down the coal, at times fracturing it even before it is undercut. Thus it falls ahead of the coal cutters, and the only work the cutters of the machine have to do is to square up the bottom.

Roof control, more or less, affects all the branches of mining. If the roof can be controlled, all the pillars can be removed in their turn, thus reducing the open workings of the mine to a minimum. When this is done the territory to be ventilated, drained, timbered, etc., will be reduced. All the coal in the seam can be extracted and this complete extraction can be accomplished with slight damage to the surface ,as it will be let down more evenly and with fewer fractures.

Mud-Capped and Open Shots Dangerous in Coal Mines

I agree with Thomas F. Hoye that the method of shooting "coal bottoms" which he describes in his article in the "Underground Operation" department, March 25, entitled "Hazardous Way of Shooting Coal Bottoms," is ill-chosen and dangerous. In the first place there is no excuse for using a dynamite or any explosive other than a permissible in coal mines, because from among the various permissibles available one can be selected which will perform any specific job encountered in coal mines.

The U. S. Bureau of Mines has frequently pointed out the importance of property confining permissible explosives. This can be done only by charging the explosive in a hole and tamping it with clay or other non-combustible stemming. The explosive, even if mudcapped, cannot be properly confined in a notch cut in the bottom.

Shots Unsatisfactory

Much greater safety and efficiency can be attained by drilling holes and placing not more than half a stick in a hole and tamping the remaining portion of the hole with the non-combustible stemming. It is almost impossible, however, to place these holes so as to obtain high efficiency, because the average thickness of bottom is hardly ever greater than 6 in., but even so, at least 90 per cent of the explosive used by the other method will be saved. As a general rule as much of the bottom as possible should be pried loose with pick or bar, and the coal should be shot only in the tight places.

Now, a word as to the gases produced by permissible explosives and dynamites when detonated. The Bureau of Mines places on its list of permissible explosives only those that produce less than 158 liters (5½ cu.ft.) of permanent poisonous gases, as determined by tests in the Bichel pressure gage. Carbon monoxide is the most common poisonous gas produced by permissible explosive but sometimes small quantities of hydrogen sulphide are formed.

On the basis of the volume of poisonous gases, permissible explosives are placed in classes A, B. and C, in which the poisonous gases do not exceed 53, 106, and 158 liters respectively. They are also classified in accordance with their characteristic ingredient. The class of permissible explosive now largely used is of the ammonium-nitrate type, which comes within class A or B.

The quantity of poisonous gases produced by a dynamite would depend upon its class and grade. For example, gelatin dynamites produce small quantities of poisonous gases, whereas the grades of straight dynamite now manufactured rarely exceed 158 liters per 1½ lb. of explosive, the limit set by the Bureau of Mines for permissible explosives.

J. E. TIFFANY,
Explosives Testing Engineer
U. S. Bureau of Mines,
Pittsburgh, Pa.

By Monthly Mapping Check Loss of Coal Pillars

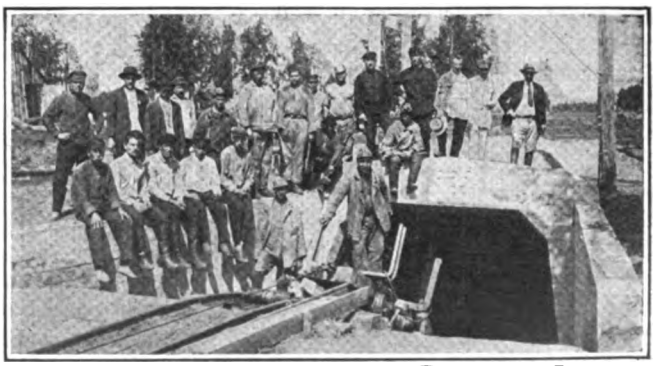
Distinctive crayon colors should be applied to mine maps to indicate progress on pillar extraction from month to month—say, yellow for one month, red for another, and so on. By this means coal pillars and stumps left in or abandoned cannot readily be camouflaged on the map as extracted coal. Not a few underground mine officials desirous of temporarily making a good showing abandon such pillars as can be recovered only at greater-than-average cost.

The failure to show clearly what coal is mined and what left makes it difficult for the company to justify the reported tonnage for royalty purposes where payment is made on the basis of actual coal mined. Where, on the other hand, payment is by the tonnage in the coal bed, the leaving of pillars involves the payment of royalty on coal left in the ground. The management should know just how much is left and why, so that it can enforce more complete extraction if that is desirable.

Moreover, the leaving of pillars causes an undue pressure on the pillar line if the abandoned pillars left are large enough to prevent the roof in the mined area from entire collapse. In consequence when pillars are left the management should have knowledge of that fact. Lost coal is not only a waste of coal and of development but often a source of further loss of coal and sometimes a menace to the section of the mine in which the pillars are abandoned.

Slope, Kemerova, Siberia

This slope is being sunk diagonally across the dip of the coal seam to the second level of the Central Shaft, a distance of 1,600 ft. on a grade of 25 deg.



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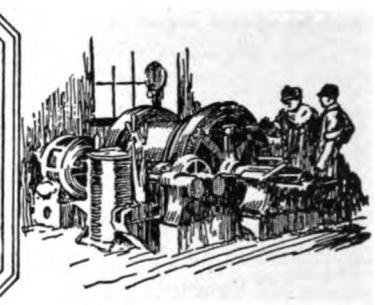
Practical Pointers For Electrical And Mechanical Men



How to Install Shaft Cables Without Unequal Loading

Lowering electric cables down a mine shaft and fastening them in place is always a ticklish operation inasmuch as the cable sheathing should not be strained and consequently each support should take only the weight of cable between it and the next lower one. Where possible, it is advisable to place the cable reel on the cage allowing it to unwind as the cage is raised or lowered, a stop being made at each support while the cable is fastened securely in place.

In many instances, however, the electrical conductor must be installed in some other passage than the cage compartment and must accordingly be lowered from the top. In such a case, as described by the *Iron and Coal Trades Review* it is advisable to lower the electrical conductor by means of a steel rope, the two being lashed together at intervals of about 30 ft. The lashings are usually composed of rope yarns, and care must be taken to see that they bind properly on both cables. If the steel rope is greasy it is advisable not only to clean it but to chalk it as well so that the marline or twine lashing may secure an adequate, non-slipping grip. By this means each lashing supports only that length of the electrical conductor lying between it and the one next lower down.

The electrical cable may be paid out from its reel under suitable tension. The steel cable, on the other hand, may well be wound upon the drum of a hoisting engine or capstan and be unwound therefrom either under the action of the driving engine or on the brake.

Fastening the Cable

When the electrical cable has been lowered to place it may be fastened in its supports successively beginning from the bottom and proceeding upward. If the lashings are properly spaced they should come immediately above or below the points of anchorage. As the cable is made fast to each permanent support the adjacent lashing may be cut loose. It has been found advisable to limit the weight of electrical conductor sustained by any one support to approximately 1,000 lb. By this means excessive weight is not thrown on the cable sheath which accordingly is not strained.

In leading the cable away from the top of the shaft also it has been found advisable to avoid sharp bends as well as sharp projections or corners in its holders. If handled and anchored carefully a cable of this kind will give excellent service and last almost indefinitely. If on the other hand it is handled roughly and installed carelessly it may give no end of trouble.

Sets Transformers in Tank Mounted on Wheels

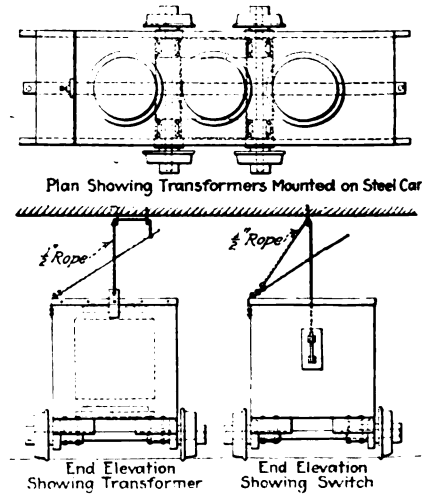
In the accompanying illustration may be seen the portable transformer station installed at Mine No. 2 of the Francisco Mining Co., of Princeton, Indiana. This is a steel box fitted with a hinged cover and employed as a container for a set of three 15-kva. 2,500- to 250-volt, 60-cycle transformers and one 2,500-volt 200-ampere oil switch.

Mounted on a Truck

This box is 9 ft. long, 32 in. wide and 35 in. deep. It is mounted on an ordinary mine car truck. The bottom of the box consists of two 4x6x⅜-in. angle bars 9 ft. long forming the sides, and two 4x6x⅜-in. angle bars 32 in. long for ends. Upon this frame is placed a ⅜-in. boiler plate 32 in. wide and 9 ft. long. A 2x2x⅜-in. angle 35 in. in length forms each of the four corners, the sides, ends and cover being made of ¼-in. boiler plate. A ½-in. manila rope is attached at one inside end of the box extending directly over the top of the oil switch and transformers and then upward to the roof where it passes around a pulley, then down to the center of one side of the lid. Under normal conditions this lid is raised about 12 in. so as to allow ventilation over the transformers and switch. In case of fire the rope will burn in two, thus allowing the lid to fall inclosing the fire within the steel box where it will be smothered.

Switch Automatically Pulled

Another detail making for safety in this device is a steel rope attached to the oil switch lever. This extends over a pulley in the roof and thence downward, being fastened to the lid of the box in such a way as to cause the switch to be pulled out in case the lid falls. Dry sand to a depth of 2 in. is placed in the bottom of the box to absorb any oil that may leak from the transformers. This sand acts as a fire deterrent rather than a preventive.



Portable Transformer Station Has Steel Walls in Case of Fire

Three 15-kva. transformers are here shown inclosed in a steel box mounted on wheels. As may be seen the arrangement is such that should fire start within the box a manila rope will be burned off permitting the cover to fall. This not only totally encases the equipment and smothers the fire, but instantly jerks out the switch cutting off the current supply.

The chief advantages of this transformer station lie in its portability and durability. Thus it may be easily and quickly moved from place to place and its first cost is practically its last.

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Six Motor Combinations for Six Reservoir Levels

An interesting system of pump-motor control was recently devised by the General Electric Co. It was developed for controlling three squirrel-cage pump motors used to maintain the water level in a reservoir. It was desired that standard automatic starting compensators be used, with an auxiliary control that would give six combinations of the pump motors at six different levels of the water in the reservoir. It was further desired that but one of the pumps operate during certain periods, the other two automatically shutting down to start again only at the end of a predetermined period.

In view of the fact that ice would foul the mechanism of a float switch during the winter months, it was decided to use a Ruggles-Klingemann regulator panel having six control points, each point to represent a definite level of the water in the reservoir. On this panel were mounted the regulator, a dial switch, a control circuit switch, a time switch and seven double-pole control relaying contactors. Rather than make up a new dial switch with six points, a field control switch with twenty-one buttons are utilized, the six points being obtained by wiring the twenty-one buttons into seven groups of three buttons each.

Pumps Start Successively

In use, a recession of the water in the reservoir causes the regulator to operate, moving the dial switch to the first control point, actuating contactor No. 1 and starting pump motor No. 1 by means of the first automatic compensator. As the water level continues to drop, additional contactors up to the sixth are actuated. The first pump motor is rated at 60 hp., the second at 100 hp. and the third at 150 hp. As each pump goes into operation on the first three points of the dial switch, the preceding one drops out. Pump No. 3 continues to operate on the fourth, fifth and sixth points, upon each of which additional pumps are picked up. On the fourth point, pump No. 1 is added; on the fifth this pump drops out and pump No. 2 is picked up, but on the sixth point, all three pumps go into operation.

In order to provide operation of but one of the pumps during certain periods, a time switch and one of the control relaying contactors were used. The normally closed tips of the time switch were wired in the coil circuit of the contactor. The control circuits of the two automatic starting compensator panels were likewise wired through this contactor. During normal operation this device is closed and all the pump motors start on their respective points. During the period of shut-down, however, the tips of the time switch open and the contactor drops out. As a result, only one pump motor operates, regardless of the position of the dial switch.

Interpoles Must Correspond With Required Rotation

In the "Practical Pointer" section of the Feb. 25 issue of *Coal Age*, J. A. Shaw describes safe practice in connecting the interpoles of direct-current motors. I am of the opinion that he has gone about the method backwards. He tells how to produce the proper rotation in relation to the interpole connections. The more practical need is to make the proper connections of the interpoles to correspond with the required rotation.

The more usual method is to connect the shunt and series fields properly, as determined by magnetic test if necessary, and then connect the interpoles in respect to the shunt and series field to correspond to the direction that the armature must rotate. Then, if on a trial, the armature does not rotate in the right direction, this can be corrected without disturbing the field relation, by reversing the two leads running to the brush holders.

R. R. WEBSTER,
Chief Electrician.
Elkhorn Piney Coal Mining Co.,
Weeksbury, Ky.

Coil Shop Should Be Clean, Light and Private

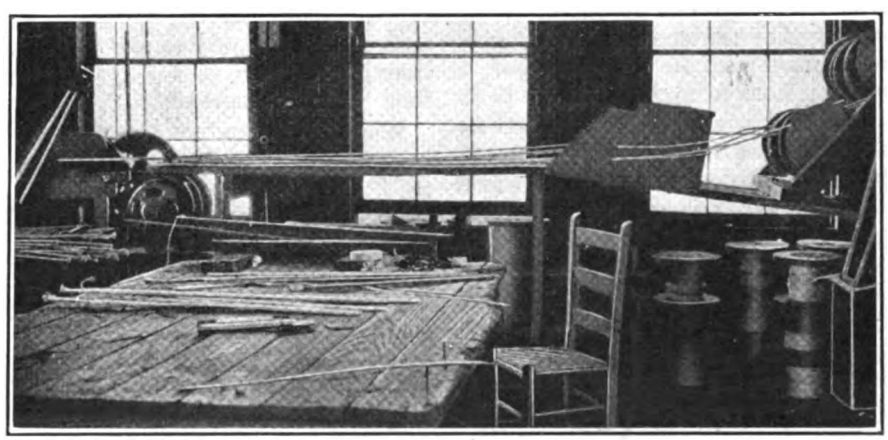
Coal companies in the last few years have shown a marked tendency to do less and less coil making in the mine repair shops. The smaller companies are, as a rule, sending their armatures away for rewinding, and the large companies which have their own winding shops are in many cases buying factory-made coils in preference to those of their own make.

An exception to the common practice is the Montevallo Coal Mining Co., of Aldrich, Ala. This mine produces only 600 tons per day, yet the armature winding is done at the mine and the coils are made there.

The coil shop is a room 16x20 ft. which forms the second story of a small store house. Windows on three sides let in an abundance of natural light. The equipment consists of a homemade motor-driven coil-winding machine, a homemade paper shear and a small dipping tank for individual coils. After being dipped in shellac the coils are pulled to shape by hand in a bench vise.

Light and Privacy Assured

The men at the mine state that this coil shop is, in a manner, a makeshift and that it is hoped that room will be provided in a proposed new repair shop for the work. Granted that it is a makeshift, this small coil shop has several desirable features. It is far enough away from the repair shop so that the man making coils is not bothered continually by visitors. The location is such that the place can be kept fairly clean, and the exposure and window location provides for an abundance of natural light.



Coil Shop of the Montevallo Coal Mining Co.

At the left is a homemade motor-driven winding machine. Mounted on the end of the bench is an improvised paper shear and at the lower right is a small tank in which the individual coils are dipped in shellac before being taped and pulled. The room, which is 16x20 ft. and is the second story of a small supply house, has windows on three sides.

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Viewpoints of Our Readers

Is the Fan with Backward-Curved Blades The Best Ventilating Unit?

Must Distinguish Intrinsic Resistance from That Due to Increased Volume — Laid-Back Blade Fan Has Twice Weight and Cost of One with Forward-Blades

By W. A. ROWE
American Blower Co., Detroit, Mich.

Several statements from which an entirely erroneous impression may be gained appeared in the article entitled "Operating Characteristics of Centrifugal Fans and Use of Fan-Performance Curve" delivered before the American Institute of Mining & Metallurgical Engineers and reprinted in *Coal Age*, March 18, pages 393 to 398. The first of these is that a fan with a forward-curved blade is so unstable that a "slight change in operating conditions when it is running at its point of maximum efficiency will cause the fan to operate very inefficiently." This is not so.

GREATER VOLUME OF AIR

The point which possibly has been overlooked is that a 10 per cent drop in the static pressure against which the fan is operating is not the same as a change of 10 per cent in the resistance of the mine. The author further states that it is guesswork to estimate the resistance a mine will offer to a certain volume of air within at least 10 per cent of the actual resistance and because that 10 per cent figure has been used, it is assumed that it was the intent of the author that the change in the mine resistance was 10 per cent *for a given volume* of air.

Take, for example, the first instance where it is stated that a 10 per cent drop in pressure would cause 26 per cent increase in volume and take also the example cited in the article of a fan designed to deliver 100,000 cu.ft. of air per minute against a 2-in. static pressure. A 26 per cent increase in the volume would represent 126,000 cubic ft. per minute at 1.8-in. water gage. We know from our mathematics of ventilation that the pressure necessary to cause ventilation varies directly as the square of the volume when conditions causing resistance remain unchanged.

NO SMALL MISCALCULATION

If the mine in its changed condition would handle 126,000 cu.ft. per minute at 1.8 in. water gage, it may be readily calculated that the resistance of the mine based on 100,00 cu.ft. per minute only being passed through it would correspond to a water gage of 1.13 in. This is not a 10 per cent change in the mine resistance. Had the actual resistance been 1.13 in. for 100,000 cu.ft. and the operator had calculated that the resistance would be 2 in. for that volume, he would have overestimated the mine resistance 77 per cent. It would not be correct to call that a "slight" difference in the resistance.

For an actual drop of 10 per cent in the resistance, it is easy to determine the condition at which the fan will operate by plotting the characteristics of the *mine* through a point corresponding to 90 per cent resistance for 100 per cent of capacity. Using the same fan characteristic charts of the forward-curved blade and the full backward-curved blade, which illustrate the author's article, we can plot the mine characteristic curve for that condition. This is marked *A*.

Where this mine characteristic curve crosses the static-pressure curve of the fan will establish the operating point, which is where the volume that a mine will pass at a given water gage equals the quantity of air a fan will handle against the same static pressure. This, it is apparent, will represent approximately 5 per cent increase in volume on the forward-curved blade, and 3 per cent increase in volume on the full backward-curved blade, with approximately 6 per cent and 2 per cent increase in the horsepower, respectively, for the two types.

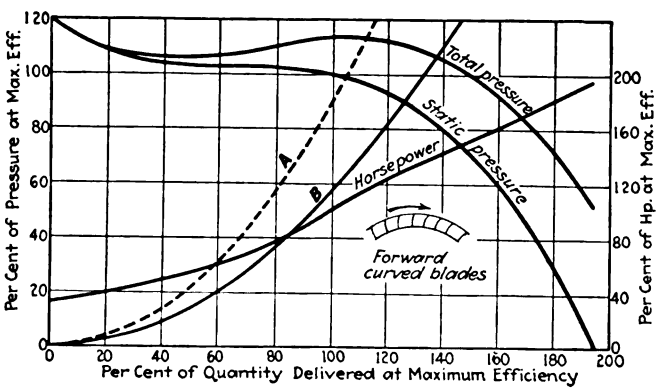
The figures given in Table I, page 396, should show the effect of 10 per cent increase or decrease in resistance *for a given volume* of air and should be revised in accordance with these figures or an entirely erroneous impression will be conveyed.

If, for both types of fans mentioned, we plot the characteristics of the mine for a condition where the water gage at the fan at constant speed has dropped 10 per cent, then it will represent with the forward-curved blade a new condition in the mine where the mine would pass the original volume at approximately 57 per cent of the original water gage, whereas in the case of the full backward-curved blade, it will represent a water gage of 77 per cent of the original, the equivalent orifice being different in each case. These two conditions are shown by the solid characteristic line *B*.

WIDE RANGE OF EFFICIENCY

It is to be regretted that the efficiency curves were not also plotted as it would have been readily possible to show by the above means that with the forward-curved blade the efficiency of the fan is maintained over a much wider range of capacity than with the full backward-curved blade.

The second point in which it is impossible to accept the author's conclusions concerns the claim for high



Forward-Curved Blade Fan

Graphs show results obtained when the larger or lesser quantity of air delivered at the changed pressure is taken into due consideration.

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mechanical efficiency on fans having a full backward-curved blade. In Fig. 5, on p. 397 of the article quoted, is shown what purports to be a test of a high-speed fan, showing the mechanical efficiency above 80 per cent. Repeated tests of fans of the leading manufacturers of that type of equipment have never yet confirmed claims for efficiencies as high as this. The efficiency of this type of fan is more likely to be under 70 per cent than over 80 per cent and it is not as high as has been obtained with well-designed proportions of the fan with the forward-curved blades.

The characteristics which have been discussed have been unfortunately those of an academic rather than of a practical nature. Instead of focussing all our attention on the performance characteristics, it would be wise to give thought to the operating every-day characteristics of the different types of fans discussed.

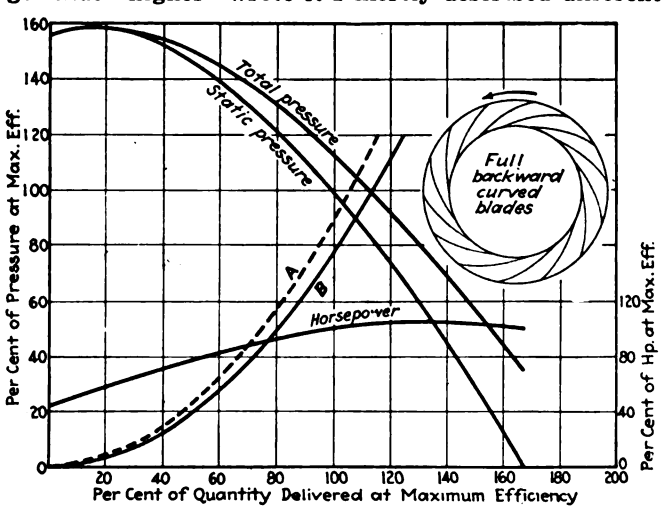
TIP SPEED EXCESSIVE

The full backward-curved blade type of fan is not a new machine. It was described in text books over a generation ago. Though it is a good fan, its laid-back blades give a low manometric ratio, requiring an excessively high speed for a given water gage. For example, in the case of the fan duty previously mentioned, having a water gage of 2 in., this high-speed fan would have to operate at a peripheral velocity, or tip speed, of 7,000 ft. per minute. For the same duty the well-designed forward-curved blade would operate at a tip speed of 4,000 ft. per minute. Though the speed, first-mentioned, for the laid-back blade might not be considered objectionable for a 2-in. water gage, there are many of our mines today which are compelled to operate at water gages much higher than this. It is easy, therefore, to appreciate that when we apply such a fan to these higher water gages, the speed of this fan may be so high as to make its use seriously questionable. The preference of many mine operators for low speeds is therefore based on real reasons. If this is a "relic of the old days" it is a sample of good judgment used by the old timers founded on long practical experience.

Another disadvantage of the backwardly laid blade is that fans of that design are low in volumetric capacities. It is necessary to use a much larger fan in all its dimensions than with the forward-curved blade, for the maximum of efficiency of the high-speed fan occurs at a relatively much lower outlet velocity. The proportional dimensions for efficiencies anywhere near comparable would show lineal dimensions over 25 per cent greater than for the forward-curved blade. Experience has shown that the weight would be about double that of the forward-curved blade fan, and the cost in the same proportion.

Backward-Curved Blade Fan

Where the mine characteristic graph crosses the static-pressure curve of the fan establishes the operating point, which is where the volume that a mine will pass at a given water gage equals the quantity of air a fan will handle against the same static pressure. This shows for a curve of this type a 3-per cent increase in volume, with a 2-per cent increase in horsepower.



Snubbing More Effective Than Shearing

In the issue of March 11 Thomas Stroup comments on my article in your issue of Dec. 31, 1925, Mr. Stroup's comments being under the head "Shooting More Important Than Shearing." Among other matters he refers to a statement in the article to the effect that it is questionable if snubbing the face will be as efficient in increasing the percentage of lump coal as center shearing. I agree with him this is a surprising statement and was surprised when I read it. In the article as I wrote it I merely described different ways of obtaining larger coal, the important one of which was the snubbing of the face.

The title of my article was "Mining Lump Coal," and I described various ways and means of obtaining results, the more important of which was snubbing. The title of the article as printed reads, "Center Shearing Increases the Percentage of Lump," and so much was omitted from my article that by reading what was printed one would think my intention was to say that center shearing was the thing to do.

SNUB FACE AND SAVE POWDER

The article as I wrote it read in part as follows:

"Another method of mining coal so that it can be shot with a small quantity of explosives and few holes is to snub the face. After the undercut is made by an arcwall cutter the machine is pulled out from under the kerf, the cutterbar raised and a snubbing cut made.

"If desirable, the snubbing can be made higher [than immediately over the undercut] leaving some coal between the two kerfs. This coal will break into good-sized lumps, and in some coal it is desirable to make the snubbing cut rather high. The same kind of cut can be made when the machine is used for slabbing on long faces. When the snubbing cut is made the coal rolls more freely from the face, requires less power to shoot, and a larger quantity of lump is obtained.

TURRET CUTTER PREFERABLE

"The arcwall machine is probably the best adapted of all machines to make a snubbing cut. There are no extra complications required on the machine to accomplish this. The standard machine will do the work.

"In some coal seams the saving in drilling holes and in powder will more than offset the cost of making the extra cut and whatever increase there might be in the percentage of lump coal is a clear gain.

"The shortwall machine has been equipped with a double cutter bar. The upper one, being shorter, does the snubbing. This type of shortwall machine has the disadvantage as compared with ordinary shortwall machines, that it is higher, heavier and a little more difficult to handle, and it is not recommended where there is sulphur, hard cutting or a rolling bottom." N. D. LEVIN.

Columbus, Ohio.

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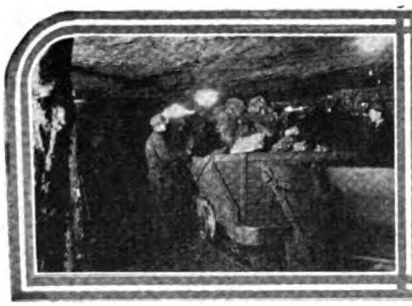
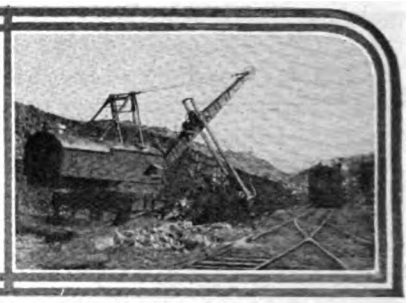


News Of the Industry



Union Balks at Arbitration in Any Form; Permanent Fact-Finding Bureau Conditionally Approved, Says Murray

Washington, D. C., April 20.—Unalterable opposition to any legislation "which spells arbitration" and conditional acceptance of the proposal to establish a permanent government fact-finding coal bureau mark the attitude of the United Mine Workers. This was made clear here yesterday when the House committee on interstate and foreign commerce resumed its hearings and invited Philip Murray, international vice-presdent, and Thomas Kennedy, international secretary-treasurer of the union, to present their views.

"Any kind of system" which has arbitration as its purpose would be unwelcome, declared Mr. Murray. This opposition extends not only to arbitration as a continuing policy but to any system of emergency control which would authorize the President to create a board that could investigate and report upon the issues in the wage controversy which gave birth to the emergency. If, however, the government should decide to set up some scheme of arbitration, then the union demands that the program be broadened to include government fixing of profits and prices as well as wages, and complete control of the industry.

The union will not oppose a compulsory fact-finding bureau provided the union has adequate representation in that bureau "in order that the American coal miner can rest assured that the statistics and information gathered shall be compiled from the standpoint of aiding in correcting the abuses and basic evils existing in the bituminous coal industry." Such a bureau should collect facts on:

(1) "The elimination of uneconomic and unscientific freight rates" on coal;

(2) Railroad coal purchases and alleged conspiracies to beat down prices on locomotive fuel;

(3) Alleged boycotts of union-mined coal by certain railroads and public utilities;

(4) Relative efficiency of all soft-coal mines;

(5) Physical conditions of mines as bearing upon introduction of new machinery and financial ability of producers to reduce costs by mechanization of such mines;

(6) Capital necessary to launch mining projects "based upon the utilization of modern mine practices in line with sound engineering principles";

(7) Sales costs, interlocking relationships of producers and sales agencies and actual profits;

(8) "All other facts which will enable collective bargaining and scientific management to remedy the evils of overproduction, unprofitable sales prices, promote efficiency and continuity of operations and in turn the lowest possible coal price to the consuming public, consistent with a wage rate to the miner compatible with American standards and a fair return upon the investment to the operator."

Congressman Lea wanted to know whether the fact-finding agency should not be empowered to compel the production of union records and testimony. Mr. Murray replied that the union did not want such power lodged with the fact-finding agency, but did not see how it could be avoided if such powers were exercised over the operators.

"The coal miner," asserted Mr. Murray, "has been the innocent victim of destructive mismanagement" and has learned by experience that it is unwise to take pot-luck in chance arbitration experiments.

Recounts Soft-Coal Evils

"Unprecedented overdevelopment, inequitable and unscientific freight rates, obsolete mining equipment, abrogation of wage contracts by cheating operators, halting of increased consumption and the inexpert management that persists throughout bituminous coal have all contributed to a period of cut-throat competition that is dissipating large pools of capital, wrecking entire mining communities and demoralizing the basic structure of the soft-coal industry."

Several times during the course of his testimony Mr. Murray attacked the companies which have broken away from the Jacksonville agreement. That agreement, he declared, had been made "at the behest of representatives of the United States Government" and the government has done nothing to brand those operators who repudiated their pledges.

Complete unionization, said the witness, would be a great stabilizing factor. Although closely questioned, he did not explain to the committee, however, how such complete unionization would eliminate the problem of the surplus mines and the surplus miners. His nearest approach was the contention that, with wages and working conditions equalized, the inefficient operation would be driven out of business by economic pressure. When asked how far the government should go in protecting the public against an interruption to its coal supply, Mr. Murray at first answered that he did not know and then parried by inquiring how far the government would go in interesting itself in the victims of contract "repudiation" in West Virginia and Pennsylvania.



Philip Murray

He admitted that if the government had emergency control powers and fixed wages high enough to induce strikers to return to work, there might be a willingness on the part of the workers to favor continued government operation. If, on the contrary, it "meant the same kind of wage regulation as in the postal service, the workers wouldn't be for it." He was not willing to concede that union and operator representation on the fact-finding agency would detract from the value and weight of such an agency's labors.

Mr. Murray accused the railroads of a deliberate campaign to break down coal prices in the union fields and to encourage non-union production to the detriment of roads serving union territory and the business and social life in that territory. President Atterbury of the Pennsylvania R.R., he said, was a leader in this movement. The purpose of this campaign, he insisted, was to wreck the Jacksonville agreement and force all wages down to $2.50@$3.50 levels. Discriminatory rate adjustments also are hurting the union fields.

Concluding the examination of Mr. Murray this morning, committee members again pressed him for an explanation of his statement that complete

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unionization would be a stabilizing factor. The witness answered that the Central Competitive Field, paying a high wage rate, had efficient labor, skilled management, large operating units and lower production costs. He contended that these conditions were reversed in non-union West Virginia, although the physical conditions as to coal seams were comparable. The better relationships developed under union control would curb ruinous competition and promote mergers to eliminate uneconomic mines.

Mr. Murray denied that West Virginia coal was superior in quality to that mined in the Central Competitive Field and said operators in the latter territory had fallen down in salesmanship. The mine workers believe, he told representatives here, that the fact that the Southern fields were non-union has been considered in fixing rates to the Lakes. Increasing the differential in favor of Pittsburgh and eastern Ohio to 53c. would enable the union mines to compete against the lower wage scales in non-union districts. It might also have a tendency to close down some of the Southern mines.

Asked his authority for the statement that the Jacksonville agreement had been made at the request of the government, Mr. Murray said: "Prior to February, 1924, a joint call was issued for a conference of operators and mine workers in the Central Competitive Field. The Pittsburgh Coal Co. refused to participate. As a result of that refusal it seemed that there would be no conference, as other operators were about to decide on the same course. Mr. Hoover, in his anxiety to have industrial peace and to prevent an additional strike, asked W. K. Field to be represented at Jacksonville. Mr. Field then authorized Messrs. Donaldson and Armstrong to attend the Jacksonville meeting and participate on behalf of the Pittsburgh Coal Co.

Operators' Wants Differ

"During the conferences some of the operating interests were opposed to a three-year extension of the old agreement; some wanted a wage reduction, others wanted a one-year agreement, some two years, but Messrs. Donaldson and Armstrong insisted on a five-year contract at the old rates. Asked why, they said it was the desire of the government."

"But the government did not attempt to dictate the terms," said Mr. Herch.

"No, except that Mr. Hoover told the mine workers that it was the desire of the government that the contract be continued three or four years."

"All the government did was to urge an agreement," persisted Mr. Herch.

"It was suggested in a private conference between Mr. Hoover and Mr. Lewis, not at Jacksonville, that the old rates be continued," retorted the witness. There was, he admitted, no formal record of the government's interest except the annual report of the Department of Commerce and a letter from President Coolidge complimenting Mr. Lewis on the arrangement effected at Jacksonville.

Mr. Murray reiterated his opposition to compulsory arbitration and said the question of voluntary arbitration should be left to the industry. For that reason he rejected the suggestion that a bill along the lines of the Parker-Watson railroad labor bill would be a good thing, notwithstanding the fact that that measure makes the acceptance of arbitration optional. The union, he said, had no objection to mediation and conciliation. He declined to venture a prediction of what might happen at the expiration of the Jacksonville agreement.

Kennedy Launches Shafts

Mr. Kennedy, calling attention to bills providing for mediation and conciliation, testified that such powers already were lodged with the Department of Labor. To go beyond those powers, he argued, would in itself be creating some form of compulsion.

Expanding further on the union distaste for arbitration, Mr. Kennedy said that both the public and the anthracite operators wanted cheaper coal and continuity of supply. This meant that the representatives of the public and of the operators on an arbitration board would be arranged against the mine workers regardless of the justice of the mine workers' contentions.

The witness would not commit himself on the question of whether he favored legislation which would permit examination of the private records of industry in general, but said that was necessary in the coal industry to establish the facts. If the government could attack the royalty problem, it could reduce the price of coal. Mr Kennedy also assailed the state anthracite tax as put over by the selfish interests of manufacturers to avoid paying their proper share of taxation. He repeated the charge that the operators had encouraged the last anthracite suspension to destroy the union.

The committee adjourned the hearings this afternoon and will resume on April 26. Harry L. Gandy, executive secretary of the National Coal Association, probably will be the first witness heard next week.

Insurance Company Insists On Rock-Dusting

The Associated Companies, of Hartford, Conn., which write a large volume of compensation insurance business on coal mines throughout the United States, have come out strongly for rock-dusting. Carrying risks on gaseous as well as non-gaseous mines, the organization has been advocating rock-dusting of bituminous coal mines for the last two years, and a large number of operations have adopted the practice.

G. B. Butterfield, general manager of the Associated Companies, announced on April 10, however, that beginning Oct. 1, next, this organization will not insure any gaseous or dusty coal mine that is not rock-dusted, and in the event that any gaseous or dusty mine on the books has not adopted the practice by that time, its policy will be cancelled.

Penna Resigns, Then Accepts Another Term

After declining to accept another term as secretary of the Indiana Bituminous Coal Operators' Association at the regular election, April 17, Phil. H. Penna, who has held the office since 1900, consented to accept the position again Monday when the executive board met in an all-day session in Terre Haute and prevailed upon Mr. Penna to withdraw his resignation. While there were no comments Monday upon the situation which led Mr. Penna to refuse to accept the office at the annual meeting of the board, it was said that all difficulties had been satisfactorily settled and that Mr. Penna had been chosen by unanimous vote of the board.

David Ingle, of Evansville, Ind., president of the association, declared that Mr. Penna's name had been the only one under consideration by the executive board and in a statement following the meeting declared that "Mr. Penna's election was unanimous."

Mr. Penna first came into prominence in the mining industry when, as a miner, he was active in the organization of the present District No. 11, United Mine Workers. As a result of his activity he was elected in 1887 as the first president of the district organization and continued in his service with the miners' union until 1900.

His ability as an organizer brought an offer from the operators which was accepted by Mr. Penna in August, 1900. In the interim Mr. Penna not only has taken an active part in the development of the Indiana bituminous field but has become recognized nationally as a leader in the coal industry.

Montour 9 Opens; 2,200 at Work for Pittsburgh Co.

With the opening of Montour No. 9 mine, of the Pittsburgh Coal Co., at McDonald, Pa., on April 20, one-third of the mines of the company in the Pittsburgh district are operating on an open-shop basis. Montour No. 9 is the eleventh mine of the company to begin work on the November, 1917, scale, independent of the United Mine Workers. The company has a total of 33 mines in the Pittsburgh district, 22 of which are still idle. More than 50 men went to work at Montour No. 9 the first day. The company now has a total of almost 2,200 miners at work in the Pittsburgh district on the 1917 scale. Montour No. 9 had been closed since April 22, 1925.

Industrial Coal Stocks Ebb

Coal supplies on hand in various industries on March 1, according to the National Association of Purchasing Agents, were as follows: Steel plants, 24 days; electric utilities and goal-gas plants, 47 days; railroads, 23 days; by-product-coke plants, 21 days; miscellaneous industries, 42 days. This compares with these estimates by the government as of Feb. 1: Steel plants, 26 days; electric utilities and coal-gas plants, 50 days; railroads, 25 days; by-product-coke plants, 23 days; miscellaneous industries, 37 days.

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Urges Subsidy to Encourage Nova Scotia Coal Industry

Establishment of coking plants in Montreal and other large central cities for converting Nova Scotia slack into domestic coal and the granting of a subsidy by the federal government for each ton of Nova Scotia coal sold to Montreal and points west, and for each ton of Alberta coal sold east of Winnipeg are suggested by Major Hume Cronyn, K. C., as means to enable Canada to become independent of the United States for coal supplies and to bring about relief from a perilous coal situation in Nova Scotia. These were submitted at a meeting of the Young Men's Canadian Club in the Windsor Hotel, Montreal, April 12. Mr. Cronyn, who is president of the Huron & Erie Mortgage Co. and the Mutual Life Insurance Co., was a member of the Duncan commission appointed to investigate Nova Scotia coal conditions.

Opposition was voiced against raising the Canadian tariff against American coals and against a reduction of rates for the transportation of coal east and west. The sale of byproducts, such as gas, from the coal converted in central coking plants, the speaker said, would lessen the cost of such fuel to the consumer. Expenses of establishing such plants would be heavy, he admitted, and he thought that the government should contribute.

Major Cronyn declared no betterment will come until the industry in Nova Scotia is placed on a firm economic basis and operators and miners forget their past bitterness and differences and prepare to co-operate in harmony for mutual benefit.

Break Off Wage Parley on Kansas Shovel-Mine Labor

Negotiations on a wage scale between District 14, United Mine Workers, and operators of half a dozen steam-shovel mines near Mulberry, Kan., were broken off the night of April 13. After the mines involved had been "marched" upon by union miners in motor cars several weeks ago, a truce was effected by entering negotiations for a contract. It was agreed at a preliminary conference that the miners should submit a written proposal. This was done and terms were presented similar to those of the Jacksonville agreement together with a tonnage rate on wagon hauls from the strip mines. The operators proposed a tonnage rate for a large part of the work in the pits, and the miners rejected this. The controversy hinges on wages for the common labor in the mines, as the cranemen, engineers and other skilled workers are paid the union scale.

Elk Horn Sells Oil Rights

All the undeveloped oil and gas rights in Kentucky and West Virginia belonging to the Elk Horn Coal Corporation have been sold to the Louisville Gas & Electric Co. for approximately $700,000. Elk Horn retains, under the terms of the sale, one-eighth interest in all oil found on the territory sold, without bearing any costs of development.



Thomas Kennedy

Miners' secretary-treasurer, who presented his views on coal legislation at the House hearing this week.

Alaska Colliery Destroyed In $500,000 Fire

The Alaska colliery of the Philadelphia & Reading Coal & Iron Co., at Mt. Carmel, Pa., was destroyed by fire last Saturday night, entailing a loss estimated unofficially at about $500,000. The fire broke out about 8 o'clock and had wrecked the structure within two hours. A night watchman who discovered the fire said there had been no explosion.

The colliery, which was comparatively new, was one of the largest in this section of the anthracite region and employed about 950 men. Officials said they were unable to explain the cause of the fire pending an investigation.

Since the resumption of hard-coal mining after the strike, the colliery had been operating at normal capacity.

C. & O. to Acquire Stock Of Island Creek R.R.

The Interstate Commerce Commission on April 16 authorized the Chesapeake & Ohio Ry. to acquire control of the Island Creek R.R. in Logan County, West Virginia, by purchase of its capital stock.

Since 1912 the Chesapeake & Ohio has been operating the Island Creek line under a 20-year lease. The main line of the Island Creek R.R., which was completed in 1904, extends from near Logan to Holden, a distance of about five miles, with several short branches which have an aggregate length of ten miles. The proposed purchase is to include the branch mileage.

The Logan & Southern R.R., a feeder line, owned by the Chesapeake & Ohio connects with the main line of the Island Creek at Monitor Junction, near Logan.

Commissioner Eastman, of the Commerce Commission, dissented from the report of the majority, declaring the acquisition of involved consolidation of roads into a single system for ownership and operation beyond their authority to approve. He also thought the price to be paid was too high.

Minto Board Report Tabled

The report of the Royal Commission appointed by the government to investigate the causes leading up to the troubles in the Minto (N. B.) coal field between the Minto Coal Co. and its miners was tabled in the Provincial Legislature April 9 by Dr. H. I. Taylor.

The Commission in the course of its duties acted as a board of conciliation and succeeded in bringing about an amicable and satisfactory settlement of the strike of the miners. The members of the Royal Commission were E. R. Teed, of Woodstock; Geo. A. Stone, of Moncton, and Luke S. Morrison, of Fredericton.

American Federation of Labor Opposes Plan For Federal Industrial Court to Settle Strikes

Discussion of proposal to establish a federal industrial court to settle strikes and other problems between capital and labor featured the hearing last week before the committee on commerce, trade and commercial law of the American Bar Association at 65 Liberty St., New York City. Chairman Province M. Pogue, of Cincinnati, presided.

Several bills are before Congress for establishment of a court of this sort, but the bar committee, it was learned, wants to formulate a bill of its own. The hearing was to study the various angles of public opinion as regards the formulation of such a bill, which would be equitable to both employer and employee.

The American Federation of Labor went on record as being unqualifiedly against establishment of such a court. Matthew Woll, vice-president of the federation, who appeared before the committee, declared such a measure "would destroy freedom of collective bargaining" between employer and employee and would furthermore be "unconstitutional as well as impracticable."

Murray T. Quigg, editor of *Law and Labor*, joined with Mr. Woll in the view that a national industrial court is unnecessary to settle strikes. He favored a Congressional bill to "define more clearly the private rights of disputants" and to provide changing of contracts by agreement in order to avoid strikes without "outside" interference in industry.

State Senator William R. Eaton of Colorado was the only advocate of the industrial court idea who was heard at the session. He favored a federal body similar to the Colorado Industrial Commission which, he said, has resulted in only two strikes being called in that state in three years.

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Cabinet Confers with British Miners And Operators as Strike Impends; Commission Report Roundly Scored

When the situation in the British coal industry seemed likely to take an even more serious turn the government intervened. The Minister of Labor on April 14 had a conference with the representatives of the operators and the Prime Minister, Stanley Baldwin, interviewed the industrial committee of the General Council of the Trades Union Congress. The Premier did not commit himself to any action, but a special meeting of the Cabinet this week was expected to consider the matter.

The outlook seemed darkest at the close of the conference between the colliery owners and miners on April 13. Replying to the recent report of the Royal Coal Commission, the miners' representatives emphatically opposed several of the report's principal clauses, which were drafted by members of the commission as essential to bringing about peace and prosperity for the British coal industry.

The miners' leaders declared that no settlement would be acceptable that did not provide at least a wage enabling the miners to get a decent standard of living. The suggestion that "the minimum percentage" on wages should be settled in the various mining districts and not nationally also was objected to. Redistribution of present daily hours of labor over a week of five days instead of six, they pronounced impracticable.

The announced intention of the operators to endeavor to open district negotiations on the wage issue was construed by the miners as definite abandonment of the national wage negotiations. It brought the Industrial Committee of the General Council of the Trades Union Congress definitely into line behind the miners' executive.

Announce End of Old Contracts

In explaining their action the operators said that it would be necessary for them to terminate the existing contracts, and that notices to that effect would be posted at the pits this week, but this, they pointed out, did not imply termination of the negotiations. On the contrary, the mine owners were preparing a draft of a national wage agreement to embody the principles which they thought could appropriately be settled nationally.

Hope of an amicable settlement before May 1 has been held in some quarters because of the resistance on both sides to letting things get to the breaking point. It has been apparent all along that the miners, though objecting to portions of the Coal Commission's report, have not wished to go on record as repudiating it entirely.

The same is true regarding the coal owners. The extremists among them who are willing to go to the mat with the miners have so far been kept in the background by cooler heads, preferring argument to action.

Secretary Cook, of the Miners' Federation, announced that he had received a letter from the secretary of the International Transport Workers Federation promising all possible support to the miners should the conflict actually break out between them and the mine owners.

Support by every possible means, in the event of a strike, was promised April 16 by a committee of the International Miners' Federation at a meeting in Brussels. The decision means, according to the International Federation, that not only will efforts be made to stop the exportation of coal to Great Britain but the possibility of a general sympathetic strike on the Continent also is contemplated.

The support of the International Federation was gained only after concessions by the British leaders. It was agreed that in the event of a sympathetic strike on the Continent the direction of the British strike would pass from the British leaders to the international committee and that there should be no separate settlement in Britain.

Prime Minister Baldwin is devoting his energy to a plan for the settlement of wages, which is the most contentious point. It is expected that the operators will reluctantly consent to a national wage negotiation proceeding, but it is not known whether they will still desire to reserve some control of the wage settlements by districts, to which the miners are violently opposed.

Resumes Work of Unifying Electrical Terms

Nearly one hundred delegates with members of their families arrived on the "Andania" from Hamburg, Southampton and Cherbourg to attend the annual sessions of the International Electrotechnical Commission. Col. R. E. B. Crompton, of England, the honorary secretary of the commission, who is 81 years of age, was the official spokesman of the party. The commission will continue the work of the international standardization of electrical terms and ratings.

At the meeting of official welcome, held in the auditorium of the Engineers' Societies Building, New York City, April 13, John W. Lieb, vice-president of the New York Edison Co., acted as chairman of the meeting. Prof. Elihu Thompson welcomed the delegates on behalf of the U. S. National Committee, and Dr. H. T. Barnes, president, Canadian National Commission, added his felicitations. The principal speaker at the session was Guido Semenza, president of the commission. Others were E. Genissieu, of France; A. F. Enstrom, of Sweden; Carl Strecker, of Germany, and Prof. V. List, of Czechoslovakia. Thomas A. Edison sent a telegraphic greeting from Florida and Lord Balfour a cablegram from London. In his address Prof. Semenza declared that unifying the nomenclature in electrical science and manufacture and establishing unified ratings for machines will simplify production.

Open-Shop Miners Earn More Than Union Men

The claim that under what is known as the American plan, the coal miners are better paid in southern West Virginia than in union fields elsewhere, appears borne out by figures compiled by A. O. Wilson, statistician of the Kanawha Coal Operatives' Association.

A federal survey of fourteen states showed daily average pay of workers in 599 mines was $6.56. There were 198 working days in the year and it was possible to average $1,300 in twelve months. In the Kanawha district the average was $10.23 daily, working days 170 in the year, and the average earnings of 3,136 men was $1,739.93. Mr. Wilson points out that in 1921, when the Kanawha district was 100 per cent union, the average pay of 4,976 miners was $1,387.26.

Offer Coal Fellowships at University of Washington

The College of Mines of the University of Washington offers five fellowships for research in coal and clay in co-operative work with the U. S. Bureau of Mines. The fellowships are open to graduates of universities and technical colleges who are properly qualified to undertake research investigations. The value of each fellowship is $720 to the holder, for the twelve months beginning July 1. Fellowship holders pay tuition and laboratory fees, but are reimbursed for the amounts so expended; they register as graduate students and become candidates for the degree of Master of Science in the proper subject, unless an equivalent degree has previously been earned.

The following coal investigations have been selected for 1926-1927: (a) Beneficiation: Coal washing; application of ore dressing principles to cleaning of coal. (b) Utilization: Briquetting of low grade coals.

Each applicant should send a copy of his collegiate record from the registrar of the college where he has graduated, or will graduate in June. He also should send a photograph and a detailed statement of his professional experience, if any. Applications should be submitted as early as possible in order to allow ample time for consideration, and should be addressed to Dean Milnor Roberts, College of Mines, University of Washington, Seattle, Washington.

Will Report Fuel Sold to Ships

Coal totaling 304,946 tons, valued at $1,644,040, and bunker oil to a total of 3,231,616 barrels, valued at $4,904,974, was furnished at American ports during February to vessels of all nations engaged in foreign trade, according to a report issued by the Department of Commerce. This report is a new service of the department and will be issued monthly, it was stated.

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Petroleum Institute Figures Reveal Influence of Oil Competition on Worldwide Slump in Coal Industry

By Paul Wooton
Washington Correspondent of *Coal Age*

A flood of light is thrown on the worldwide depression in the coal industry by the estimates of the American Petroleum Institute on oil output.

The world production of petroleum in 1925 was 1,066,220,000 barrels, a new high record and a total of 54,000,000 barrels larger than that of 1924. The figures show that the competition of fuel oil, which is such a factor in the United States, is worldwide and is the great underlying cause of the depression in the fields of Great Britain and the Continent.

In 1925 the world production of coal was 1,368,000,000 tons, only 26,000,000 tons greater than 1913. Prior to that time the average normal growth was 38,000,000 tons per year. Thus in a twelve-year period there has been less than one year's normal growth.

Some loss of coal consumption is chargeable to the industrial depression which has followed the war and to the fuel economies which were stimulated by higher prices, but these influences have not had a proportional influence on the consumption of energy. The production of natural gas has doubled since 1913, while the production of oil is 177 per cent greater. In 1913 oil and gas furnished only 7 per cent of the oil derived from mineral fuels. In 1925 they furnished 17 per cent.

Another factor which has had an influence is the increased use of waterpower. Scarcity of power during the war and the high price of coal stimulated waterpower development so that in 1920 this form of power was displacing 91,000,000 tons of coal. By 1923 further hydro development was resulting in the displacement of 116,000,000 tons of coal. Between 1913 and 1925 oil and waterpower displaced more than 200,000,000 tons of coal.

Use of Coal Reduced by Economy

At the same time that oil and waterpower have been obtaining a larger share of the total business, economies in the use of coal have reduced the quantity consumed. The electric utilities have reduced their unit consumption per kilowatt hour by 40 per cent. The railroads and steamship companies also have increased efficiency.

Had the bituminous coal industry in the United States been a static one like anthracite it could have met the decline with less difficulty. It had grown accustomed to rapid expansion and was so geared that it has been hard to adjust itself to the lessened demand.

Another study of current interest, using the statistics of the Engineering Valuation Committee of the Fuel Administration and of the Geological Survey, indicates that the industrial use of fuel oil in New England has reached and passed its maximum. Though it is expected that the relatively few remaining unutilized waterpower sites in that section of the country will be harnessed, coal operators do not expect much more competition than exists today. New England is expected, however, to increase its use of bituminous coal for industrial purposes as well as for domestic fuel. An extract from the report reads:

"According to the estimates of the U. S. Geological Survey the states of Pennsylvania, Maryland and West Virginia, from which New England draws bituminous fuel by both rail and water, contained deposits of coal amounts to no less than 285,193,000,000 net tons.

"The total quantity of low-volatile coal in reserve in West Virginia, Pennsylvania and Maryland is estimated to be 68,310,000,000 tons. These deposits all are within normal transportation radius of New England either by rail or water.

"Low-volatile coal is fragile in texture and frequent handling tends to reduce the quantity of lump. For that reason insistence upon low-volatile coal in domestic sizes has reduced greatly the percentage of the total output at the mines which can be used for household purposes. During the strike the Commission on the Necessaries of Life soon abandoned its emphasis upon sized smokeless coal and came out squarely for the use of run-of-mine. Sized smokeless coal has no advantage over run-of-mine coal and any preference shown for it by domestic users must be set down as almost entirely a matter of prejudice.

Low-Voltage Could Meet Demand

"The normal consumption of coal of all kinds in New England is 30,000,000 tons a year. Of that amount 10,000,000 tons have been anthracite. Even if anthracite were replaced entirely by bituminous coal, not all would be low-volatile, but even on the assumption that New England's entire fuel requirements were to be met with low-volatile coal the low-volatile mines would experience no difficulty in adapting themselves to that enlarged demand.

"As nearly as can be estimated, the output of low-volatile coal from Pennsylvania, Maryland and West Virginia in 1925 totaled 83,000,000 net tons. Of this 83,000,000 tons not less than 12,000,000 went to New England. Deducting this last quantity from the 30,000,000 tons annually required in New England the net addition to the output of low-volatile coal which would be required to meet New England's entire coal needs, would be only 18,000,000 tons. The best estimate that has been made of the equipped capacity of low-volatile mines is not less than 115,000,000 tons, which is 32,000,000 tons in excess of the 1925 output, which excess in turn is 14,000,000 tons more than the quantity necessary to replace New England's present consumption both of anthracite and of high-volatile coal."

Further Hearings Ordered in Lake Cargo Rate Cases

Further hearings in the Lake Cargo rate cases were ordered by the Interstate Commerce Commission on April 19. The dates and places at which such hearings will be held will be announced later.

The question of the relative adjustment in rates from the Northern and Southern producing districts to Lake Erie ports for transshipment to the Northwest has been a subject of controversy for many years. In the most recent attack upon the adjustment the tentative opinion of the examiners of the Interstate Commerce Commission recommended a revision of rates which would have widened the spread between the transportation charges from Ohio, western Pennsylvania and northern West Virginia on the one hand and southern West Virginia and eastern Kentucky on the other. The Commission, however, refused to indorse those recommendations and dismissed the complaints.

Since that time the case has been the subject of heated discussion by Congressmen from the affected districts and by officials of the United Mine Workers. Senator Reed of Pennsylvania used the decision as a text in his drive to force the appointment of a Keystone State man to the Commission. On March 2 the commission announced that it would consider whether the case should be reopened for additional testimony and called upon the parties at interest to state their views.

The Northern railroads which, with the exception of the Wheeling & Lake Erie, had stood with the Southern lines in opposing any change when the original case was heard, abandoned that alliance.

Hearing on Permanent Rates From South to Northeast

The question of the establishment of permanent rates on bituminous coal from the Virginias, Pennsylvania, Maryland and eastern Kentucky and on coke from ovens in that territory to points in the New England and Middle Atlantic States where no joint through all-rail rates are now in effect will be considered by the Interstate Commerce Commission at a hearing before Examiner Koch at New York on June 7. The proceedings are part of the same docket under which the Commission established permanent rates on prepared low-volatile coal to part of the northern territory and emergency rates on high- and low-volatile coal to all destinations in the Northeast. The emergency rates expire on April 30 and the Commission recently refused the petition of the New England Governors' fuel committee and associated industrial interests to continue those rates until the question of permanent rates had been decided.

In a hearing before the same examiner, at Syracuse on June 28, the Commission will take up the adjustment of anthracite rates to stations in upper New York. The central and upstate New York rate structure on hard coal has been a bone of contention for several years.

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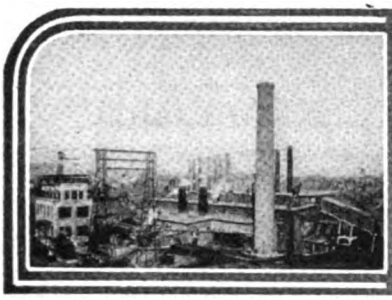
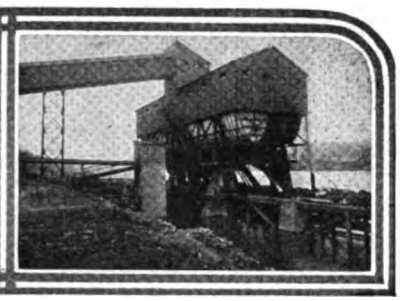


News Items From Field and Trade



ALABAMA

The Tennessee Coal, Iron & Railroad Co., it is understood, will in the near future sink a shaft or slope in the Pratt division near its present No. 2 mine, which will be driven into the workings of the Hamilton slope.

The Alabama By-Product Corp. has been making a number of improvements in its Flat Creek division lately, 250 new houses of modern construction having been built for its employees. It is also stated that consideration is being given to the driving of a new slope at Praco, an extension is being made to the tipple building at Wegra and other improvements are under way to arrange for the handling of a larger tonnage at this mine. Installation of conveyor belts at some of the Flat Creek operations for bringing the coal to the surface also is contemplated.

Reports from New Orleans are to the effect that E. A. Martinez, of that city; A. A. Fendley, of Oneonta, and Messrs. Gay and Gillespie, of Biloxi, Miss., have taken over the properties of the Birmingham Coal & Iron Co. in Blount County, near Oneonta. J. O. Gillespie succeeds I. E. Boyette, of Birmingham, as president. Mines at Inland were developed a number of years ago, but have not been in operation in the past six years.

ARKANSAS

Thirty-two local unions of District No. 21, United Mine Workers, are enjoined permanently from interfering with employees or properties of the Bernice Anthracite Coal Co. at Russellville in a pro confesso decree issued in U. S. District Court at Little Rock by Judge Jacob Trieber. The order is directed against locals in Sebastian, Franklin, Logan, Johnson and Pope counties, which revolted against employment under the wage scale of 1917 placed in effect at the expiration of the 1924 scale.

ILLINOIS

The Consolidated Coal Co.'s Mine No. 7, at Herrin, has posted notice of an indefinite suspension of operations. Slack market and the need for a considerable amount of repair work are reasons assigned for the shutdown. Normally the mine employs 600 men.

The Cosgrove-Meehan Co. has announced that, due to new contracts, Franco mine No. 3, located at Paulton, seven miles east of Marion, will reopen at once and employ 300 men who have been idle two months.

The St. Louis & O'Fallon Coal Co. has discontinued the sale of coal from its own mine in Illinois. It will be handled in the future through the Meteor Coal Co., of St. Louis.

The Black Servant Coal Co., of Danville and Elkville, have established their own sales office in St. Louis under the name of the Black Servant Coal Sales Co.

The By-Products Coke Corp., Chicago, reports March net earnings of $292,633 before depreciation and federal taxes, against $150,642 in March, 1925. Net earnings for the first quarter of 1926, before depreciation and federal taxes, were $886,818, compared with $169,864 in the first quarter of the previous year.

The State Mine Examining Board, of which William Hall is president and John Mulligan is secretary, has announced its schedule for May as follows: Belleveille, 10th; Harrisburg, 11th; Herrin, 12th; Benton, 13th; Duquoin, 14th; Centralia, 15th; Staunton, 17th; Springfield, 18th; Taylorville, 19th; Danville, 20th; Farmington, 21st; Peoria, 22d.

INDIANA

The Carlisle mine, at Carlisle, owned by the Carlisle Coal Mining Co., has reopened after a two-months shutdown. It was closed about the middle of February when it failed to meet its payroll. Under the present arrangement whereby it was reopened miners will receive half their back pay and the remainder in instalments, money to be furnished by subscription of Carlisle business men. Three thousand dollars is on hand at present. By a new contract with the Carlisle Fifth Vein Coal Co., owners of the mine will buy its output from the Fifth Vein company, which will operate the pit. Will Cooper will be local superintendent under Wesley Harris, general superintendent of the Carlisle Coal Mining Co.

The Indiana Coal Co., of Sullivan, has filed a certificate of dissolution. Following the filing of this certificate, the same incorporators filed incorporation papers for the Indiana Coal Co., giving a capital stock of 300 shares of no par value. The company is formed primarily to enter the production end of the business. Among the incorporators are Will H. Hays, motion picture czar and former Postmaster General, whose home is in Sullivan, and his brother, Hinkle C. Hays, attorney of Sullivan. Joseph E. Hitt is given as the other incorporator.

KANSAS

Postpone Rescue Meet.—The Kansas mine-rescue and first-aid meet that was to have been held in Pittsburg on May 22, has been indefinitely postponed, it was announced after a meeting of the general arrangements committee. While the meet may be held in the late summer or early autumn it is probable that it will be deferred to next year, members said. The great expense of sending the winning team to the international meet in San Francisco, together with other outlays for the meet made it impossible to finance it at a time when the coal industry in this region is inactive, members of the committee stated.

Examinations of applicants for certificates as mine foremen, hoisting engineers, gas men and shotfirers were held in Pittsburg, on April 17 by the state mine examining board.

Jackson-Walker Lease 10 Mines.—The Jackson-Walker Coal & Mining Co. announced on April 5 that leases had been signed on ten of its mines in the Pittsburg district to ten different companies as follows: Pittsburg, Crawford County, Cayuga, Victor, Star, Wolfe & Linthicum, Moore, Wilbert & Schreeb, Dittman & Wachter and Gubbio coal companies. The leases run to March 31, 1927. The Jackson-Walker no longer operates any mines, leasing all its properties to operating companies and handling the greater part of their output.

Sixty-two miners who had completed their night class work in Scammon and West Mineral in the extension course in mining offered by the State Teachers College received their certificates April 6, short addresses being made by President W. A. Brandenburg, Prof. G. E. Abernathy and Prof. J. A. Yates, of the Teachers College; Matt L. Walters, president of District 14, United Mine Workers, and James Sherwood, state mine inspector. Similar exercises were conducted in Arma the night of April 8 for a large class of miners completing the course there.

KENTUCKY

William A. Schanzenbacher, manager of a Louisville yard of the St. Bernard Mining Co. division of the West Kentucky Coal Co., is in a serious condition at a local hospital as a result of having been shot by two would-be bandits on the evening of April 3. The gunmen trailed him in another machine from the coal company office to his home, and started shooting, one of the five bullets striking him in the abdomen. After the shooting the bandits jumped into their car and fled, without taking a box from him which contained nearly $300. In their excitement they failed to change a set of license tags, and were later picked up, and acknowledged the

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plot. Schanzenbacher has a fair chance of recovery, the bullet having been removed in an operation the following day.

Work of stripping the Canoe Creek mine, located in Henderson County, has been started by A. D. Reed. The mine formerly was operated as a shaft mine. All cutting machines, motors and rails will be brought to the surface and sold at private sale, it was announced.

The Eastern Kentucky R.R., operating thirty-six miles of track from Webbville to Riverton, near Ashland, Ky., has petitioned the Interstate Commerce Commission for permission to abandon the road, which has lost money for several years. This road some three years ago was frequently mentioned in reports regarding an extension of the Detroit, Toledo & Ironton R.R. owned by Henry Ford, traffic men figuring that it might be bought up and used as a link in a proposed road to reach the eastern Kentucky coal fields.

Following the recent announcement that the Old Ben Coal Corporation, Chicago, had closed contracts for eastern Kentucky and western Kentucky coals it has been learned that the company arranged with the Hart Coal Corporation, Providence, for supplying western Kentucky fuel.

MINNESOTA

The Zenith Furnace Co., of Duluth, has awarded a contract for complete re-equipment of the section of the coal dock destroyed by fire last January. The dock uses the cable-drawn coal car system in which the cars dump into pockets for delivery to coke ovens or for outgoing car shipments.

MISSOURI

Miners of Bevier have reached an agreement to operate the Star coal mine on a co-operative basis, and will put the plant in shape to work soon. About 50 men will be given employment, the number to be increased as the demand develops. The mine suspended April 1, 1924. A co-operative coal mine at Macon has been doing well and from 75 to 100 men have found steady work there right along. It is operated in conformity with the union laws and union men have at all times been working in the pit.

The St. Louis Coal Club last week elected the following officers: President, Louis C. Meid; first vice-pres., Harry K. Pilkington; second vice-pres., Edw. D. Houlle; secretary, Joseph J. Harding; treasurer, Gregory W. Daues; directors, Geo. H. Martin, Arthur M. Hull, Henry C. Frier and Carl Stiefel.

Horace Whetsel, treasurer of the Home Coal Co., Macon, has announced that the company will open Mine No. 1 at once to supply the needs of patrons of the company and the Mulkey Block Co. The Mulkey Block company closed down March 31 to add some equipment to its mine.

NEW MEXICO

Form Institute Chapter.—At a recent meeting of foremen and officials of the Phelps Dodge Corp. held in Dawson, a chapter of the Rocky Mountain Coal Mining Institute was organized with twenty-five charter members. W. C. Holman, chief engineer, was elected president and Wm. Moorehead, assistant underground superintendent, was named secretary of the new organization. Various phases of the coal mining industry will be discussed at the monthly meetings of the chapter and membership will be open to all foremen, department heads and other executives.

NEW YORK

The city water works department of Buffalo on April 10 opened bids for furnishing three-quarter slack coal to the pumping station for a year, beginning July 1. The tenders were as follows: On $2.25 rate, Lake Erie Fuel Co., $1.44; Theo. Krug, $1.53; M. Balber & Son (Avella slack), $1.44; on $2.39 rate, Agnew-Smith Fuel Co., $1.30; Theo. Krug, $1.39. The Balber bid is regarded as irregular, making the Lake Erie Fuel Co. lowest, by one cent. No action was taken by the department.

NORTH DAKOTA

Records of the state Railroad Commission of North Dakota on lignite shipments show a slight gain for the first three weeks of March, 1926, as compared with the same month in 1925. Interstate shipments were 5,472 tons against 4,615 and intrastate were 53,289 against 51,285.

OHIO

Upon the application of John McMillen, president of the Big Bailey Mining Co., the Carr Run Coal Co., and the North Hill Coal Co., R. H. Jackson, of Nelsonville, was named receiver of the three companies by the common pleas court recently. The three companies have been operated by Mr. McMillen and C. C. Sharp, of Nelsonville, on property leased from the Sunday Creek Coal Co., upon a royalty and sales contract basis.

The Harbison-Walker Refractories Co., which has headquarters at Pittsburgh, has taken options on the clay rights of four large tracts of coal lands in Jackson County, and steps have been taken to make extensive tests for fine clays for refractories manufacture. Drilling machines will be used to determine the quality of the various clay seams. The company obtained the options from the Superior Colliery Co., of which U. S. Morris, Detroit, is president. In all about 6,000 acres are to be tested. In the mining operations in No. 2 seam the men exposed many fine clay seams.

Several thousand forest trees are being planted on the property of the Wayne Coal Co., near New Lexington. The reforestation is being supervised by F. W. Dean, of the Forestry Department of the Ohio Agricultural Experiment Station.

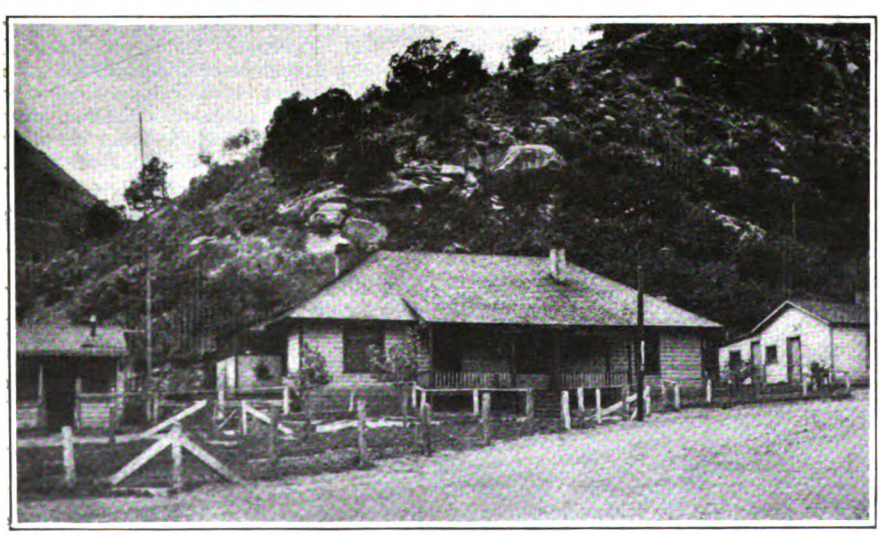
The Black Diamond, mines, near Glouster, will soon suspend operations, unless some change is made in the wage scale. The company has just completed the driving of a new entry 300 ft. long to open a new body of coal. About 250 men are habitually employed at the mine.

The Board of Education of Columbus will receive bids May 13 for approximately 15,000 tons of mine-run or lump coal and 2,000 tons of nut, pea and slack to be delivered to the various public schools of the city. The specifications provide for analysis of the coal offered by the various bidders.

PENNSYLVANIA

Plant 300,000 Trees.—The Berwind-White Coal Mining Co. and the Wilmore Coal Co. are each planting 100,000 trees on lands in Somerset County. The Wilmore Real Estate Co. also is planting 100,000 trees in the vicinity of Windber.

The sixth quarterly meeting of the Pittsburgh Coal Mining Institute was held in the Pittsburgh Chamber of Commerce, April 17. The institute is engaged in a general educational program involving the several successive steps



Official House or Club House of Carbon Fuel Co. at Rains, Utah

Though Rains is not named in recognition of the precipitation of moisture locally, but after L. F. Rains, of Salt Lake City, it shows clearly the advantage which rains afford. Much of Carbon County is arid and Rains itself is perhaps semi-arid, but the hills are clad with scrub vegetation.

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in the operation of a coal tract from the optioning, testing and prospecting to full development. The largest session dealt with the modern development stages. A. W. Hesse, chief engineer of the Buckeye Coal Co., Nemacolin, was the chief speaker. B. L. Lubelsky, explosives engineer of the Pittsburgh Coal Co., discussed the several types of explosives with respect to several methods of blasting coal. A question box was in charge of Hunter Klingensmith, safety director of the National Mining Co., Morgan, Pa.

The U. S. Engineer's report for March showed that 1,594,624 tons of coal and 30,224 tons of coke moved on the Monongahela River, 370,352 tons of coal moved on the Ohio and 64,100 tons of coal moved on the Allegheny River.

Open-shop miners of the Pittsburgh Coal Co. in the Pittsburgh district established a new record for a week's production during the week ended April 10, when 39,026 tons of coal was dumped through the tipples of 10 mines. This is the largest coal output in one week since the first mine was reopened independent of the United Mine Workers, in August, 1925. A new maximum number of men at work on any one day was reached during the week with 2,156, and a new daily output record was reached with 7,200 tons.

TENNESSEE

Tennessee mined 846,243 more tons of coal in 1925 than in 1924, at an increased value of $1,724,723, according to O. P. Pile, chief mine inspector. The average price was $1.90 or 14c. lower than 1924, while the wages increased $200,000.

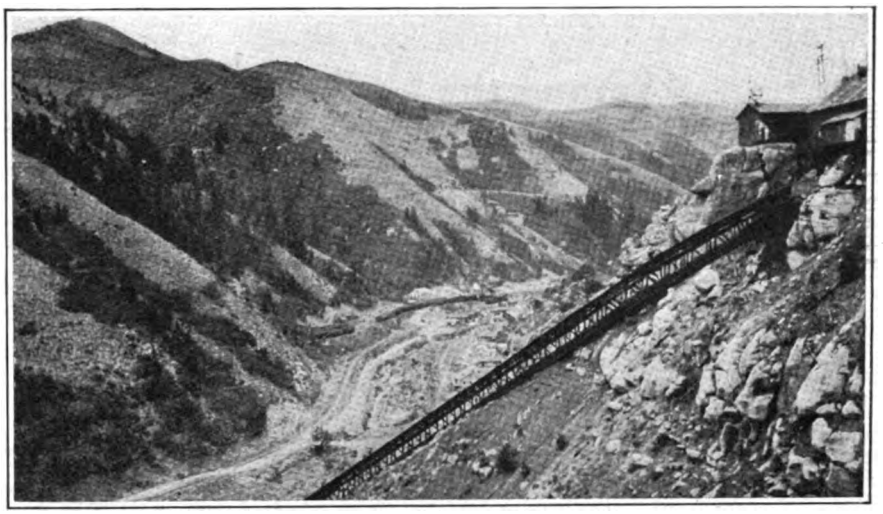
UTAH

The Columbia Steel Corp., with offices in Salt Lake City and a plant at the new town of Ironton, Utah County, has taken up another 116 acres of land for the purpose, it is understood, of extending its coal operations.

WEST VIRGINIA

After an inspection trip covering their mines in Boone County, stockholders of the Coal River Collieries Co., controlled largely by members of the Brotherhood of Locomotive Engineers, held their annual meeting in Huntington, on April 6 but did not elect their directors at that time owing to the fact a majority of the stock was not represented at the meeting. The election was therefore deferred until May 15, and it is believed that the election will be conducted by ballots. At the conclusion of the two-day meeting stockholders heard the report of President J. T. Dunigan and discussed it informally.

It is reported in coal circles that J. S. Thurmond, son of the late Capt. W. D. Thurmond, has disposed of the three-fifths interests of the Thurmond heirs in 3,500 acres of smokeless coal land in the Minden section of Fayette County to the New River-Pocahontas Consolidated Coal Co. The company formerly owned a two-thirds interest. The sale followed action in federal courts, according to reports.



Scraper Conveyor at Rains, Carbon County, Utah

To the left can be seen Spring Canyon. Rains, operated by the Carbon County Coal Co., is the most northern of all the plants on the canyon except Mutual, which is operated by the Mutual Coal Co., of Salt Lake City.

The Black Betsy and Otto Marmet Coal Co. properties in the Black Betsy and Raymond City sections, respectively, in Putnam County, have been taken over by the Otto Marmet Coal Mining Co., the original company, it is reported. This followed federal court action in which the Johnson McKinley interests released the properties. It is reported that the company is considering a plan to consolidate the properties and probably spend from $100,000 to $200,000 in improvements.

Within six weeks the new rope and button conveyor being installed by the Forsdon Coal Co. at Nuttallburg mine, Nuttallburg, Fayette County, will be completed. The conveyor is 1,500 ft. long and will cost approximately $100,000.

Mines Nos. 5 and 6 of the Crab Orchard Improvement Co., at Eccles, Raleigh County, will be rock-dusted beginning this week.

J. D. Stoots and James Keath, who were among the entombed miners rescued March 8 from mine No. 5 of the Crab Orchard Improvement Co. at Eccles, addressed a meeting of the Fayette Mining Institute at Mount Hope Saturday night, April 10. Robert M. Lambie, chief of the state department of mines, also spoke.

Ground has been broken in Belle, 10 miles east of Charleston, for the new plant of the Sharpless Solvents Corporation, and W. H. Mason, formerly of the Winifrede Coal Co., is in charge of the work.

Rock-Dusting Spreads. — The state Department of Mines reports that these mines in southern West Virginia are being rock-dusted: Lake Superior mines Nos. 1 and 2 of the Lake Superior Coal Co., at Superior, McDowell County; the mine of the Landstreet Downey Coal Co. at Delbarton, Mingo County; a mine of the Elkhorn Piney Coal Mining Co. at Stanaford, Raleigh County; mines Nos. 21 and 22 of the Island Creek Coal Co., at Holden, Logan County.

Three prosecutions were made recently by the state Department of Mines against men charged with short-fusing, improper tamping, storing powder in the mine and other offenses. Each miner was fined $50 and costs by justices of the peace. The alleged offenses occurred at the Kingmont mine of the Virginia & Pittsburgh Coal Co. near Fairmont, and the J. D. Boone Coal Co. at Boonedale, Kanawha Falls, Fayette County.

The Paisley interests, of Cleveland, have issued instructions to the management of the company's four operations in the Monongalia field to keep the mines closed indefinitely instead of operating on a non-union basis. The management states it can buy non-union coal to fill orders at a lower price than it can be mined in Monongalia County.

CANADA

The British Empire Steel Corporation's coal mines produced 268,582 tons in March. Of this amount, 167,794 tons was hoisted in the Glace Bay and New Waterford district; 13,121 at Sydney Mines; 38,602 at Acadia Mines, and 49,065 at Springhill.

Bituminous coal has been discovered at Long Rapids, on the Mattagami River, northern Ontario, but whether it exists in commercial quantities has not as yet been ascertained. The occurrence of lignite in the locality has been known for some years, but a borehole through the lignite revealed a seam of bituminous coal. Work is now under way on the sinking of a shaft to the bituminous seam.

Coal operators of British Columbia are meeting with keen competition owing to large importations of British coal. This is due to the increase of grain exportations by the Pacific route, the grain-carrying ships bringing from England return cargoes of coal. The British coal can be sold on the western Canada market cheaper than the home product. This is made possible by the policy of the British government in subsidizing coal production in order to keep the British miner at work.

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Among the Coal Men

Samuel W. Parr, professor of chemistry in the University of Illinois, who will receive the Chandler gold medal for 1926, will deliver a lecture on "The Constitution of Coal" in connection with the presentation, at Havemeyer Hall, Columbia University, New York City, at 8:15 p.m., April 23.

A. G. Johnson has been appointed as general superintendent of the Greenbrier Coal & Coke Co. in McDowell County, West Virginia, to succeed Charles L. Logan, who resigned. The appointment became effective April 1. Mr. Logan became superintendent of the Killarney Smokeless Coal Co., operating in Raleigh County, W. Va., on April 1.

Walter R. Thurmond, head of the Thurmond Consolidated Coal Co., with headquarters at Logan, W. Va., has announced the appointment of **H. A. McAllister**, formerly general superintendent of the Logan Division of the West Virginia Coal & Coke Co., as general manager of mines for the Thurmond interests.

J. B. McCune, of Bentleyville, Pa., general superintendent of the Bethlehem Mines Corporation in that district, was the principal speaker at the weekly luncheon of the Charleroi (Pa.) Rotary Club last week.

Charles O. Fowler, formerly of the Southern Coal Co., Chicago, distributors of western Kentucky coal, has become president of the Abbott-Irwin Coal Co., Chicago. Mr. Fowler was one of the first Illinois coal men to enter the western Kentucky field. He began in 1916 as vice-president of the Bickett Coal & Coke Co. In 1920 he went to the Monro-Warrior Coal Co. and two years later became president of the Southern Coal Co., selling coal which was recently taken over by the Peabody Coal Co. This change brought about Mr. Fowler's connection with the Abbott-Irwin Coal Co.

W. H. Grady, of New York, was recently appointed as consulting engineer of the West Virginia Coal & Coke Co., and is giving much attention to the operating affairs of that company. He also is consulting engineer for a number of other coal companies operating in different sections of West Virginia.

V. Y. Dallman, editor of the Illinois *State Register*, has been appointed receiver for the St. Louis Coke & Coal Co. by Federal Judge Fitz Henry. Mr. Dallman succeeds F. O'Donnell, Bloomington, who died recently. The new receiver says he will wind up the affairs of the receivership by disposing of claims pending.

Don D. Walker, manager in Louisville, Ky.; New Albany, Ind., and Jeffersonville, Ind., for the St. Bernard division, West Kentucky Coal Co., was recently elected a director of Post Q, Travelers Protective Association, at New Albany, Ind.



John Hays Hammond

When John Hays Hammond, eminent engineer and former chairman of the U. S. Coal Commission, arrived in New York last week after a trip to Europe he learned that a celebration had been arranged in honor of his seventy-first birthday, which occurred in March, when he was abroad. Mr. Hammond told some friends who met him at the pier that eating and drinking when he felt like it, and even worrying a little, had not proved a handicap in living to be 71.

Obituary

Abner Lunsford Succumbs To Pneumonia

Abner Lunsford, general manager of the Fordson Coal Co. (Henry Ford interests), with headquarters in Stone, Ky., who was well known to the coal trade of southern West Virginia, died in the Good Samaritan Hospital in Cincinnati, April 12, of the effects of an attack of pneumonia, following an operation for appendicitis.

Mr. Lunsford formerly was general manager and part owner of the Banner Fork Coal Co. at Harlan, Ky., and when Mr. Ford purchased the mines he made Mr. Lunsford general manager with extended duties. Two of these mines are located in southern West Virginia, the Nuttallburg mine at Nuttallburg, Fayette County, and the Twin Branch plant at Twin Branch, McDowell County, along the Norfolk & Western Ry.

At one time Mr. Lunsford was connected with the Virginia Iron, Coal & Coke Co. in the Clinch Valley at Norton and at St. Paul. He was especially well known in operating circles in Charleston, and was highly regarded as a mining man.

John F. Fuller, 33 years old, part owner of the Sunflower Coal Co., Scammon, Kan., was killed by a fall of rock in the company's mine, near Columbus, Kan., on the afternoon of April 7. Mr. Fuller was working alone in a room when a 1,000-lb. slab fell on his shoulders, pinning him to the floor. His brother, Harry Fuller, associated with him in the company, heard the crash, but it was ten minutes before the rock could be broken by sledgehammers and the man removed. Mr. Fuller had lived in the southeastern Kansas field seven years.

David William Jones, brother of John E. Jones, safety engineer of the Old Ben Coal Corp., Chicago, Ill., was fatally injured April 16 in a mine accident. The younger and only brother of the safety engineer was engaged in operating a small mine with his father, and according to the information received the wheel in the headframe broke, and Jones was killed outright. The shaft is 40 ft. in depth and is located at Spara, Ill. He is survived by a widow and two children.

George P. Pattison, 75 years old, a coal operator identified with the Piedmont field of West Virginia for 60 years, died suddenly April 6, as he was about to leave his home for Baltimore on business. Mr. Pattison had apparently recovered from grip. His wife died about three weeks ago. He leaves three sons, Carroll and Russell Pattison, well-known coal operators of Bloomington, and Dorsey Pattison of Westernport, manager of the Pattison store at Bloomington.

Traffic News

To Study Coke Rates from South

The Coal, Coke & Iron Ore Committee, Central Freight Association Territory, announces a public hearing on coke rates in general from Birmingham, Ala., to destinations in the State of Michigan. Application for extension of the basis covered by Committee Information Circular No. 1373 beyond April 30, 1926, for an indefinite period having been made by Southern coke producers and shippers through the Southern Freight Association, the committee will hold a session at Room 606 Chamber of Commerce Building, Pittsburgh, Pa., April 29, 1926, at 10 A.M., daylight saving time.

The Kanawha Coal Operators' Association was an intervener at the hearing of the Kalbaugh Coal Co. case, which was heard by an examiner of the Interstate Commerce Commission at Cumberland, Md., on April 16. The Kalbaugh Coal Co., which operates a mine at Barnum, Mineral County, W. Va., along the Baltimore & Ohio R.R., seeks to have its rate lowered under the so-called Myersdale (Pa.) group rate on the ground that as the coal from its mines does not have to be hauled over the Allegheny Mountains it should have a lower freight rate to the east than mines in the Preston County fields of northern West Virginia. The State of Maryland filed an amended complaint with the Commission designed to protect the several coal fields of that state. Southern West Virginia wants the present relativity to remain intact.

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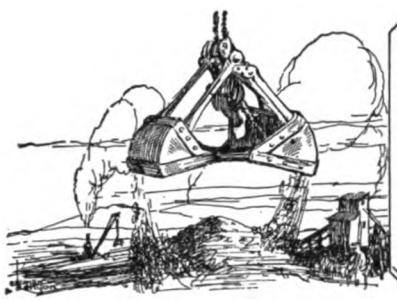
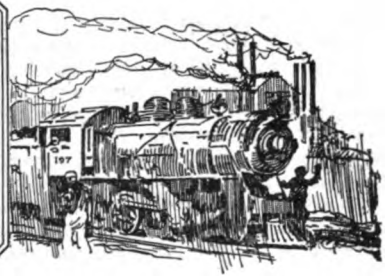


Production And the Market



Soft-Coal Market Suffers from Stand-Off Policy; Anthracite Demand Disappointing

Developments in the bituminous coal trade during the last week, as far as any approach to a firm footing is concerned, brought comparatively little comfort to anyone. Domestic business, it is true, felt the stimulus of a quickened demand brought about by unseasonably low temperatures, but orders were fitful, unevenly distributed and only in sufficient volume to tide over immediate requirements.

Steam-coal demand shows but little change, particularly in the contract situation. Large industrial consumers are reluctant to enter into agreements, the belief in some quarters being that the bottom of the market has not been reached. Some business is being closed quietly, of course, but most of the orders that are placed in the open are practically "bargain counter" deals. This condition does not seem to be confined to any section, a waiting game apparently having been adopted as the ruling policy. The utilities and railroads in all districts likewise are in no hurry to cover.

Lake Shipping Further Delayed

The backwardness of the lake season has been the chief unsettling influence, continued congestion between the mines and the docks at Toledo and Sandusky having made it necessary for the railroads to continue the embargo on shipments until the tracks have been cleared. The movement of a large tonnage of western Kentucky coal into channels served by Illinois and Indiana producers seems to be helping the general market situation in the Middle West. Price competition, which of late has been ruinous, will be less keen, it is hoped, and a further stabilizing influence is seen in the reports of more mergers.

Although production continues above the seasonal average of the preceding two years, the downward course of spot prices came to a halt this week. *Coal Age* Index on April 19 stood at a fraction over 158 and the corresponding price was $1.92. This was an advance of about 1c. compared with the preceding week.

Bituminous coal production during the week ended April 10 was estimated by the Bureau of Mines at 9,429,000 net tons. Output was partly curtailed by the observance of Easter Monday, though the total was 389,000 tons higher than for the preceding week.

Weak Retail Demand for Hard Coal

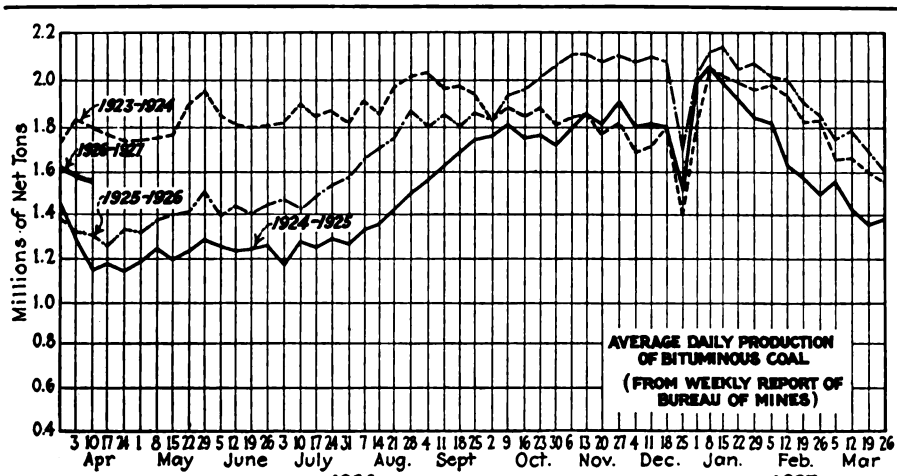
Domestic sizes of anthracite from company mines are moving with comparative freedom, pea continuing to show the greatest strength. Retail distributors, particularly in New York and Philadelphia, find the demand a distinct disappointment. Consumers in most cases are indifferent to efforts to induce them to place orders for next winter. The cool spell served to bring in only small orders for immediate consumption. Baltimore householders, on the other hand, are placing orders promptly for season's requirements, lest prices be increased later.

Considerable uneasiness has been expressed by retail distributors lest the anthracite operators reduce the prices on domestic sizes later in the season. The likelihood of any such action being taken is so extremely remote, however, that it may be ignored.

Premium prices on the larger domestic sizes are largely nominal as the market refuses to absorb any substantial tonnage at prices above company circulars.

The steam sizes are quiet, some industrial consumers holding out for lower prices on contracts.

In the Connellsville coke market there is practically no spot demand for any grade and output is declining slightly.



Estimates of Production

(Net Tons)

	1925	1926
BITUMINOUS		
March 27	8,353,000	9,626,000
April 3 (a)	7,547,000	9,040,000
April 10 (b)	7,843,000	9,429,000
Daily average	1,307,000	1,571,000
Cal. yr. to date (c)	138,844,000	159,747,000
Daily av. to date	1,637,000	1,882,000
ANTHRACITE		
March 27	1,640,000	1,991,000
April 3	1,438,000	1,549,000
April 10	1,672,000	1,793,000
Cal. yr. to date (c)	24,059,000	13,303,000
BEEHIVE COKE		
April 3 (a)	234,000	234,000
April 10 (b)	212,000	231,000
Cal. yr. to date (c)	3,457,000	4,288,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

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Railroads Reluctant to Contract

Middle Western railroads still play a waiting game in the matter of contracts. Few, if any, of the big systems have covered for their requirements and the little buying being done is at low prices. One belt line, for example, closed for April delivery of western Kentucky coal at $1,10 for mine-run. A number of large industrial consumers also are fighting shy of contracts. Spot business is quiet, but fairly strong.

Another cold snap last week put life into the demand for domestic sizes, but orders are unevenly distributed. In the southern Illinois field, Carterville operators complain that business is backward, except at mines supplying railroad tonnage. Duquoin working time is down to three days a week and the number of idle mines is increasing. On the whole, steam business exceeds domestic in the Mt. Olive district. The only coal in the Standard district that is not backing up on producers is slack.

Eastern Kentucky and West Virginia are pounding the Chicago territory for tonnage. Coke also is making a drive to hold its position against anthracite. The failure of the anthracite producers to make the usual spring reduction has helped the coke market and many dealers are pushing the latter product much more actively. Aside from a weather domestic movement of the cheaper coals, the St. Louis local market is featureless.

Kentucky Competition Less Menacing

The passing of such a large tonnage of western Kentucky coal into the hands of Illinois and Indiana producers is having a favorable effect upon the general market situation in the Middle West. Ruinous price competition, the optimists believe, will be lessened. Talk of additional consolidations in the Middle Western fields also is looked upon as a stabilizing influence. Mines in western Kentucky are now operating at about one-third capacity.

The Louisville view of the railroad contract situation is happier than that prevailing at Chicago. However, the optimism rests more upon contracts that may be placed than on actual orders. The Illinois Central is reported to be buying in the open market at around $1.50, mine-run; the Louisville & Nashville, says rumor, is paying $1.40@$1.50 for western Kentucky coal and up to $1.60 for southeastern Kentucky and Tennessee mine-run.

Troublesome accumulations of "no bills" in the eastern Kentucky districts have disappeared. There is considerable dickering on lake business, but the situation is by no means clear as the late opening of the season relieves buyers of the necessity of closing. Utilities are contracting at a fair rate, but industrial consumers are holding back.

Western Kentucky Prices Firmer

On the whole, the tendency in western Kentucky prices is toward greater firmness. Actual realizations are ap-

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	April 20 1925	April 5 1926	April 12 1926	April 19 1926
Smokeless lump	Columbus	$2.60	$2.85	$2.85	$2.75@$3.00
Smokeless mine run	Columbus	1.95	1.95	1.90	1.85@ 2.00
Smokeless screenings	Columbus	1.40	1.15	1.10	1.00@ 1.25
Smokeless lump	Chicago	2.85	2.60	2.60	2.50@ 2.75
Smokeless mine run	Chicago	1.95	1.80	1.80	1.65@ 2.00
Smokeless lump	Cincinnati	2.60	2.75	2.75	2.50@ 3.00
Smokeless mine run	Cincinnati	2.00	2.00	1.90	*1.75@ 2.00*
Smokeless screenings	Cincinnati	1.50	1.35	1.35	1.25@ 1.50
*Smokeless mine run	Boston	4.30	4.15	4.20	**4.25@ 4.40**
Clearfield mine run	Boston	1.90	1.85	1.85	1.75@ 2.00
Cambria mine run	Boston	2.25	2.15	2.10	2.00@ 2.25
Somerset mine run	Boston	2.00	2.00	1.95	1.80@ 2.10
Pool 1 (Navy Standard)	New York	2.60	2.70	2.65	2.50@ 2.85
Pool 1 (Navy Standard)	Philadelphia	2.60	2.80	2.80	2.65@ 3.00
Pool 1 (Navy Standard)	Baltimore	2.00	2.05	2.05	2.00@ 2.10
Pool 9 (Super. Low Vol.)	New York	2.05	2.25	2.25	*2.10@ 2.30*
Pool 9 (Super. Low Vol.)	Philadelphia	2.00	2.35	2.35	2.20@ 2.50
Pool 9 (Super. Low Vol.)	Baltimore	1.85	1.90	1.90	1.85@ 1.95
Pool 10 (H.Gr.Low Vol.)	New York	1.80	1.85	1.85	1.70@ 2.00
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.65	2.05	2.05	1.90@ 2.25
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.70	1.75	1.75	1.70@ 1.80
Pool 11 (Low Vol.)	New York	1.50	1.65	1.65	**1.55@ 1.85**
Pool 11 (Low Vol.)	Philadelphia	1.55	1.70	1.70	1.55@ 1.85
Pool 11 (Low Vol.)	Baltimore	1.45	1.60	1.60	1.60@ 1.65
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.45	1.45	1.45	1.35@ 1.55
Pool 54-64 (Gas and St.)	Philadelphia	1.45	1.45	1.45	1.35@ 1.55
Pool 54-64 (Gas and St.)	Baltimore	1.65	1.30	1.30	1.30@ 1.35
Pittsburgh st'd gas	Pittsburgh	2.40	2.40	2.40	2.35@ 2.50
Pittsburgh gas mine run	Pittsburgh	2.00	2.05	2.05	2.00@ 2.15
Pittsburgh mine run (St.)	Pittsburgh	1.80	1.95	1.95	1.90@ 2.00
Pittsburgh slack (Gas)	Pittsburgh	1.65	1.55	1.55	1.50@ 1.60
Kanawha lump	Columbus	2.10	2.05	2.05	1.85@ 2.25
Kanawha mine run	Columbus	1.40	1.55	1.55	1.40@ 1.70
Kanawha screenings	Columbus	1.10	1.10	.85	.75@ .95
W. Va. lump	Cincinnati	1.85	1.85	1.85	1.75@ 2.00
W. Va. gas mine run	Cincinnati	1.35	1.50	1.45	**1.40@ 1.60**
W. Va. steam mine run	Cincinnati	1.25	1.40	1.30	1.25@ 1.40
W. Va. screenings	Cincinnati	1.20	.90	1.00	*.75@ 1.00*
Hocking lump	Columbus	2.25	2.35	2.35	2.25@ 2.50
Hocking mine run	Columbus	1.40	1.55	1.55	1.40@ 1.70
Hocking screenings	Columbus	1.15	1.10	1.05	1.00@ 1.15
Pitts. No. 8 lump	Cleveland	2.30	2.25	2.20	**1.85@ 2.65**
Pitts. No. 8 mine run	Cleveland	1.75	1.85	1.80	1.80@ 1.85
Pitts. No. 8 screenings	Cleveland	1.35	1.55	1.60	*1.35@ 1.45*

Midwest	Market Quoted	April 20 1925	April 5 1926	April 12 1926	April 19 1926†
Franklin, Ill. lump	Chicago	$2.60	$2.60	$2.60	$2.60
Franklin, Ill. mine run	Chicago	2.35	2.40	2.40	2.35@ 2.50
Franklin, Ill. screenings	Chicago	2.10	1.85	1.85	1.75@ 2.00
Central, Ill. lump	Chicago	2.35	2.30	2.30	2.25@ 2.40
Central, Ill. mine run	Chicago	2.10	2.05	2.05	2.00@ 2.10
Central, Ill. screenings	Chicago	1.90	1.30	1.30	1.25@ 1.40
Ind. 4th Vein lump	Chicago	2.60	2.40	2.40	2.25@ 2.60
Ind. 4th Vein mine run	Chicago	2.25	2.15	2.15	2.10@ 2.25
Ind. 4th Vein screenings	Chicago	2.05	1.70	1.70	1.65@ 1.75
Ind. 5th Vein lump	Chicago	2.25	2.15	2.15	2.00@ 2.35
Ind. 5th Vein mine run	Chicago	1.95	1.95	1.95	1.85@ 2.10
Ind. 5th Vein screenings	Chicago	1.70	1.30	1.30	1.25@ 1.35
Mt. Olive lump	St. Louis	2.50	2.50	2.50	2.50
Mt. Olive mine run	St. Louis	2.25	2.15	2.15	2.15
Mt. Olive screenings	St. Louis	1.75	1.40	1.40	1.40
Standard lump	St. Louis	2.25	2.50	2.50	2.50
Standard mine run	St. Louis	1.80	1.80	1.80	1.75@ 1.85
Standard screenings	St. Louis	1.70	1.15	1.15	1.15@ 1.20
West Ky. block	Louisville	1.85	1.85	1.75	1.65@ 1.85
West Ky. mine run	Louisville	1.35	1.30	1.25	1.15@ 1.35
West Ky. screenings	Louisville	1.30	1.00	1.00	.90@ 1.15
West Ky. block	Chicago	1.85	1.75	1.75	1.65@ 1.85
West Ky. mine run	Chicago	1.30	1.15	1.15	.80@ 1.50
South and Southwest					
Big Seam lump	Birmingham	2.25	2.00	2.00	1.75@ 2.25
Big Seam mine run	Birmingham	1.75	2.00	2.00	1.75@ 2.25
Big Seam (washed)	Birmingham	1.85	2.25	2.00	1.75@ 2.25
S. E. Ky. block	Chicago	2.10	2.25	2.25	2.00@ 2.50
S. E. Ky. mine run	Chicago	1.55	1.65	1.65	1.50@ 1.85
S. E. Ky. block	Louisville	2.10	2.00	2.05	1.85@ 2.25
S. E. Ky. mine run	Louisville	1.30	1.55	1.55	*1.35@ 1.60*
S. E. Ky. screenings	Louisville	1.10	1.00	1.05	1.00@ 1.10
S. E. Ky. block	Cincinnati	2.10	2.10	2.10	2.00@ 2.25
S. E. Ky. mine run	Cincinnati	1.40	1.50	1.45	**1.25@ 1.75**
S. E. Ky. screenings	Cincinnati	1.30	.95	1.00	*.65@ 1.10*
Kansas lump	Kansas City	4.25	4.35	4.25	4.00@ 4.50
Kansas mine run	Kansas City	3.00	2.75	2.85	2.75@ 3.00
Kansas screenings	Kansas City	2.75	2.50	2.50	2.50

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	April 20, 1925 Independent	April 20, 1925 Company	April 12, 1926 Independent	April 12, 1926 Company	April 19, 1926† Independent	April 19, 1926† Company
Broken	New York	$2.34	.....	$8.00@$8.50	.....	$8.15@$9.25	.....	$8.15@$9.25
Broken	Philadelphia	2.39	.....	9.15	$9.25	9.00@ 9.25	$9.25	9.00@ 9.25
Egg	New York	2.34	$8.50@$8.75	8.25@ 8.50	9.25@10.25	8.75@ 9.25	*9.25@ 9.75*	8.75@ 9.25
Egg	Philadelphia	2.39	8.50@ 9.20	8.30@ 8.50	9.25@ 9.85	9.15@ 9.25	9.25@ 9.85	9.15@ 9.25
Egg	Chicago*	5.06	7.76@ 8.40	7.42@ 8.08	8.75	8.13	8.75	8.13
Stove	New York	2.34	8.75@ 9.00	8.50@ 8.90	9.25@10.25	9.25@ 9.50	9.50@10.00	9.25@ 9.50
Stove	Philadelphia	2.39	9.10@ 9.55	8.75@ 8.90	9.60@10.10	9.35@ 9.50	9.60@10.10	9.35@ 9.50
Stove	Chicago*	5.06	8.12@ 8.50	7.82@ 8.00	8.88	8.58	8.88	8.58
Chestnut	New York	2.34	8.50@ 8.75	8.25@ 8.50	9.25@10.25	8.75@ 9.15	*9.25@10.00*	8.75@ 9.15
Chestnut	Philadelphia	2.39	8.50@ 9.35	8.40@ 8.50	9.25@ 9.75	9.00@ 9.15	9.25@ 9.75	9.00@ 9.15
Chestnut	Chicago*	5.06	7.94@ 8.25	7.59@ 8.00	8.88	8.33@ 8.53	8.88	8.33@ 8.53
Pea	New York	2.22	4.50@ 5.25	5.00@ 5.50	6.25@ 7.50	6.00@ 6.35	6.50@ 7.25	6.00@ 6.35
Pea	Philadelphia	2.14	5.00@ 5.75	5.25@ 5.30	6.50@ 7.00	6.00@ 6.50	6.50@ 7.00	6.00@ 6.50
Pea	Chicago*	4.79	4.91@ 5.36	4.69@ 5.00	5.65	5.65@ 5.80	5.65	5.65@ 5.80
Buckwheat No. 1	New York	2.22	2.00@ 2.50	2.50@ 3.00	2.00@ 2.50	3.00@ 3.50	*1.75@ 2.25*	3.00@ 3.50
Buckwheat No. 1	Philadelphia	2.14	2.00@ 2.75	2.50	2.50@ 2.75	3.00	*2.25@ 2.75*	3.00
Rice	New York	2.22	1.75@ 2.10	2.00	1.50@ 2.00	2.00@ 2.25	1.50@ 2.00	2.00@ 2.25
Rice	Philadelphia	2.14	1.75@ 2.00	2.00	2.25	2.25	*2.00@ 2.25*	2.25
Barley	New York	2.22	1.40@ 1.50	1.50	1.25@ 1.50	1.60@ 1.75	1.25@ 1.60	1.60@ 1.75
Barley	Philadelphia	2.14	1.50	1.50	1.50@ 1.60	1.75	1.50@ 1.60	1.75
Birdseye	New York	2.22	1.40@ 1.60	1.60	1.60@ 1.75	2.00	*1.25@ 1.60*	2.00

*Net tons, f.o.b. mines. †Advances over previous week shown in **heavy type**; declines in *italics*.

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proximately 25c. per ton better than a year ago although the price ranges show little change. Screenings are selling at 85c.@$1.15, with little tonnage moving under 90c. Some lots of mine-run have gone at $1.05 or less, but the average is $1.15@$1.35. Some eastern Kentucky mine-run has sold at $1.20; most shippers, however, ask $1.35@$1.60.

Cold weather came to the rescue of the trade at the Head of the Lakes last week and kept retailers over the Northwest busy delivering small lots to improvident consumers. As a result some of the accumulations of smokeless coals, domestic coke and briquets put in stock during the hard-coal strike have been diminishing. There is a fair demand for anthracite, but no great pressure to buy. Dock men, however, hold to the belief that the market will absorb 1,000,000 tons in 1926-27.

There has been practically no contracting for soft coal by industrials and public utilities. Activity in that direction waits upon the announcement of the new season prices. Owing to ice conditions, actual receipts from the East are not expected before the first week in May. In the meantime quotations on stocks now on the docks are steady except upon coals which have degraded badly in storage.

Northwestern Consumers Indifferent

Fluctuating temperatures have created an air of uncertainty in the domestic coal trade at Milwaukee, but business thus far this month has been good. Results in March were comparatively satisfactory. The call for steam coal has been surprisingly strong and dealers expect to see the docks pretty well cleaned up by the time navigation opens. Prices are steady and unchanged. Despite uncertain weather conditions, business in the Twin Cities is characterized by evasive tactics on the part of consumers. Demand has been only moderate. Prices now named are considered tempting, but consumers show no interest.

Kansas mines did not catch up with their orders until last week. There is still enough cold-weather business on the books of the companies working to assure steady operation for some days. The increase in domestic demand has made the screenings situation easier and there has been a slowing down in the crushing of mine-run for steam consumption.

Colorado, too, is still enjoying a heavy demand for domestic sizes and running time has increased approximately 15 per cent. One of the largest producers has been so swamped with orders that it is now accepting business only for future delivery. Lump and nut are the sizes most called for, but there also is a fair movement of steam sizes.

Spring and summer storage prices have been announced. On Walsenburg domestic lump the base price is $4.25; on nut, $4; on anthracite, $6.75. These prices will be advanced 25c. per ton each month until August, making the August prices $1 higher. Trinidad coking coal is quoted at $2.75 for April delivery, $2.85 for May, $2.95 for June, $3.05 for July and $3.15 for August.

Utah mines again are complaining of poor business. Sales of prepared sizes are so small that it is difficult to take care of the orders for slack, which is firm at $1.50. "No bills" of lump and stove are waiting for buyers. The only real activity reported in the industrial field is in the buying by the smelters and the metal mines.

Smokeless Prices Continue Downward

Prices at Cincinnati continue on a downward course. Smokeless lump and egg were offered last week at $2.50, though the spread ranged up to $3. Mine-run dipped to $1.75. Screenings, however, maintain a firm front at $1.50.

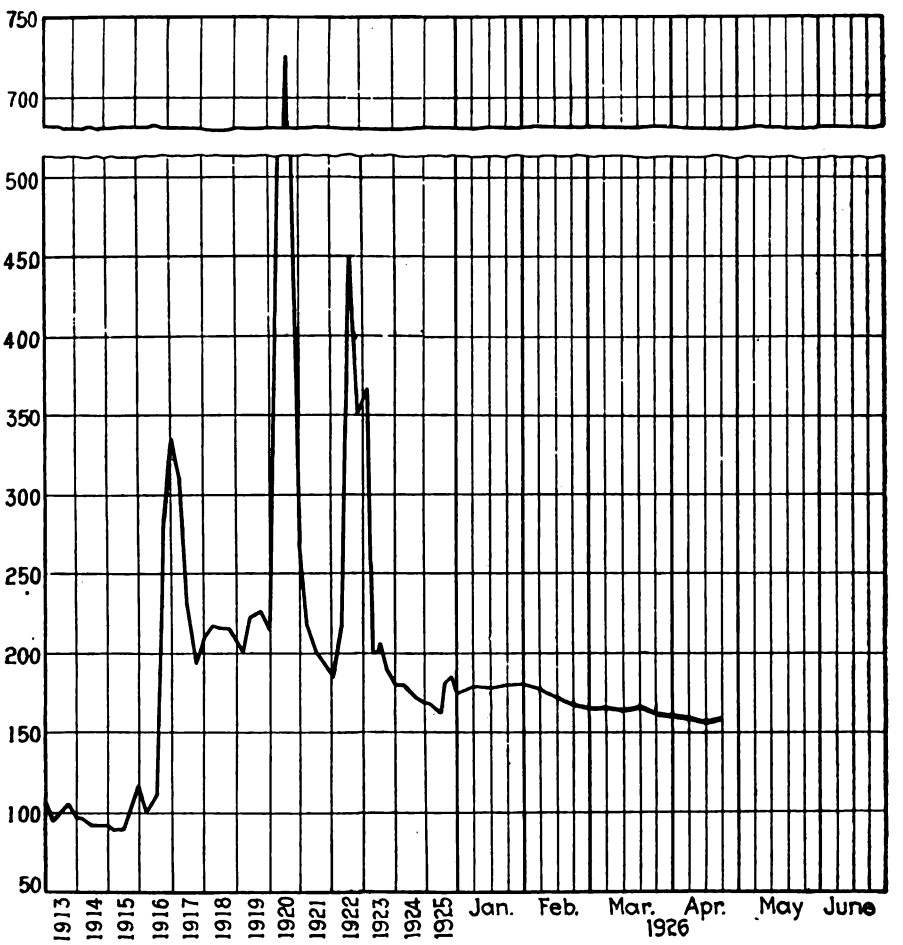
High-volatile mine-run is unsteady with a tendency to softness; 2-in. and egg are shaky, and screenings, which had been notably steady, are wobbling. Prepared lump sizes, on the other hand, are fairly firm, due to a decrease in the "make."

Overproduction is the principal cause of the difficulty, the latest report of coal movement through the Cincinnati gateway showing an increase of 1,545 carloads. Delay in the opening of lake navigation and embargoes at Toledo and Sandusky have intensified the dilemma.

Dealer demand is light, despite continued cold weather, buyers showing a disposition to "shop around," which is discouraging to sellers. Utilities and other large consumers are reluctant to close contracts, apparently being hopeful of a lower market. Retail trade has been unusually good for April on account of low temperatures.

The coal business in central and southern Ohio continues in a state of flux. There is little contracting by industrial consumers and the majority of the railroad contracts have not yet been placed. The slow start of the lake season also adds to the uncertainty and intensifies the pressure from the non-union fields. Lake business probably will be closed at $1.35@$1.50, mine-run. The bright spot in the lake situation is the possibility of a broader market for slack coal. Domestic trade is quiet.

At Cleveland an oversupply of bituminous coal from practically all fields that ship to this market coupled with an easing off in consumption of both steam and domestic grades has caused a pronounced depression. Slack and nut-and-slack are no longer scarce and prices have declined 5 to 15c. per ton in the last week.



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926				1925	1924
	Apr. 19	Apr. 12	Apr. 5	Mar. 29	Apr. 20	Apr. 21
Index	158	158	160	163	161	169
Weighted average price...	$1.92	$1.91	$1.93	$1.97	$1.95	$2.04

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.

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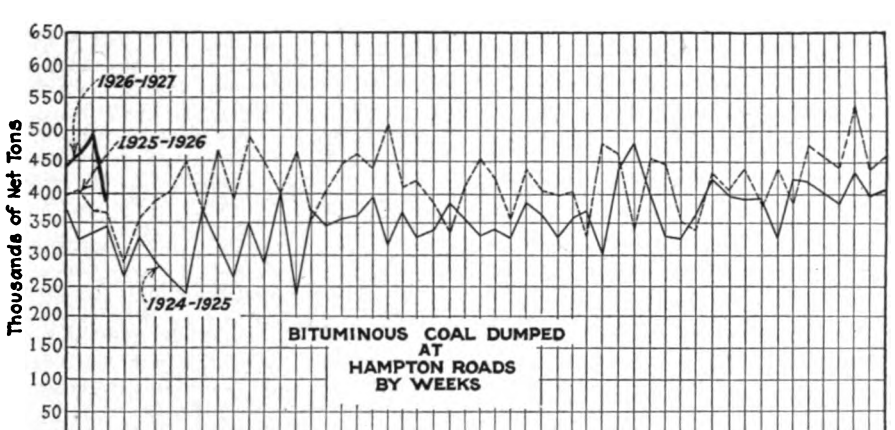


Output in eastern Ohio during the week ended April 10 was 199,000 tons, or 28 per cent of capacity, compared with 191,000 tons in the preceding week, which was a 5-day week, and 211,000 tons in the corresponding week a year ago.

Price Slide Continues at Pittsburgh

Very little coal is moving on the open market in the Pittsburgh district. Prices are more or less nominal. There are 18 or 19 mines now running open-shop and their output probably represents half of the commercial production of the district. Output for the field as a whole is less than 25 per cent of capacity.

With 2,400 "no bills" in the field, central Pennsylvania is experiencing the dullest market so far encountered this year. Loadings for the first ten days of the month were approximately 34 per cent less than for the same period in March. Quotations have declined 5 to 40c. in a week. Pool 1 dropped to $2.40@$2.60; pool 71, $2.20 @$2.40; pool 9, $2@$2.15; pool 10, $1.75@$2 and pools 11 and 18, $1.65 @$1.75.

With the exception of some small-lot domestic business due to cold weather, the Buffalo market is as dead as ever. Nominal quotations on mine-run and lump are unchanged, but it is not unlikely that these figures could be shaded. Slack is 5@10c. stronger. All-rail demand for anthracite still is so heavy that lake loading may not begin for several weeks. In Buffalo local territory coke alone is proving an active competitor of hard coal.

New England Trade Inert

In New England there is practically no buying of steam coal in any quantity. Consumers feel it is much too early to take on supplies even for summer consumption, and present prices afford no inducement. Shippers report extremely light tonnages in every direction and the market seems certain to be more or less glutted for months to come.

Rehandling factors here have again modified prices for Pocahontas and New River for inland delivery; $5.50 is quoted as a top figure now per gross ton on cars, and at Providence spot coal can be covered at as low as $5.25. Even the smaller purchasers are counting upon lower prices later on.

On the other hand the Hampton Roads situation is under slightly better control than a week ago. Accumulations are not heavy; there appears more co-ordination on the part of producers, and in consequence there is less talk of distress prices. The agencies maintain $4.25 as a minimum f.o.b. vessel per gross ton for No. 1 Navy Standard, but naturally all the weak spots are not yet eliminated.

Coals from central Pennsylvania show no favorable signs whatever. Output is extremely light and prices are at production cost.

New York Situation Slightly Better

There was a slight improvement in the bituminous situation at New York last week, although the distress tonnage still is uncomfortably large. Some high-volatile coal was offered at $2.25 @$2.75 alongside. Buyers, for the most part, are deaf to pleas for contract renewals. Local exporters are watching the British situation closely.

The one show of seasonal activity in the Philadelphia market has been the solicitation of bids by various public institutions. Competition on this business has been so keen that some bargain-counter prices have been named. The railroads have not changed their policy of dictating prices and feign indifference as to the future. Prices are weak. Baltimore is another market where the situation is flat and uninteresting, with tonnage highly competitive and buyers getting the best of the bargain.

There has been no material change in the Birmingham situation. The spot market in steam coals is slightly stronger and there are no troublesome surpluses to depress prices. Industrial operations throughout the territory are on a good basis. A little spot tonnage of high-grade domestic coal is available, with demand negligible. Most of the output, however, is covered by contracts. Foundry coke is strong at $5.50@$6.50, spot or contract; egg and nut coke is weak at $4.50@$5, f.o.b. ovens.

Hard-Coal Buying Disappoints

April buying of anthracite at New York has been disappointing. Retailers find it hard to induce consumers to place orders for next winter's supply. Company domestic sizes are moving fairly well, but there is practically no market for premium coal, except pea, and quotations have been shaded. The maximum premium is 50c. and it is no secret that tonnage can be had at approximately company prices. Steam sizes are dragging and prices are weaker.

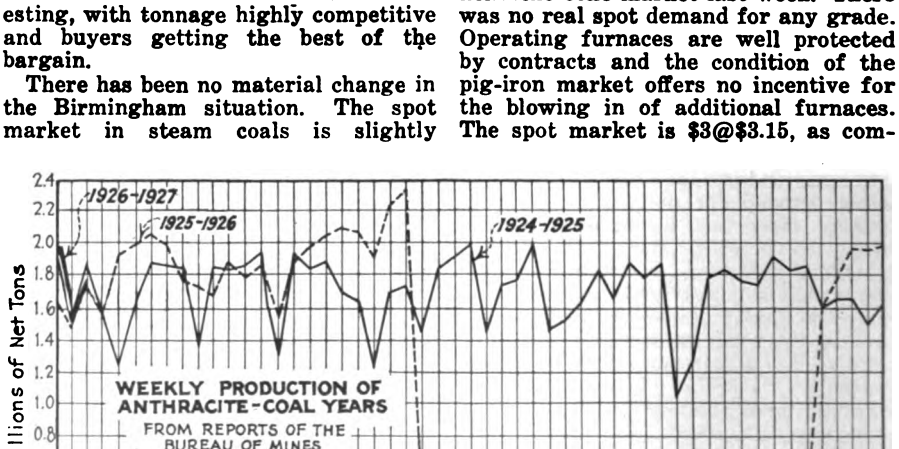
Were it not for the demand for coal for immediate consumption, the Philadelphia anthracite market would be weaker than it is. Some independents are experiencing difficulty in moving nut and some premium orders placed with middle houses have been canceled. In so far as movement at premium prices is concerned, pea coal is the strongest member of the hard-coal family.

The steam coal situation in unsatisfactory. Certain industrial consumers are holding out for lower prices on contracts. Independent No. 1 buckwheat has been offered for contract at $2.25. Buyers have no difficulty in picking up rice and barley at less than company circulars and the big producers are putting coal in storage.

Unlike the consumer at New York and Philadelphia, Baltimore householders are eager to place orders for their season's requirements. Some of the more forehanded are asking for April delivery, fearing an increase in prices later in the year.

Connellsville Coke Market Stagnant

Stagnation characterized the Connellsville coke market last week. There was no real spot demand for any grade. Operating furnaces are well protected by contracts and the condition of the pig-iron market offers no incentive for the blowing in of additional furnaces. The spot market is $3@$3.15, as com-



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Freight-Car Loadings

	Cars Loaded—All Cars	Coal Cars
Week ended April 3, 1926	928,092	156,909
Preceding week	967,838	171,413
Week ended April 4, 1925	861,990	123,403

pared with $3@$3.25 a fortnight ago. Spot foundry coke is weak at $4.25@$4.75.

The decline in merchant-oven production which began with the end of the anthracite strike continues, but furnace-oven output during the week ended April 10 showed a sharp increase. The total output, according to the Connellsville *Courier*, was 179,730 tons, as compared with 180,850 tons in the preceding week and 148,490 tons a year ago. Furnace-oven output increased 4,300 tons over the preceding week and merchant-oven output declined 5,420 tons.

Coal Consumption by Utilities Continues to Decline

Public utility power plants in the United States consumed 3,357,808 net tons of coal in February, according to the U. S. Geological Survey. This compares with a consumption of 3,730,371 tons in the preceding month and 3,803,633 tons in December, 1925. Fuel-oil consumption by utilities in February totaled 703,947 barrels, as against 1,014,245 barrels in January and 810,980 barrels in December.

The daily production of electricity by public-utility power plants in February surpassed all previous records with an average rate for the month of 199,700,000 kw.-hr. The average daily production of electricity by the use of water power also exceeded all previous daily rates, with an average for the month of 67,600,000 kw.-hr.

The total output for January and February of this year was about 11 per cent larger than for the same months in 1925 and the output in 1925 was only 5½ per cent larger than the output for the same months in 1924.

Dutch Production Increases

Coal production in the province of Limburg, which produces practically all of the Netherlands coal output, was 6,848,000 metric tons in 1925, as compared with 5,882,000 in 1924, an increase of 16 per cent. In addition slack coal was produced to the amount of 269,000 tons in 1925, a decrease of 10 per cent from the production of 299,000 tons in the preceding year.

The greatest increase took place in the third quarter of 1925, when the output was 17 per cent more than in the previous quarter. The increase is attributed to several causes, chief among which are the gradual exploitation of one of the state-owned mines (Mannits), the extension of two other mines and the installation of improved mechanical devices underground.

On Jan. 1, 1926, 22,610 underground and 8,421 surface workers were employed in the Netherlands coal mines. The average number of workers during 1920, 1922, 1924 and 1925 was 24,944, 26,766, 29,957 and 30,390, respectively. The increase in the average number of workers is proportionately less than the increase in output.

Production of Briquets In 1925 Gained Impetus From Anthracite Strike

A marked increase occurred in the manufacture of fuel briquets during 1925, according to reports received by the U. S. Bureau of Mines. Production totaled 839,370 tons, an increase over 1924 of 258,900 tons, or 45 per cent. This is the highest production figure for the fuel briquet industry in this country, indicating not only substantial progress in the capacity of the operating plants but the possibilities in times of fuel shortage.

Fuel briquet manufacturing in 1925 received its great impetus from the suspension of the production of anthracite, which began Sept. 1 and continued through the end of the year. For the period January-August, 1925, the average production per month was 48,726 tons, as against 34,856 tons in the corresponding period in 1924. During September-December, 1925, however, when no domestic sizes of anthracite were being produced, briquet production per month averaged 112,780 tons. Some of this was due, obviously to the increased autumn and winter demand, but during the same four months in 1924 the average monthly production was only 77,905 tons.

The increased production for 1925 was general in the three grand subdivisions of the country. It was greatest in the Eastern States, where the tonnage was more than double that for 1924; increased 37 per cent in the Central States, and 8 per cent in the Pacific Coast States. The United States production and value of the fuel briquets for the years 1918-1925 is summarized in table I.

Table I—Fuel Briquets Produced in the United States, 1918-1925

Year	Net Tons	Value—Total	Value—Per Ton
1918	477,235	$3,212,793	$6.73
1919	295,734	2,301,054	7.78
1920	567,192	4,623,831	8.15
1921	398,949	3,632,301	9.10
1922	619,425	5,444,926	8.79
1923	696,810	5,898,698	8.47
1924	580,470	4,986,622	8.59
1925	839,370	7,128,404	8.49

The character of the raw material used as a fuel constituent by the 17 plants reporting production during 1925, is summarized in Table II.

Table II—Materials Used in Manufacture of Briquets in 1925

	Number of Plants
Anthracite culm	7
Semi-anthracite	1
Semi-anthracite and carbon	1
Mixture of anthracite fines and bituminous slack	2
Bituminous slack and sub-bituminous	1
Semi-bituminous slack	1
Semi-coke	1
Carbon residue from the manufacture of oil gas	3
	17

The total quantity of raw coal used was 844,590 net tons, an increase over 1924 of 261,225 net tons, or 45 per cent. Of the total used, 46 per cent was anthracite and semi-anthracite coal, 40 per cent semi-bituminous and bituminous slack, coke and semi-coke, and 14 per cent sub-bituminous coal and oil-gas residue.

During the year one plant in Pennsylvania, which had been idle during all of 1924, went out of business. There were added, however, during 1925 five others, located in California, Maryland, New Jersey, Pennsylvania and West Virginia.

Breaks Coal Loading Record At Curtis Bay Pier

In a space of 3 hours and 1 minute 11,353 tons of coal was put aboard the Str. "Lemuel Burrows" at the Curtis Bay coal pier of the Baltimore & Ohio R.R., at Baltimore, on April 13, according to the railroad company officials. This was an average of 62.7 tons a minute, or a little more than a ton a second.

This achievement by the pier broke the world's record for fast loading of coal into vessels, which it had held since 1920. The previous speed recorded was at the rate of 61.2 tons a minute, when the Str. "Malden" was loaded with 7,222 tons of coal in 1 hour and 58 minutes.

During the first hour and 58 minutes while the Str. "Lemuel Burrows" was being loaded, 73.5 tons a minute was the average speed at which the coal was handled on the pier, which was 12.3 tons a minute more than the "Malden" loading.

Strike Boosts C. & O. Profits

The cessation of operations in the anthracite mines during the latter half of 1925 enabled the Chesapeake & Ohio Ry. to report a gain of more than $8,000,000 in 1925 net income. After deductions of taxes and fixed charges net totaled $20,152,269, compared with $12,222,042 in 1924. This was equivalent to earnings of $21.32 a share on 906,912 shares of outstanding common stock, compared with $16.95 a share on 672,657 shares of common stock outstanding in 1924.

As the Chesapeake & Ohio serves some of the principal bituminous mines of West Virginia it came in for a good share of the bituminous coal traffic necessary to supply the Eastern markets during the anthracite strike. As a result the increase in net reported is the third largest of any railroad in the country, being exceeded only by the Pennsylvania and Norfolk & Western. Gross operating receipts were larger by $15,000,000 than in 1924.

Table III—Raw Fuels Used in Making Briquets in the United States, 1921-1925

In Net Tons

	1921	1922	1923	1924	1925
Anthracite culm and fine sizes and semi-anthracite	190,964	254,563	331,102	224,539	387,454
Semi-bituminous and bituminous slack, coke and semi-coke	a121,925	a235,542	a225,508	a297,814	a341,161
Sub-bituminous coal and oil-gas residue	85,352	123,339	125,880	b61,012	115,975
Total	398,241	613,444	682,490	583,365	844,590

a Includes no semi-coke in 1921 and 1922, no coke or semi-coke in 1923 and 1924, and no coke in 1925
b Includes no sub-bituminous coal.

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Foreign Market And Export News

Sharp Pick-Up in Orders For Welsh Steam Coals; Spot Quotations Stiffen

London, England, April 6.—Conditions in the Welsh steam coal trade are stronger at the moment than at any time during the past two years. Inquiries from foreign buyers are very frequent and tonnage is arriving freely. More coal is being shipped now than at any time since the beginning of last year and the output is the highest for two years. Several pits which have been closed down since the end of 1924 are now reopening.

Buyers had been holding back to watch the action of the government over the Coal Commission report, but have now booked heavy quantities throughout April and into early May. Prices have stiffened a little and in some cases have advanced by a shilling or so.

According to the audit the actual loss per ton of coal for the quarter ended Dec. 31, 1925, was 3s. 3d., and operators are doing all they can to make selling prices cover as much of this loss as possible, though they cannot hope to retrieve all their losses on sales alone. At present most of the coal being delivered is on the low price rate and on contracts placed some weeks back, so there is little chance of any immediate cutting of losses.

The Newcastle market shows some improvement and European gas plants continue to favor British gas coals. Aside from these orders, which are mostly for comparatively small quantities, there is not very much doing.

Output by British collieries during the week ended April 3, according to a special cable to *Coal Age*, totaled 4,635,000 gross tons, compared with 5,415,000 tons the preceding week.

Belgian Market Quiet

Brussels, Belgium, March 31.—The Belgian coal market is devoid of a startling change. With the exception of greater firmness in quotations on fines for lime and brick-making, 70 fr., and coking smalls, 87 fr., prices are colorless. Industrial demand is far from satisfactory. The decline in the value of the Belgian franc has paralyzed foreign competition for local trade. Holland alone is meeting with success in the Belgian market.

During February Belgian mines produced 1,894,470 metric tons of coal, as compared with 1,976,320 tons in January and a monthly average of 1,928,000 tons in 1925. The pre-war monthly average was 1,902,460 tons. Coke output last month was 347,900 tons, as compared with 324,220 tons in January and monthly averages of 346,650 tons in 1925 and 293,480 tons in 1913. Briquet production, 203,370 tons, was approximately 36,000 tons greater than the 1925 average, but 14,000 tons less than the pre-war average.

Spring Reductions in Effect on French Coals

Paris, France, March 31.—The new schedule of prices effective April 1, published by the O. H. S., shows the following increases:

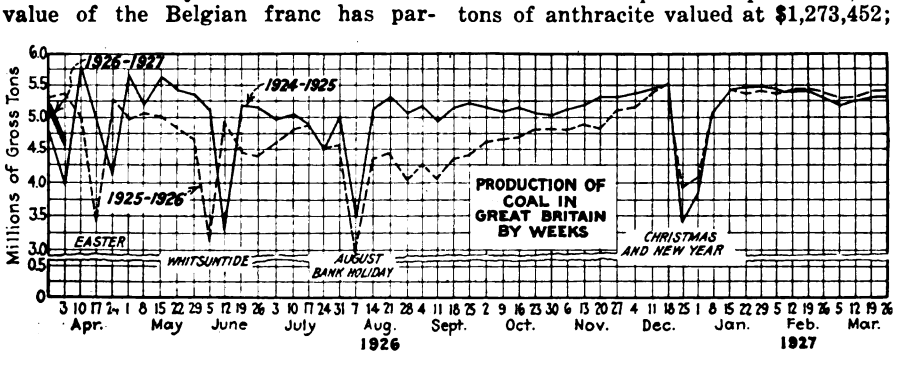
(1) For shipment by sea to French domestic and colonial ports, 5 fr.; (2) on trucks at the Franco-Belgian frontier, 15 and 10 fr. for anthracite, lean and semi-bituminous domestic coals; (3) on truck or canal barges in French ports of the Rhine, 5 fr. on industrial sizes, 10@15 fr. on sized coal and 20 fr. on lignite briquets.

A discount of 10 fr. will be given on April-May orders of coal, 6 fr. in June and July and 4 fr. in August. On lignite briquets a discount of 15 fr. will be made on April, May and June shipments and 10 fr. on July business.

The current market, particularly on industrial coals, is considered satisfactory. Stocks are low and the decline in the franc has helped the French producers by erecting a barrier against foreign competition.

As a result of the recent changes, April prices in the Paris district show reductions of 10@28 fr. when compared with March quotations on kitchen coals, 15@16 fr. on briquets and ovoids and 13@18 fr. on flaming coals. Belgian anthracite prices at retail are down 24 @30 fr.; British nuts and cobbles, 10@15 fr. and central heating coals, 22@28 fr.

During February the Custom House at New York reported imports 115,814 tons of anthracite valued at $1,273,452; 5 tons of bituminous coal and slack valued at $100 and 1,900 tons of coke valued at $9,404.



Export Clearances, Week Ended April 15

FROM HAMPTON ROADS

	Tons
For Brazil:	
Br. Str. Baron Fairlie, for Rio de Janeiro	8,914
Br. Str. Ethelaric, for Para	4,699
Br. Str. Catherine Ratcliffe, for Rio de Janeiro	7,737
Nor. Str. Ramsdalshorn, for Rio de Janeiro	8,472
Grk. Str. Rokos Vergottis, for Rio de Janeiro	7,063
Br. Str. Jamerson, for Pernambuco	5,217
Br. Str. Ventura de Larrinaga, for Rio de Janeiro	6,704
For Trinidad:	
Nor. Str. Sneland I, for Port of Spain	2,500
For Mexico:	
Nor. Str. Ebro, for Frontera	1,104
Br. Str. Baron Garioch, for Vera Cruz	1,818
For Nova Scotia:	
Br. Str. Fred Cleeves, for Halifax	2,004
For Italy:	
Span. Str. Arno Mendi, for Porto Ferrajo	7,240
Ital. Str. Clam, for Venice	3,223
Ital. Str. Clara Camus, for Fiume	1,347
Ger. Str. Sile, for Genoa	9,007
Ital. Str. Columbia, for Trieste	4,347
For Argentina:	
Swed. Str. Falco, for Rosario	3,921
For Jamaica:	
Nor. Str. Vika, for Port Antonio	104
For British West Indies:	
Br. Str. Tullochmoor, for Castries	3,481

FROM BALTIMORE

For Cuba:	
Br. Str. Kelsonian, for Daiguiri	4,141
Am. Str. Delfina, for Guanica	106

FROM PHILADELPHIA

For Cuba:	
Nor. Str. Songa, for Havana	——
Br. Str. Vittoria, for Havana	——
Nor. Str. Evenson, for Havana	——
For San Domingo:	
Nor. Str. Anders, for San Pedro de Macoris	——

Hampton Roads Coal Dumpings*

(In Gross Tons)

	Apr. 8	Apr. 15
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week	169,964	128,020
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	107,355	86,978
C. & O. Piers, Newport News:		
Tons dumped for week	168,578	124,063

* Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS

	April 10	April 17†
Pool 1, New York	$5.50@$4.75	$5.50@$5.75
Pool 9, New York	5.10@ 5.25	5.10@ 5.25
Pool 10, New York	4.75@ 5.00	4.75@ 5.00
Pool 11, New York	4.50@ 4.75	4.50@ 4.75
Pool 9, Philadelphia	5.10@ 5.40	5.10@ 5.40
Pool 10, Philadelphia	4.80@ 5.15	4.80@ 5.15
Pool 11, Philadelphia	4.25@ 4.50	4.25@ 4.50
Pool 1, Hamp. Roads	4.40@ 4.50	*4.35@ 4.40*
Pool 2, Hamp. Roads	4.20@ 4.30	*4.10@ 4.15*
Slack (Pool 1 and 2 grade)		3.90@ 4.15
Pools 5-6-7, Hamp. Rds.	4.00@ 4.10	*3.90@ 4.00*

BUNKERS

Pool 1, New York	$5.75@$6.00	$5.75@$6.00
Pool 9, New York	5.35@ 5.50	5.35@ 5.50
Pool 10, New York	5.00@ 5.25	5.00@ 5.25
Pool 11, New York	4.75@ 5.00	4.75@ 5.00
Pool 9, Philadelphia	5.35@ 5.65	5.35@ 5.65
Pool 10, Philadelphia	5.05@ 5.40	5.05@ 5.40
Pool 11, Philadelphia	4.50@ 4.75	4.50@ 5.75
Pool 1, Hamp. Roads	4.50	*4.40*
Pool 2, Hamp. Roads	4.30	*4.15*
Pools 5-6-7, Hamp. Rds.	4.10	*4.00*

Current Quotations, British Coal, f.o.b. Port, Gross Tons

Quotations by Cable to *Coal Age*

Cardiff:	April 10	April 17†
Admiralty, large	24s.6d.@25s.	**25s.6d.**
Steam smalls	14s.6d.	**16s.6d.**
Newcastle:		
Best steams	18s.	*17s.*
Best gas	20s.@22s.	**20s.6d.@22s.**
Best bunkers	17s.	**17s.6d.**

Advances over previous week shown in **heavy type**; declines in *italics*.

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Coming Meetings

Chamber of Commerce of the United States. Fourteenth annual meeting, United States Chamber of Commerce Bldg., Washington, D. C., May 10-13.

Mine Inspectors' Institute of America. Annual meeting, Seventh Avenue Hotel, Pittsburgh, Pa., May 11-13. Secretary, G. B. Butterfield, Hartford, Conn.

International Railway Fuel Association. Eighteenth annual convention, Hotel Sherman, Chicago, Ill., May 11-14. Secretary, J. B. Hutchinson, Omaha, Neb.

National Retail Coal Merchants' Association. Ninth annual convention, New Willard Hotel, Washington, D. C., May 17-19. Resident vice-president, Joseph E. O'Toole, Transportation Bldg., Washington, D. C.

The American Mining Congress. Annual Exposition of Coal Mining Equipment, May 24-28, at Cincinnati, Ohio, in conjunction with the annual meeting of practical operating officials. Assistant secretary, E. R. Coombes, Washington, D. C.

International Geological Congress. The fourteenth congress will be held in Madrid, Spain, commencing May 24, 1926. Secretary of the organizing committee, Enrique Dupuy de Lome, Plaza de los Mostenses, 2, Madrid, Spain.

Midwest Retail Coal Merchants Association. Annual meeting, May 25 and 26, at Kansas City, Mo. Secretary, James P. Andriano, St. Joseph, Mo.

Pennsylvania Retail Coal Merchants' Association. Annual meeting, York, Pa., May 27 and 28. Secretary, W. M. Bertolet, Reading, Pa.

Western Canada Fuel Association. Annual meeting at Winnipeg, Manitoba, Can., May 27 and 28. Secretary, W. H. Morrison, Winnipeg.

West Virginia Coal Mining Institute. Annual meeting, June 1-2, Bluefield, W. Va. (tentative). Secretary, R. E. Sherwood, Charleston, W. Va.

American Wholesale Coal Association. Annual meeting at Toledo, Ohio, June 7-9. Treasurer, R. B. Starek, Union Fuel Bldg., Chicago, Ill.

Association of Iron & Steel Electrical Engineers. Exposition and convention at Hotel Sherman, Chicago, Ill., June 7-10. Secretary, J. F. Kelly, 1007 Empire Bldg., Pittsburgh, Pa.

National Coal Association. Ninth annual meeting, June 9-11, at Drake Hotel, Chicago, Ill. Executive secretary, Harry L. Gandy, Southern Bldg., Washington, D. C.

American Institute of Electrical Engineers. Annual convention, White Sulphur Springs, W. Va., June 21-25. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

Illinois Mining Institute. Annual summer meeting on board steamer "Cape Girardeau" to some point in Illinois on the upper Mississippi River, leaving St. Louis, Mo., June 24 and returning to St. Louis about noon, June 26. Secretary, Frank F. Tirre, Central National Bank Bldg., St. Louis, Mo.

New Equipment

Carbon-Dioxide Recorder Is Motor-Driven

After many experiments, a new motor-driven carbon-dioxide recorder has been perfected and introduced on the market by the Republic Flow Meters Co., 2240 Diversey Parkway, Chicago, Ill. This recorder is shown in the illustration.

As it does not operate by water power, water conditions at the place of installation need no consideration whatever, the manufacturer claims. The mechanism of the instrument is completely submerged in oil, thus reducing wear to a minimum and eliminating corrosion, said to be the chief difficulty found in water-driven carbon-dioxide recorders.

The case of the instrument is dirtproof. It has been designed for appearance and easy vision as well as for accuracy and ruggedness. It is arranged so that it is easy to change both the oil and potash. All parts are interchangeable. A small motor is used to operate the instrument, and, though small, it is capable of handling a load two or three times that required.

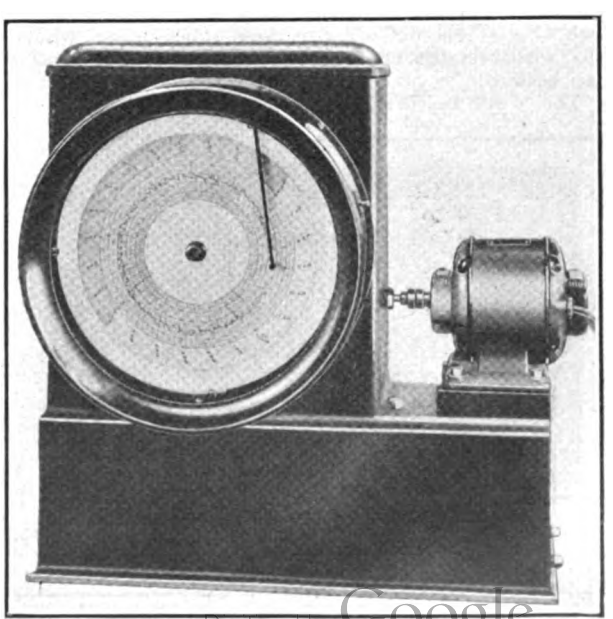
The operation of the recorder is as follows: When the gases are drawn through the furnace into the instrument they pass through a brass tubing immersed in oil. They then go through the pump and more brass tubing before passing to the measuring chamber. The gas in passing through the pump is divided into very fine particles and comes into close contact with the metal. This gives it the temperature of the pump and the surrounding oil. It then passes into the measuring chamber, which is immersed in the same oil and measured at a specific temperature. Next the gas passes through the potash chamber and then into the final measuring chamber, this last also being immersed in the same oil as in the first measuring chamber.

The oil chamber is directly above and in contact with the potash chamber, so that the oil and potash are at the same temperature or nearly so. If there is a difference in the temperatures of the oil and the potash, corrections will be made in the final measuring chamber, which also is surrounded by the oil. Therefore, no error can be caused by temperature irregularities.

The instrument requires about two gallons of ordinary machine lubricating oil, which should be changed every six months or every year. The potash chamber holds about three gallons and requires 12 lb. of dry potash. This will last from four to six months.

Mechanism Submerged in Oil

As no water is used corrosion is avoided. Ordinary machine lubricating oil is used which needs changing only once in six months or a year. Oil keeps potash at same temperature as measuring chambers so no error can be caused by irregularities of temperature. Other recorders are driven by water power and, hence, have trouble from rust.



Motor Trolley for Spotting Work Over Machine Tools

A new motor-driven trolley has been developed by the American Engineering Co., Philadelphia, Pa., for use with its ½-ton and 1-ton Class A, "Lo-Hed" electric hoists, which have been built, heretofore in bolt-suspension and plain trolley types only.

This trolley can be supplied with a travel speed of either 80 or 120 ft. per minute, so that the unit provides an inexpensive overhead system for handling loads of one ton or less at high speed, both in lifting and moving. Its accurate control makes it highly efficient in spotting work for machine-tool operations. It can be arranged for remote control, if desired. Any hoist of the type named now in service can be easily converted into a motor-trolley hoist by adding the new trolley.

Only 22-in. headroom is required for both hoist and trolley, which is small for a motor trolley hoist. The trolley is ruggedly built, and maximum traction is obtained by driving all four

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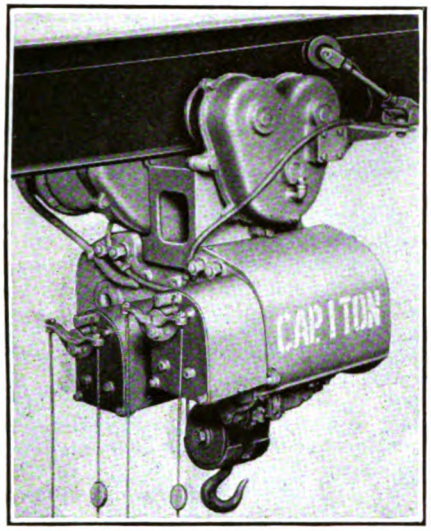


Speedy Trolley Hoist

Around many plants, particularly machine and electric shops a unit of this kind is extremely handy. It may be built in either ½- or 1-ton capacity and the traversing speed may be made as much as 120 ft. per minute.

wheels. The three main castings, from which the hoist and the load are suspended, are made of steel. The spur-gear drive is totally inclosed and runs in an oil bath. Roller bearings are used on all shafts. The motor also is totally enclosed and has high-grade ball bearings. All parts are completely accessible and the motor can be removed readily when necessary. It can be furnished for either direct or alternating current, the latter either 2- or 3-phase.

Two Graphic Records Drawn Side by Side

The new "Twin-Type" graphic meter of the Esterline-Angus Co., Indianapolis, Ind., represents a logical development in meter construction. This model contains two metering elements which are mounted side by side and are driven by a common mechanism. The distinct advantages of the new meter are, (1) two quantities can be recorded simultaneously and on charts that are perfectly synchronized, (2) much less switchboard space is needed than when two single instruments are used, and (3) either daily or long-strip charts can be used.

The first feature will be specially useful in recording simultaneously the load in kilowatts and the voltage, the load and power factor, the line amperage and power factor, or other similarly related quantities, in a power plant, substation, or at any convenient metering point of a distribution system. The meter can be equipped with almost any combination of two of the various electrical measuring elements or with other units such as pressure and vacuum recorders.

The 12- or 24-hr. duplex charts are 11¼x26¼ in. overall. They are punched at one end so they can be placed in a standard loose-leaf file, and are of such dimensions that when folded, they will fit a standard letter-size drawer file.

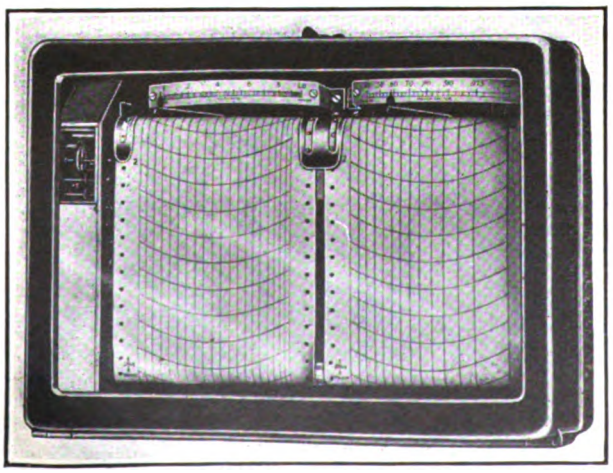
In addition to the two standard types of clock drive, the instrument can be furnished with either an impulse-system electric drive or with a motor. The latter is recommended only when high chart speeds are desirable. While regularly made in the switchboard and wall types, instruments of this kind can be built in portable models for special requirements.

Affords Better Illumination

Recently the U. S. Bureau of Mines granted to the Koehler Mfg. Co. of Marlboro, Mass., an extension to Approval No. 17 covering improvements in the Wheat electric safety mine lamp. The principal feature of the improved lamp is a new higher candle-power bulb. This operates at 4 volts, has successfully passed the 300-hr. life test of the Bureau and when used in the improved mine lamp gives the greatest amount of light of any bulb having passed this test.

To produce this increased candle power a new design of battery plate has been used. This new plate is so constructed as to give not only increased power but longer life as well.

A new design of non-spilling device is also used. This employs tubes that carry the fumes produced by charging to the outside of the battery case free and clear of all working parts. The improved battery may be charged in the regular Wheat electric mine lamp charging equipment. In outward appearance the new lamp outfit is practically identical with the older equipment which has become familiar to most mining men during the past few years. It is not illustrated for this reason.



Meter Fitted with Strip Charts

The two scales can be printed on a single wide sheet and two graphs drawn simultaneously. The meter shown is fitted to record kilowatts and power factor side by side.

Recent Patents

Handling and Feeding of Pulverized Coal; 1,560,510. Arthur V. Adamson, Hempstead, N. Y., assignor to Combustion Engineering Corp., New York City. Nov. 10, 1925. Filed Nov. 19, 1924; serial No. 750,731.

Feeder for Coal Breakers; 1,560,301. Frank Pardee, Hazelton, Pa. Nov. 3, 1925. Filed Oct. 24, 1922; serial No. 596,570.

System of Arresting Mine Explosions; 1,568,281. John E. Jones, West Frankfort, Ill. Jan. 5, 1926. Filed Nov. 22, 1924; serial No. 751,565.

Automatic Mine-Car Coupler; 1,569,012. B. E. Gildersleeve, Lynchburg, Va. Jan. 5, 1926. Filed Oct. 17, 1923; serial No. 669,158.

Loading Machine; 1,569,209. Charles W. Shanaberger, Indiana, Pa. Jan. 12, 1926. Filed June 9, 1925; serial No. 36,034.

Combination Blasting Method and Means; 1,569,222. Dent Ferrell and Arthur W. Helmholtz, Harrisburg, Ill. Jan. 12, 1926. Filed March 16, 1925; serial No. 15,728.

Drag Scraper; 1,569,925. Wm. E. Hale, Fort Washington, Pa., assignor to R. H. Beaumont Co., Philadelphia, Pa. Jan. 19, 1926. Filed March 4, 1923; serial No. 622,835.

Method of Treating Coal Products; 1,570,103. Walter E. Trent, New York, N. Y., assignor to Trent Process Corp., Wilmington, Del. Jan. 19, 1926. Filed Sept. 23, 1919; serial No. 325,632. Renewed July 18, 1925.

Double-Dump Skip Hoist; 1,570,302. Wm. E. Hale, Fort Washington, Pa., assignor to the R. H. Beaumont Co., Philadelphia, Pa. Jan. 19, 1926. Filed March 5, 1923; serial No. 622,836.

Electric Time Fuse for Blasting Cartridges; 1,570,733. Wilhelm Eschbach, Troisdorf, Germany. Jan. 26, 1926. Filed July 12, 1922; serial No. 574,594.

Loading Machine; 1,570,829. John A. Forsyth, Nemacolin, Pa. Jan. 26, 1926. Filed Jan. 13, 1922; serial No. 528,976.

Inclined Coking Retort Oven; 1,570,871. Joseph Van Ackeren, Pittsburgh, Pa,. assignor to the Koppers Co., Pittsburgh, Pa. Jan. 26, 1926. Filed Sept. 29, 1921; serial No. 504,142.

Longwall Conveyer; 1,571,009. Hiram A. Holzer, Kansas City, Mo., assignor to United Iron Works, Kansas City, Mo. Jan. 26, 1926. Filed Aug. 4, 1924; serial No. 729,959.

Blasting Cartridge; 1,571,122. Ernest Hutton, Fairmont, W. Va. Jan. 26, 1926. Filed July 24, 1924; serial No. 727,973.

Coal-Cutting Machine; 1,571,162. Gilbert Rimmer, Radford, England, assignor to Sullivan Machinery Co., Chicago, Ill. Jan. 26, 1926. Filed Jan. 10, 1925; serial No. 1,687.

Coal Elevating and Conveying Apparatus; 1,563,387. Roderick MacEachen, Washington, D. C. Dec. 1, 1925. Filed Aug. 7, 1923; serial No. 656,188.

Coking Process; 1,563,595. Frederick W. Sperr, Jr., Pittsburgh, Pa., assignor to the Koppers Co., Pittsburgh, Pa. Dec. 1, 1925. Filed July 18, 1919; serial No. 311,810.

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A Modern Ventilation System for a Modern Mine, p. 595

APR 30 1926

COAL AGE

The World's Accepted Authority on Coal Mining

McGraw-Hill Publishing Company, Inc. **April 29, 1926** Price Twenty Cents per Copy



Type ME 6, Class BM. Totally Inclosed Motor and Controller. Approved by U. S. Bureau of Mines.

for—
gathering pumps
small fans
blowers
room hoists
air compressors

Built to Start a New Chapter in Coal Mining History

This latest General Electric contribution to mine electrification is intended to reduce the danger arising from internal explosions. It is the first complete, self-contained motor and control unit approved for use in gaseous mines.

Both motor and controller are totally inclosed. The controller throws the motor across the line and protection to the motor is provided by a thermal overload relay which can be reset without dismantling the controller.

See this equipment at the G-E Exhibit. American Mining Congress Exposition, Cincinnati, May 24-29.

G-E Motorized Power is more than a motor or its control—it is a practical and economical application of electric power. "Built in" or connected to all types of industrial machines, G-E Motorized Power provides lasting assurance that you have purchased the best.

MOTORIZED POWER
-fitted to every need

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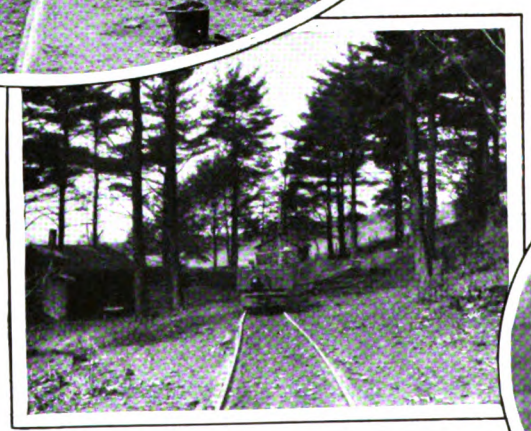
Speeding the empties in and the loads out



Miners seldom wait for empties when Exide-Ironclad Batteries are in the haulage motors. An Exide-Ironclad is not only full of pep and speed, but its speed holds up well all day long. It hustles the empties in and the loads out.



This motor is pulling a heavily loaded trip up a steep hill. Yet it moves right along without pause, for in the battery box is an Exide-Ironclad. This battery always carries power in reserve; and when extra power is needed, it delivers current much faster than the normal rate.



Noon hour, and while the motorman eats his lunch he is giving his battery a "boosting" charge. You can do this to an Exide-Ironclad Battery when rush of work makes you push the haulage motors extra-hard, for an Exide-Ironclad is so efficient on charge that it takes current in quickly, easily, and with little waste.



This motor has completed a week's work and is at the charging barn. The motorman is testing the specific gravity of his battery cells with a hydrometer. That, and an occasional flushing of the cells with pure water, is about all the attention an Exide-Ironclad Battery ever needs. It is built so rugged that it stays on the job month after month without needing repairs.



If you want your mine to ship as many cars a day as it is capable of producing, you've got to have a smooth-running haulage system. And one of the biggest helps in maintaining a speedy, efficient, trouble-free haulage system is to have your motors driven by Exide-Ironclad Batteries.

Send for a free copy of our valuable booklet, "Facts for Consideration in *Selecting a Battery* for Locomotive Service." Form No. 1791.

Exide
IRONCLAD
BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia

Exide Batteries of Canada, Limited, 153 Dufferin Street, Toronto

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 29 — New York, April 29, 1926 — *Number* 17

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COAL AGE

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Modern Mine Must Have Ventilation System That Suits New Conditions 595
BY CARL H. TRIK.

Why Illinois Uses Purchased Power Extensively 600
BY J. PAUL CLAYTON.

Emergency Coal Control Now Allowed by Statute; Continuous Fact-Finding Unconstitutional, Gandy Testifies 610

Baldwin Raises Hopes of Breaking Deadlock in British Coal Industry 611

Tangible Evidence Lacking of Government Influence in Jacksonville Agreement 612
Live Topics Scheduled for Discussion by Engineers 612
Grant Honored for Settling Hard-Coal Strike 613
National Retailers Map Out Live Convention Program 613
Interesting Talks at Meeting of Fayette Institute 613
169 Miners Meet Death by Accidents in March; Decline in Fatality Rate 614
Pittsburgh Terminal Corp. Closes Avella Mine 614
Oil More Costly Than Coal As Domestic Fuel 614
Railroad Coal Cost Higher 614

Editorials 593
Underground Operation 604
Practical Pointers 606
Viewpoints of Our Readers 608
News Items from Field and Trade 615
Traffic 617
Weekly Review and the Market 619
Foreign Market and Export News 624
New Equipment 625

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They Didn't Read

No one can but be impressed with the rapidity of modern progress as compared with that in earlier years when men didn't read and didn't travel. Once in a while populations got on the move, and by meeting other peoples learned new ideas. Then the world went a step forward, only to stop again. Then came printing. It developed mankind in mental and moral ways, but it really did not effect any active change in the arts and sciences till the technical journal came on the scene. Then the results were marvelous. Every month showed progress. There was no standing still so long as the technical magazine was devoured week by week.

Too Far Behind

Backward mines have not become obsolete in a day, but month by month they have gotten behind in condition and in practice. What was left one week or one month remains to be done the next. Soon there are several weeks' or several months' work to be done in one week or month, and the job is too big to be done and is not performed at all unless there is a new management and more money put in the plant.

The cure for this growing backwardness is to keep the mine always up to the minute, to read and to plan so that the burden of getting on an up-to-date basis will not be too big for accomplishment. Many an old mine, like many an old business, settles back like an old hulk on a sandy shore till it cannot be moved.

Our Mines and Our Minds

Coal Age has men gathering up-to-date ideas of operation around the country. Though its readers in some cases live where they have little chance to keep in touch with the current of affairs, they have an opportunity to travel with its pages over the length and breadth of the whole field of mining, geographically and technically speaking. But if we fail to read we come soon to a day when our mines and our minds need more replenishment than they can acquire in the time we have to bestow on them.

Advertising Index—Alphabetical, 44; Classified, 41; Consulting Engineers, 37; Searchlight Section, 38 and 39

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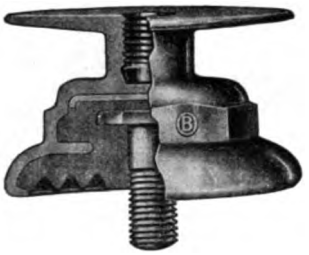
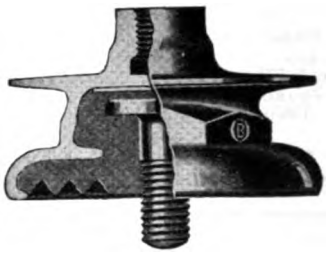
Standard—for roof
(renewable insulation)



Universal—for roof
or timber



K Type—for roof

Made of Dirigo Insulation and FLECTO IRON

ABOVE are popular types of hangers, all widely used.

The Standard is for roof. It has a removable insulator made of Dirigo. Made also in Universal and timber types.

The Universal is probably the most popular of O-B Hangers. It may be used for roof or timber support. Made in five styles.

The K type is for roof only. It is made in 5 styles.

WHEN it is said that O-B Insulated Hangers are made of Dirigo Insulation and Flecto Iron—you have the story of those qualities that save you money, not necessarily in first cost but in the extra service you realize.

FLECTO IRON—The O-B malleable iron that does not become brittle when hot-dip galvanized. It is never brittle—a tough metal with heavy galvanized coating that will give years of extra life.

DIRIGO INSULATION—The O-B molded insulation that withstands heat, cold, moisture, acid, time, mechanical stresses, electrical stresses—the balanced composition.

All O-B Insulated Hangers are made with these two materials and there is variety in design so you can make the correct application for your trolley.

Ohio Brass Company, Mansfield, Ohio
Dominion Insulator & Mfg Co., Limited
Niagara Falls, Canada

27M

Ohio Brass Co.

PORCELAIN INSULATORS, LINE MATERIALS, RAIL BONDS, CAR EQUIPMENT, MINING MATERIALS, VALVES



O-B Expansion Bolts are all made of O-B Flecto Iron.

BELOW are several special types of O-B Hangers — also made of Flecto Iron and Dirigo Insulation.

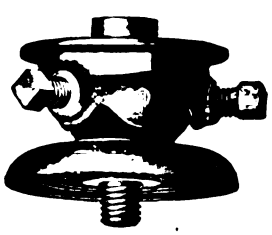
The SK—a swivel type for use on sloping roof.

The H—for timber or with special clamps it may be attached to I-beams. Has a long leakage path.

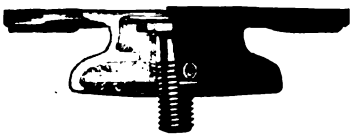
Pipe Hanger—one of several types designed for suspension from pole brackets or pipe frame.



O-B Expansion Bolt suitable for Standard, K, SK and Universal Hangers.



SK-Swivel for sloping roof



H Type for Timber or I-beam



Pipe Hanger

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COAL AGE

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Devoted to the Operating, Technical and Business
Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 29 NEW YORK, APRIL 29, 1926 Number 17

Preventing Substitution in Marketing Coal

COMMENT WAS MADE in a recent editorial on the evils of substitution in marketing coal and its unfortunate repercussions on the producer, wholesaler and retailer. No one in the industry can regard such practices with indifference even though his own practice is in every way honorable. A communication was received from George R. Pratt of *Coal Truth* in which he describes the means by which the Government of the Province of Alberta endeavors to establish fair-trade conditions in coal marketing. The foundation of these methods is fair price, high coal quality, consumer satisfaction and good will.

A special act called the Coal Sales Act of 1925 provides for registering the trade names of the coals which the several mines produce. No coal can be advertised or sold except under its registered trade name, and the invoices and shipping bills must give the name of the mine, the coal field in which it is located, the size of coal shipped and the registered trade name of the coal.

Every dealer is required to keep a record of his coal purchases whether from Alberta or outside sources. This record is open to inspectors who have the power to inspect invoices and shipping documents, and, where these do not conform to the coal in question, they may stamp upon the document a statement to that effect. A penalty is provided for failure to comply with the law or for false statements in the invoice documents.

In advices to the retail coal dealer the following excellent rules are offered for his adoption: That the value of the coal shall be equal to the advertised value; that in the event of dispute of value no rebate in money (unless a contract to the contrary has been made) shall be given but the offer shall be made to remove the coal within 24 hours and to refund the purchase money; that the Golden Rule shall govern in all dealings between dealer and consumer.

It is recognized that where the "quality first" dealer pays the price for quality coal and sells in competition with second-quality coal sold at the quality price, the result is a buying public dissatisfied with the price, dissatisfied with the quality and of critical mind toward all engaged in the industry. Advertising and selling efforts enhance coal values, but by supplying coal below the established quality standard, or of different sizes, or by substituting coals of different class, inferior to the promised standard and rebating to one customer out of ten who complains forcefully enough, good will and confidence are undermined.

To overcome the difficulty of the few dealers who do not wish to deal on the square, the government office offers to all dealers who agree to observe the foregoing rules the privilege of attaching a seal to each customer's delivery slip and supplies the seals to the dealers. The seals are about the size of a postage stamp and contain the words—"Coal on the Square."

Evidently the Alberta coal industry has worked out a practical method to insure satisfactory trade practice in distributing their product. No doubt other methods would serve the same ends but similar problems arise in many coal-distributing centers and need the attention of producers, wholesalers and retailers in establishing "coal on the square" practices.

Water on Cutter Bits

RAPID PROGRESS is being made in the application of jets of water to the bits of cutting machines, the purpose being to keep down coal dust which would otherwise be suspended in the air and carried considerable distances outby the face. Where places are wetted down by a hose and a waterline is therefore convenient the spray pipe of the cutting machine should, of course, be connected to the line. Absence of this last provision in the majority of mines should not retard the spread of bit sprinkling, for it is entirely practicable to carry a tank of water on a trailer truck, to which pressure may be applied by a small air compressor. In other cases a pump may be used.

At the last meeting of the Coal Mining Institute of America, Inspector E. Girod of the Twenty-third Bituminous District, part of the coke region of Pennsylvania, stated that five mines in his territory during the last ten months of 1925 adopted this measure. He added that he expected a rapid growth in the practice. Solely as a safeguard against the danger from coal dust, it ought to be regarded as being worth while but those not so strongly influenced by this safety feature should be won over by the pecuniary gain which might possibly accompany it.

A jet of water playing on the bits not only lays the dust but dissipates the heat generated during cutting. When the material cut is hard the temper within the pointed section of the bit is likely to be lost at least to skin depth by extreme rises of temperature, and the effectiveness of the tool may soon become lessened by the greater rate of wear of the cutting edge. Mining men generally, including several manufacturers of cutting machines and cutter-bit steel, say that this action does not take place. Their contention as applied to the absence of such action in bits made of alloy steel is no doubt true. However, are they even reasonably sure that their contention rests on solid ground as regards carbon steel, of which practically all the bits now in use are manufactured?

No scientific studies of the problem have yet been made, for which reason a positive opinion should be withheld. Already several manufacturers' engineers have withdrawn their adverse criticism to the suggestion and, after hearing the other side of the argument,

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have taken a neutral stand. The very fact that alloy steel is admitted to be far superior to carbon steel in the use to which cutter bits are put casts a shadow of suspicion on the ability of the latter substance to retain its temper in cutting the harder coals. The few metallurgists who have been interested in the discussion are one in the opinion that hard cutting could draw the temper in a bit of carbon steel. The stand which they take, in view of their knowledge, should be considered with some deliberation, and the argument should be definitely decided one way or the other.

It may be found that bits of carbon steel are not likely to be fatigued and fractured by shock when a uniform low temperature is maintained. The sprinkling attachment may after all be the means by which the time lost in the frequent changing of bits may be retrieved; also it might enable the bits to cut coal at greater speed.

Limiting the Peak

PEAK LOADS are always to be avoided regardless of whether power for mine operation is purchased or generated. If current is purchased the peak load "sets the pace," that is, determines the demand charge paid for power for the month during which the peak occurred as well as in many instances for the eleven succeeding months as well. If power is generated the peak throws a heavy and usually an unnecessary load on the power-generating equipment.

In order to avoid high momentary peaks, especially where power is purchased various expedients have been employed. At one large mine in southern Illinois the present production of which is well below its demonstrated capacity and where consequently it is not necessary to hoist steadily throughout the entire shift in order to raise the day's output, a plainly visible indicating meter is placed near the hoist engineer's platform. This is marked with a predetermined peak load which is not to be exceeded. The hoistman watches this meter closely and when this maximum demand is approached hoisting is suspended until the demand subsides when it is again resumed.

Certain other mines are employing circuit breakers so arranged that when the total load reaches a predetermined value the breakers controlling one or more of the feeder circuits will kick out. These breakers will automatically reclose when the total demand has decreased to a predetermined level. This arrangement is extremely handy and effective possessing the marked advantage that it is automatic in operation, thus requiring no attendance.

Conservation in mine costs is a dominant trend in the coal industry today. Of course what all mine operators most desire is a means for materially lowering the major expense involved in coal production, namely the cost of loading, but advantage should be taken, nevertheless, of all other possibilities by which the cost of mining may be reduced, even though the reduction be small. Not allowing the power demand to exceed a predetermined amount is one means of accomplishing the desired result.

The time has passed in which the superintendent called for power, more power, regardless of the way in which it was used. He now tries to make his uses fit a certain definite hourly supply. He trims his power bills just as he has long limited his supply requisitions.

Substance and Shadows

HOW FUTILE the hope that Congress can guarantee the public an uninterrupted flow of coal is unblushingly revealed in the frank statements of international officers of the United Mine Workers before the House committee on interstate and foreign commerce. Organized labor in the coal industry is firmly opposed to compulsory arbitration. In that opposition the mine workers have the tacit or open support of the majority of the country. Raise the cry, as union leaders have done, that compulsory arbitration means enforced labor, and only a small minority will have either the courage or the desire to embrace that uncertain strike preventive.

The United Mines Workers, however, goes still further in fighting the suggestion that the federal government should have the power to intervene in times of emergency. The union objects to anything and everything that smells of arbitration. Mediation and conciliation it is ready to accept—possibly because they already are written into the Department of Labor law. Any proposal that the President be authorized to create a fact-finding agency with power to inquire into wage disputes and make public the results of its investigations is wholly unacceptable to the men who direct the destinies of the mine workers' organization.

Academic discussion of compulsory arbitration is beside the point. It is obvious that such compulsion is repugnant to the nation when the surface of industrial relations is reasonably calm. Congress does not intend to consider that question. The United Mine Workers, apparently, has no intention of viewing favorably any of the various half-steps proposed in the many "emergency control" bills which have been referred to the House committee. That Congress, of its own volition, will risk battle against a minority as effectively and vociferously organized as union labor upon an issue in which there is little present public interest is unlikely. Thus the chief excuse for federal regulation of the coal industry falls of its own weight.

Fire Will Build, Not Burn, Our Homes

PRINCIPAL AMONG the changes of the twentieth century is the tendency to build fireproof structures, and, strange to say, fire has a part in the manufacture of nearly all fireproof material—lime, cement, brick, tile, terracotta and steel—and in the formation in geologic time of granite and therefore of its reconstructed materials, sandstone and slate.

The coal industry will necessarily benefit in this movement and should foster it. There is no reason why the present heavy yearly loss from fire should be sustained. From the progress in the use of steel for schoolhouses, factories and dwellings, the coal industry may draw much help in the future. Unfortunately dwellings not entirely standard make it difficult to construct the great variety of shapes needed for residence construction. But the oxy-acetylene field welding apparatus will probably enable the architect to turn rigid standard forms into the shapes required by the eccentricities of home construction and to do it with as much ease as a woman can remodel a bonnet with a few deft touches.

The fireproof era will be one in which fire and therefore coal will have increased use. Fire will be more active in the building and less active in the burning of our homes.

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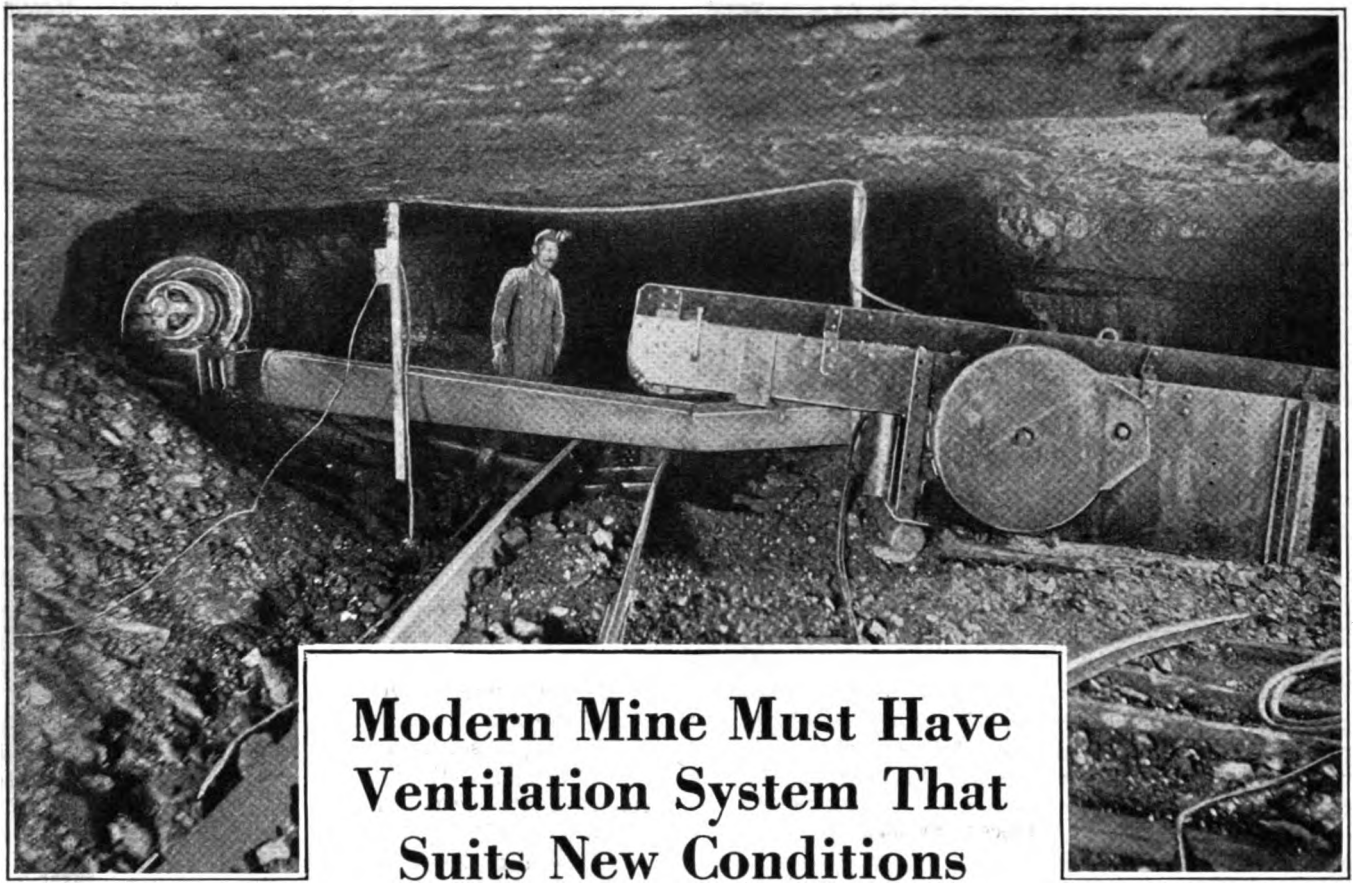

Modern Mine Must Have Ventilation System That Suits New Conditions

Dead Ends Best Ventilated by Blowers and Canvas Tubing —Air Is Static in Wide Places—Sometimes a Fan Can Deliver More Air Than Mine Will Pass at Water Gage Provided

By Carl H. Trik
Mine Ventilation Engineer, Jeffrey Manufacturing Co., Columbus, Ohio



Carl H. Trik

IN ALL the studies of the mining of coal by mechanical cutters, loading devices, conveyors and other means, commonly designated as "concentrated mining," little has been written as to the effect of these new methods of "harvesting coal" by machinery on the ventilation problems at the working face. Is it not high time to consider the effect of these changes on the ventilation of the mine? What effect will they have on the quality and quantity of the air delivered to the face? How will it modify the mine resistance? What effect will it have on the fan and on the cost of operation? Let us consider each of these matters in turn. Theoretical discussion is of little value to the practical man, and empirical data are so far difficult to find. However, enough information is now available to allow anyone to arrive at certain definite conclusions.

Ventilation has, for instance, definitely divided itself into two parts, a primary and a secondary system to be compared aptly with the ventilation of a metal mine which has its gangways and tunnels ventilated by a primary system and its "dead ends" such as blank stopes and raises requiring secondary systems supplied with air drawn from the main, or primary, air current. In those states that permit the driving of a single entry for any number of feet without a crosscut, the problem of secondary ventilation is simply, if not always cheaply, solved. These "minor faces" must have air while they are being driven to open up a panel or block. As they receive conveyors, it will be well to name them "conveyor headings," or "conveyorways," though "development headings" would be an equally satisfactory term.

Judging by the number of companies using the small auxiliary blower and flexible canvas tubing, as compared with those using brattice cloth to conduct air to the face of these conveyor headings, the former method must be the best means of ventilating these minor faces. In fact, operators who have installed fans and tubing declare that this method of providing air is less costly by far than the erection of brattice cloth. Many operators would gladly adopt these fans in preference

Headpiece shows a fan delivering air to a "minor face." This face is being served by a sectional conveyor which brings the coal to another conveyor on the entryway of the panel. The blower is set on the opposite side of the main conveyorway from the narrow place or room, so that the air returning from the place will not enter the fan and be redelivered to the working face.

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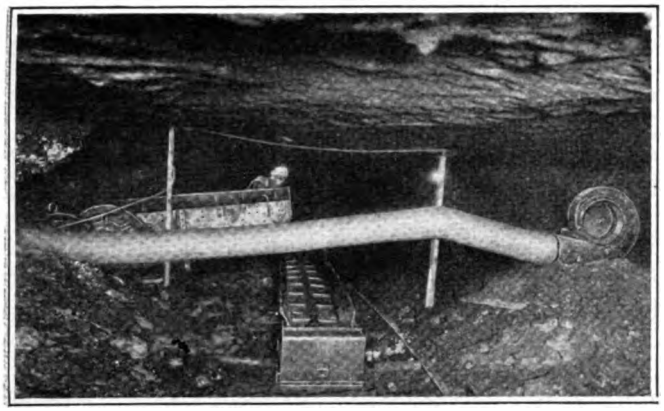

Fig. 1—Opposite View of Conveyor, Fan and Canvas Tubing Shown in Headpiece

Twelve-inch diameter tube delivering air to a minor face. The conveyor, being empty, its construction can readily be discerned. An electric lamp strung from the supports of the canvas tube lights up the conveyor and adds to the safety of the operation.

to older devices if the laws of the states in which they are operating would permit. They believe that these laws should be revised so as to be in harmony with changing conditions. Of course, there are those who object to the small blower, and they present many reasons for their opposition. But there are also many who take exception to the use of the brattice line, and they have just as many and as cogent reasons for the stand they take. Be that as it may, the conveyor headings must be ventilated. That is true regardless of the system of secondary ventilation that is adopted. Certainly this ventilation will not be as expensive as in those fields where the state laws and state inspectors insist on having a crosscut driven every 60 to 100 ft. Even when such rulings are obeyed the operator is left without anything that could be dignified with the term "secondary system."

When the decrees of such legislatures and inspectors are followed the resistance of the airways varies greatly according to the degree of their development, and the main current has to be regulated to suit the frictional losses of the most resistant entries. The ventilation is consequently uneconomical and not appreciably safer than when the small blower is used.

AUXILIARIES OR HIGH WATER GAGE

The headpiece of this article shows the method of setting the blower that one operator adopted when driving a single entry to connect up with another entry parallel to the one down which we are looking in the picture. The fan is set across the entry so that it will not recirculate the air as it returns from the conveyor heading. Here it is entirely out of the way.

A few inspectors have severely criticized the small blower as a source of danger declaring that with it the air might be recirculated. I have even heard one man state that he knew of a small fan handling nothing but gas between the fan inlet and the face. This may be true, it could easily happen, but I fail to see the logic in condemning the small blower. Rather should the operator be taken to task who was so utterly lax as to install a fan in such a position as to permit this to occur. Every tubing company makes right-angle bends of tubing to obviate this very condition. If these were used even the probability of recirculation would be eliminated so long as the main fan continued in operation.

After the narrow conveyor headings or the double entries, if these are driven, are completed and connected with each other so as to form a continuous working this section becomes "a major face" and a part of the primary ventilation system in that a true circuit or current is established which can be considered as a separate split of the main current passing to the return or being carried back to the intake air current, diluted and used again, all depending on local conditions. Many operators mining a large acreage on a continuous face (really consisting of a series of small faces *en échelon*) find themselves forced to consider one of the blocks as a separate split, the law of the state under which the operator is working limiting the number of men allowed on each split.

We are now ready to consider the ventilation of those working places which, for obvious reasons, we have termed "major faces." In a block consisting of a single face or a series of staggered faces, the conveying and haulage problems may be more or less intricate but the ventilation will be plain sailing from this point on, so that the old cry, "No air at the working face" will become a thing of the past.

We have all heard of operators who have been all too eager to get out coal and who in their mad dash for production have dug themselves in until their airways, especially on the return, are mere dog holes and the air current is so feeble that it cannot travel against the high resistance of the mine. But with concentrated mining systems we shall probably hear of them no longer.



Fig. 2—Looking Along Conveyorway Toward Fan

The canvas tubing naturally straightens itself and gives a fair passage for the air current. Resting on the floor of the roadway it requires no support. Note how large a capacity the conveyor provides.

Under the new system the ventilation should be much superior to that of the average mine under the old plan, and that is proved by the experience of many companies throughout the land. There is an "if," however, in this, as in every flat statement and that is "*if* the main airways, both intakes and returns, are

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FIG. 3

Work in Good Air

Each man has about 25 ft. of face. Despite the absorption of light by the coal, six men can be seen at work on about 125 ft. of face. The photograph was taken with a flashlight, a testimony to the excellence of the ventilation due to the generous current that can be made to sweep a straight face.

kept free and clean and the sectional area is ample for the volume required."

When cutting begins on a major face, the current of air flows past the men working along it in a clean uncontaminated stream. Fig. 3 shows how pure the air is at one of these faces. This flashlight photograph reveals about 125 ft. of face. Six loaders can be distinctly seen through the clean air. Fig. 4 shows another face immediately after shooting. The air has rapidly swept away all fumes and smoke.

In fact, at some mines, as cutting proceeds and more and more coal is removed, the space between the working face and the gob increases to such an extent that the air is likely to become sluggish due to the greater increase in area. Plenty of air may be passing, but the area over which it travels is so wide that the speed will decline unless some means be taken to guide the air to the place in which its scouring effect is needed.

Putting Brattice Cloth Behind the Men

The best method is to line brattice cloth between the men and the gob at such a distance as will cause the air to travel along the face at the requisite speed. This, in no case, should exceed 500 ft. per minute nor be less than 50 ft. In fact 75 ft. per minute would be the preferable figure.

However, it will be found that in most mines the roof will have fallen shut practically up to the props or cribbing, and the air will now slow down so much as to make the use of brattice cloth necessary. Although the roof is down and loose rock is piled up to the rear line of props, the gob is not tight and the air will work its way through and around the caved area, which is as it should be. When the coal is mined out to the barrier pillar and the last cut has been taken, the entire area may be sealed off and forgotten so far as entering into the scheme of ventilation is concerned.

New Methods Lower Mine Resistance

From the foregoing it is apparent what a remarkable effect this will have in reducing the water gage, or mine resistance. This is what every conscientious manager is seeking, and this new method of operation will commend itself to him from this reason alone.

We have now seen the effect of the new methods of mining on the quality of the air and the resistance to its passage. It next behooves us to consider its effect on the fan. It is well known to ventilation and fan specialists that fully 80 per cent of the fans ventilating coal mines today are working below their true or normal capacity, for the water gage is higher than that for which the fan is designed.

The reasons for this condition are many, chief among them being that the mine manager oftentimes when ordering a fan, orders that it be built to afford "plenty of capacity" and he gets it *in the fan*, but he fails to live up to his end of the bargain, in that he does not give the fan a mine that will permit the normal capacity

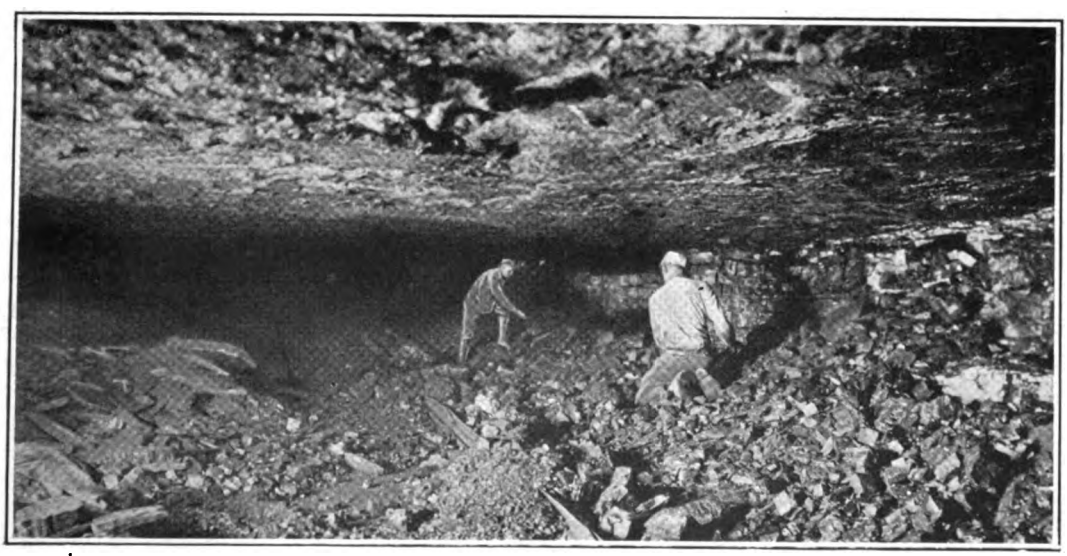

FIG. 4

After a Shot

Immediately after shooting, the men are able to resume work. The conveyor in any event does not need loading by hand, for it is already well-loaded by the effects of the shot. Much of the coal is above the conveyor and does not have to be raised. The work is that of lowering coal rather than of lifting it as in loading a mine car.

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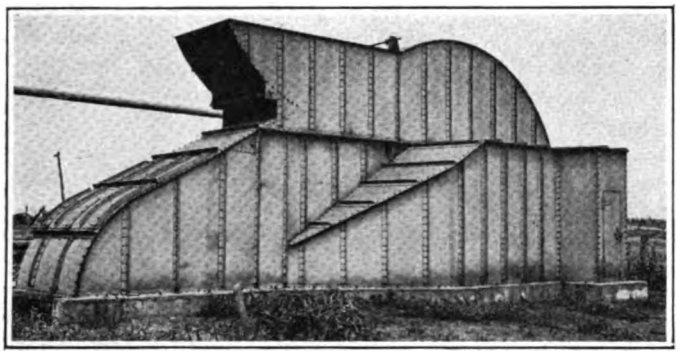

Fig. 5—Fan Makes More Air Than Mine Will Take

Always consider the mine wholly apart from the fan. Given a certain water gage and a certain resistance the mine will pass a certain quantity of air. The duty of the ventilating unit is to create that water gage. How much air must it thus compress? Just as much as, and no more than, the mine will take at that pressure.

of the ventilating unit to flow through the mine workings except at a water gage entirely out of all reason.

Again one finds at mines, fans that "fit" the mine conditions the first few years of their operation, but as time has passed the operator has been too optimistic as to his ability to keep down the resistance of the mine to the stated water gage, and as the workings develop the fan becomes more and more unsuited to the work it is required to perform. It is now too large and is able to deliver more air altogether than can pass through the aging mine at the original water gage. As retreating begins, of course, the fan is gradually brought up to capacity and operates more efficiently.

Fig. 5 shows a 12-ft. blowing reversible fan, the normal capacity of which is about 300,000 cu.ft. per minute. When the mine resistance is equal to 3 in. of water gage the fan is 75 per cent efficient mechanically and the brake horsepower required is 140. But the mine will only permit 200,000 cu.ft. per minute to pass with a 3-in. water gage. As a result 140 hp. is required to obtain this result.

By cleaning up the airways and otherwise relieving the restriction, the fan could be brought to efficiency and made to deliver the desired 300,000 cu.ft. of air per minute without a single additional revolution per minute, but this is exceedingly difficult and expensive to do once the airways throughout the mine have been allowed to become cluttered with roof falls.

Characteristic Curves of Multivane Fan

Fig. 6 shows the characteristic curves of a modern multivane fan of practically any standard make when running at constant speed. It will readily be seen that with the fan running at normal capacity it operates at a peak efficiency of 75 per cent delivering 150,000 cu.ft. per minute at 3.5-in. water gage. Should roof fall in the aircourses so as to restrict the air passing through the mine to one-half that volume, the water gage, as will be noted from the graph, will show a slight increase, but the efficiency of the fan will be reduced to about 58 per cent. Yet, its speed will have remained unchanged. The constant-speed curve illustrates clearly the important economy effected by operating a multiblade fan at ranges reasonably within its normal capacity.

Fig. 7 shows a small modern all-steel fan 5 ft. in diameter replacing a wooden fan of 20-ft. diameter. This substitution saved the operator about $3,000 a year in his power bills, because the new fan was operated at peak efficiency. Not so much of this trouble will be experienced in a mine that has introduced the new systems of mining, for the fan will be over- rather than underloaded. As most fans are underloaded the change to more modern methods of extracting coal, which will increase the load, will be favorable to greater mechanical efficiency.

What about the effect of this change on the cost of ventilation? My data, observation and experience lead me to the conclusion that ventilating cost will be materially reduced, particularly in those states permitting the driving of entries more than 80 ft. without a crosscut. The elimination of the driving of many crosscuts and of the building and maintenance of many stoppings will result in an important reduction of cost. A positive decrease in the cost of ventilation is assured because of the reduction in the resistance of the mine. The power required to drive a mine fan varies as the square of the pressure and increases, or decreases, as the cube of the volume, the velocity or the number of revolutions per minute of the fan.

If a mine needs 200,000 cu.ft. of air per minute and the water gage is 4.5 in. a 250-hp. motor is needed to ventilate it. The operation of the fan will cost about $25,000 a year, estimating the cost on the basis of a 24-hr. day, 300 days in the year, a 60-per cent overall efficiency and 2c. per kilowatt-hour. This figure will be about $19,200 a year with energy at 1½c. per unit. This is to run the fan alone.

Operator Saves $13,000 Yearly

Should the same mine be able to reduce its resistance to 2 in. of water gage for the same quantity of air, the power bill for the operation of the fan will be cut to $11,300 on a basis of 2c. per kilowatt-hour and to $8,500 if the cost of energy is only 1½c. per unit. It

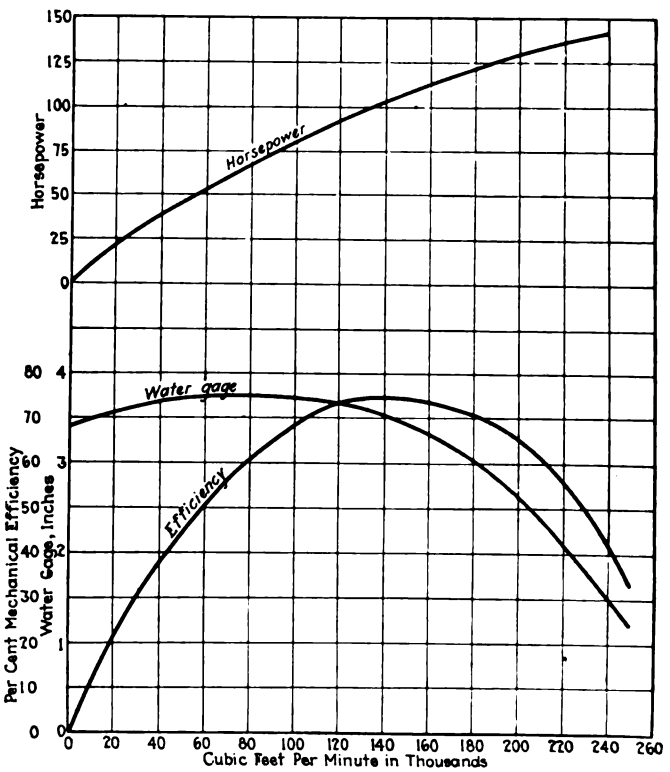

Fig. 6—Characteristics of Mine Fan Running at Constant Speed

The greatest water gage is not found at the point of maximum efficiency. If the mine demands the higher water gage the fan will furnish it in some degree but at a loss of capacity. If it demands less pressure more air will be delivered but at a lowered efficiency. As far as possible the mine should fit the fan and the fan the mine, but that fact is rarely understood.

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is quite evident, therefore, that if the permanent airways are kept clean and open, under the new system, the ventilation cost, in so far as power bills are concerned, will be reduced appreciably. The company using this system of mining successfully should be able to show a saving in the cost of production per ton over its former system, and if it can achieve a saving of 25c. a ton on the mining alone, it is inclined to regard any saving in the cost of ventilation as so much "velvet."

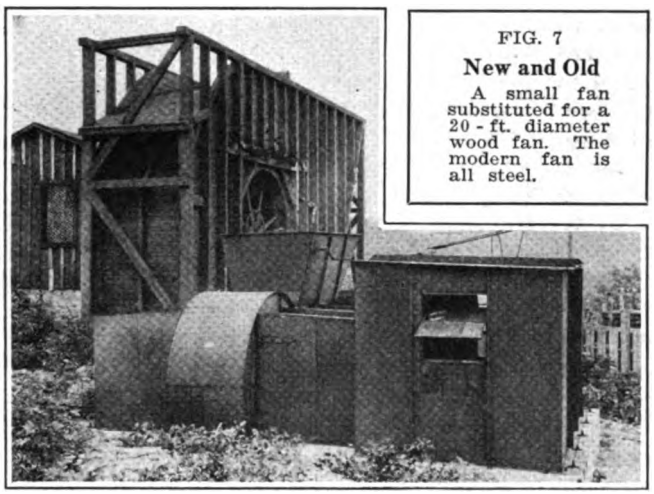


FIG. 7
New and Old
A small fan substituted for a 20-ft. diameter wood fan. The modern fan is all steel.

The ventilation of the working faces under various systems of concentrated mining presents problems all having the same physical aspects but though these aspects are alike they cannot all be solved in the same manner. The operator in one state may have clear sailing, whereas his neighbor across the state line may be hampered in many ways by the laws with which he is obliged to conform. One state will be found progressive and alive to what these new methods can do and in framing its legislation will give all reasonable assistance to its mining men. Another will be found to cling to laws made for a system of mining that is surely, but, of course, gradually, doomed to give place to a new order, the state being nevertheless unwilling to recognize this fact.

I refer, of course, to those states that bar the use of the small auxiliary blower with canvas tubing for ventilating minor faces and which do not permit an entry to be driven without making a crosscut every 60 or 80 ft. The last thing in my mind is to recommend a step backward or to undo any good practice already established, but the reader will surely agree that without jeopardizing the lives of the men employed, a mining code may be so framed and worded as to give progressive operators a chance to work their mines efficiently by one of the many systems of concentrated mining now receiving extended application.

Royalties Are Low in Southern Illinois

Investigations made by L. D. Tracy, a coal-mining engineer of the U. S. Bureau of Mines, show that since 1910 the average royalty in Williamson County in southern Illinois has gradually increased from about 3c. per ton for run-of-mine coal to about 6½c. In Franklin County, which is adjacent to Williamson and in the same state, during the same period the royalty has risen from about 1½c. to 5c. per ton.

In normal times a piece of coal land in Williamson County brings about 8c. per ton royalty. This presupposes that all conditions as to mining, shipping and quality are favorable and that it will be mined in the course of the normal development of the field. In Franklin County the probabilities are that a slightly lower royalty would be asked than in Williamson, although royalties as high as 10c. per ton have been received. Surface options, as given in leases in this district, indicate the surface as valued at $85 per acre. General inquiry would indicate that from $50 to $75 per acre was a fair price for the surface and $100 to $125 per acre for the big seam, No. 6, without surface.

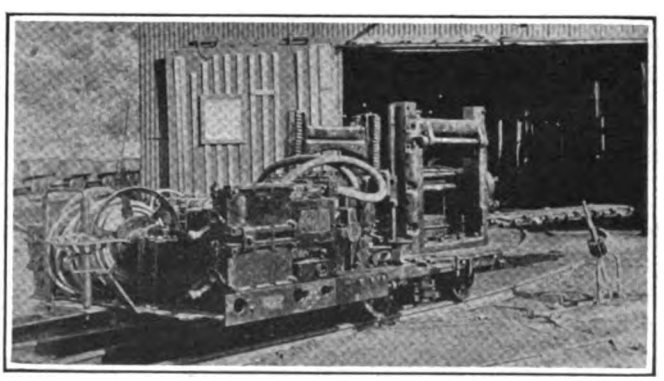
Formerly no mention of surface subsidence was made in coal leases, but in later years about 52 per cent of the leases in Williamson County and 37 per cent of those in Franklin County contain a clause which expressly releases the lessee from all liability for damages to the surface by subsidence caused by removing the underlying coal. No difference in the royalty appears to result from incorporating such a clause.

There are no recent figures at hand of royalties in other fields of the country but George H. Ashley gives a few as of 1910. However, comparing the average royalty in Franklin and Williamson as of 1923 with those in the coal fields as given by Ashley it would appear that southern Illinois coal is valued at a much lower figure by comparison.

As far back as 1910, Pittsburgh coal royalties ranged from 10 to 15c. per ton of run-of-mine coal. Hocking Valley, Ohio, coal brought 8c. per ton; Kanawha, W. Va., 5½ to 10c., Routt County, Colo., 8 to 10c. and Boulder County 8 to 27½c. These figures of fifteen years ago are higher than those of Williamson County which averaged a little over 6c. per ton or those of Franklin County that run from about 4 to 7c. per ton for the past few years. There does not seem to be any definite reason for this seeming discrepancy in values.

The highest price of Williamson and Franklin County coal land, is $125 per acre for coal and $75 per acre for surface, or a total of $200. The average thickness of the principal bed is given as 9.2 ft., and the average thickness mined as 7½ ft. These figures will give an approximate acre-foot value of $21.50 and $26 respectively.

Comparing Ashley's maximum acre-foot values of fifteen years ago: Pittsburgh coal is $110 to $170; Kanawha district $6 to $60; Pocahontas district $10 to $40; Colorado $23 to $60. And probably in none of those places does the surface value play as large a part as in the Illinois acre-foot value.



This Top Cutter Overcomes Obstacles
Turret machine with 8-ft. cutterbar is used by the Phelps Dodge Corp. for special cutting in 35-ft. rooms where faces slant at an angle of about 32 deg. The revolving cutting mechanism is self-propelling within its working area, maintaining contact with the nearest power line by means of a cable reel.

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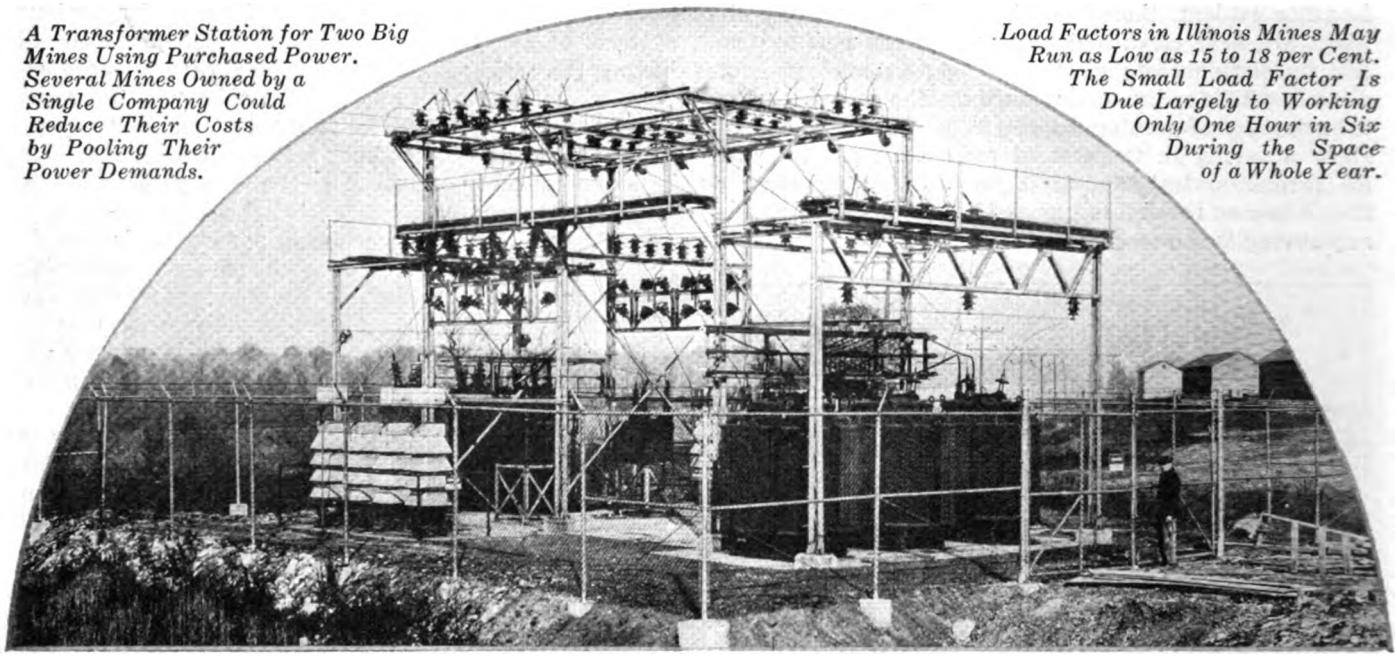

A Transformer Station for Two Big Mines Using Purchased Power. Several Mines Owned by a Single Company Could Reduce Their Costs by Pooling Their Power Demands.

Load Factors in Illinois Mines May Run as Low as 15 to 18 per Cent. The Small Load Factor Is Due Largely to Working Only One Hour in Six During the Space of a Whole Year.

Why Illinois Uses Purchased Power Extensively

Small Loads and Irregularity of Operation Favor Use of Purchased Power—Load Factor of Diversified Service Much Greater Than That of Any Single Mine

By J. Paul Clayton
Vice-President, Central Illinois Public Service Co., Springfield, Ill.

OUT of a total area of 56,000 square miles in the State of Illinois somewhat over 35,000 square miles are underlaid with bituminous coal. With an average yearly production of about 70,000,000 tons this state ranks third in the Union, being exceeded only by Pennsylvania and West Virginia. The beds of coal now worked vary from 3 to 14 ft. in thickness and lie at a depth ranging from nothing at certain outcrops to as much as 1,000 ft. below the surface. The average depth of the mines now working is approximately 400 ft. Little water is encountered in any of these operations.

Early development of the coal deposits of this state largely utilized hand labor, but as this became more and more expensive it has been gradually supplemented by mechanical energy until at the present time mechanical or electrical power is used for a great variety of operations. The early mines were supplied with mechanical or electrical energy from stations located near the shaft or other mine opening. These as a rule were small at the start and grew by accretion as power demands increased. As a result, many of these early mine power plants were woefully inefficient.

It was not until about 1912 that high-tension transmission lines furnishing power to the mines made their appearance in Illinois. At that time two large mines were built and completely electrified using purchased power for their operation. These two developments are still among the most efficient in the state from the standpoint of power consumption. They are likewise among the largest producers as regards annual tonnage. The extension of transmission lines steadily progressed until, at present, purchased power is available in almost all the coal fields of the state. Most of the power furnished to these fields is generated in large modern steam-turbine stations where it can be produced at low cost.

Electric service to the coal mines has steadily progressed from its humble beginning back in 1912 up to the present. Today not less than 200 coal operations purchase all or a substantial portion of their total power requirements. There are now about 338 shipping mines within the state, so that approximately 60 per cent buy part or all of their power. A majority of the fully electrified operations are of large capacity so that probably at least 75 per cent of the coal mined within the state borders is produced in whole or in part by the aid of power purchased from central station companies. Great progress has been made in the electrification of the mining industry of Illinois during the last fifteen years.

SERVICES POWER PERFORMS

The main purpose for which power is used at electrified mines are as follows: Hoisting, haulage, cutting, ventilating, pumping, preparation, shops, lighting and to a limited extent battery charging. In the larger fully electrified mines of Illinois practically all the hoisting is done by means of flywheel motor-generator sets which take energy from the alternating-current supply through an induction motor and generate direct-current power. A large flywheel is mounted on the same shaft with the motor and generator so that any sudden draft of power for hoisting is provided by both an increased input from the transmission line to

Abstract of a paper entitled "Purchased Power for Coal Mines in Illinois," presented before a meeting of the Mid-West Power Conference at Chicago, Jan. 26 to 28, 1926.

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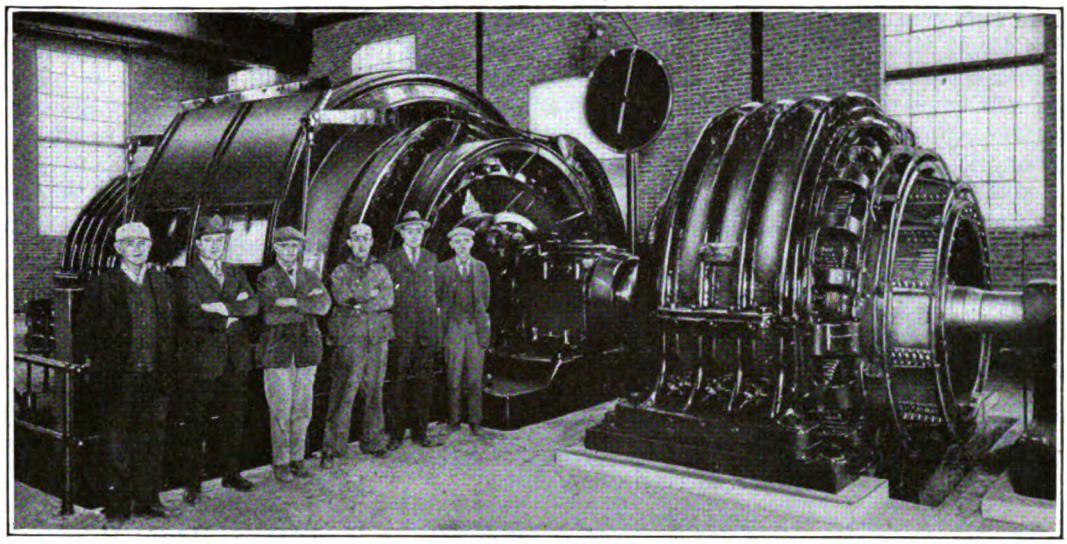
Double-Motored Hoist

At Orient, No. 2 Mine. In order to avoid the installation of a motor of excessive size two such machines are employed to operate a single hoist. Where large outputs must be attained speed and reliability are prime requisites in hoisting equipment. Such machinery must, therefore, be massive in design.



the motor and the stored energy of the flywheel. The hoist itself is driven by a motor drawing its current supply from the direct-current generator. An auxiliary alternating-current motor of relatively small capacity is provided for hoisting men and materials when the large motor-generator is not in operation.

This method of driving the hoist, variously known as the Ward-Leonard and Ilgner system of control, provides a fairly steady average load upon the alternating-current supply, simultaneously affording almost unlimited power for hoisting purposes. One of the advantages of this method of control is that in the event of an interruption to the power supply sufficient energy for hoisting is available for some time from the flywheel alone. This control also gives great refinement of manipulation in hoisting. It is undoubtedly the most satisfactory method yet devised for controlling mine hoists at operations of large capacity. In small mines or those that hoist only a short distance where the size of motor required does not exceed 300 to 500 hp. geared alternating-current motors are employed.

Haulage Uses 250-Volt Current

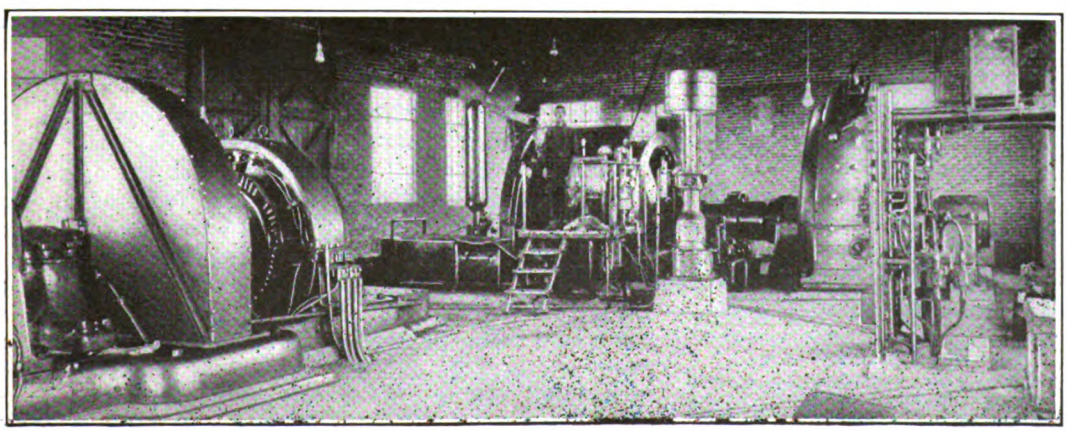
Power haulage in Illinois mines is performed entirely by means of direct current at approximately 250 volts. To furnish this energy synchronous motor-generator sets are employed. An Illinois law forbids the carrying of potentials exceeding 275 volts on exposed wires.

Cutting and mining machines are operated both by direct current from the haulage system at approximately 250 volts and by alternating current at about 220 volts. Alternating-current cutting machines were first introduced in this state in 1913 following the introduction of purchased power. Their use encouraged the practice of taking power at 2,300 volts underground by means of three-phase, lead-covered, armored cables to banks of transformers located adjacent to the working faces. This arrangement greatly reduced the losses experienced in the direct-current transmission and materially lessened repairs to the cutting machines themselves as full voltage was always supplied to them. The majority of new mines developed within this state during the last ten years have installed alternating-current cutting machines.

Pumps and Fans Use Alternating Current

Pumps used for voiding water from the mines are usually driven by alternating-current motors, although some are operated from the direct-current haulage circuits. Ventilating fans are usually driven by induction motors taking either 220, 440 or 2,300 volts. Many machines of this kind are operated at constant speed but others are connected to variable-speed motors obtaining this variation of speed either by means of pole-changing devices or by some form of mechanical equipment for altering the speed. Tipple motors at the majority of mines are operated on alternating current of 220 to 440 volts.

During the last two or three years a number of large strip mines have been developed in Illinois. Some entirely satisfactory beds of coal lie within 25 or 30 ft. of the surface. By the use of large power shovels it has been found possible to strip the overburden from these measures and lay the coal bare. Smaller shovels



Hoisting Electrically

Hoist at Valier. Raising coal entails a big demand for power. A flywheel motor-generator is interposed between the hoist and the line. The inertia of the flywheel takes part of the load when coal is being raised, thus cutting down demand peaks.

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load this coal into cars by which it is transported to the tipple where it is prepared for market. In such mines electric power may be utilized for operating the shovels employed in both stripping and loading as well as for actuating the tipple. In some cases also this power is used for pumping if natural drainage is not available.

Power consumption in individual mines varies according to the depth of the operation, average length of haulage, volume of air furnished, quantity of water pumped, thickness of bed and other conditions of lesser importance. The actual power consumption for a year of operation, in two completely electrified mines producing approximately 1,000,000 tons of coal each from a depth of 400 ft. was as in Table I.

Table I—Power Used for Various Purposes and Its Percentage of Use as Related to Total Consumption

Operation Performed	Power Consumption Kw.-Hr. per Ton of Coal Hoisted	Percentage of Total Consumption
Hoisting	0.6	25.0
Haulage, gathering, cutting, pumping	1.4	58.3
Fan, tipple, shops	0.4	16.7
Total	2.4	100.0

The total power consumption in completely electrified Illinois mines varies from a minimum of about 2.1 kw.-hr. per ton of coal produced under unusually favorable conditions of nearly continuous operation up to 4.5 kw.-hr. per ton of production under unfavorable conditions and operations considerably below normal. An average for the state would probably be about 3.5 kw.-hr. per ton under average prevailing conditions.

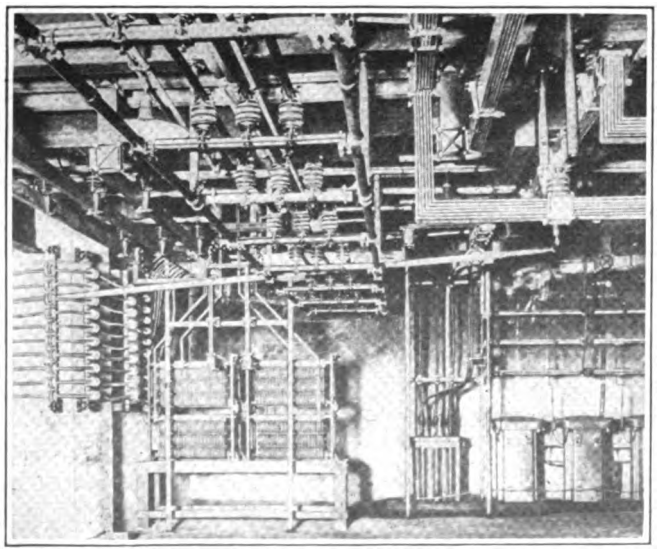
The total operating cost of power when purchased will vary between limits according to the conditions enumerated above. The actual cost of power from a year's operation of the two mines to which reference has been made was as in Table II.

Table II—Cost of Operating Mine Equipment

	Cost Cents per Ton of Coal Hoisted
Labor, including hoisting engineers, firemen, janitors, etc.	1.5
Purchased power, coal for heating water for wash house, lubricants, etc.	5.8
Repairs, supplies and miscellaneous	1.0
Total	8.3

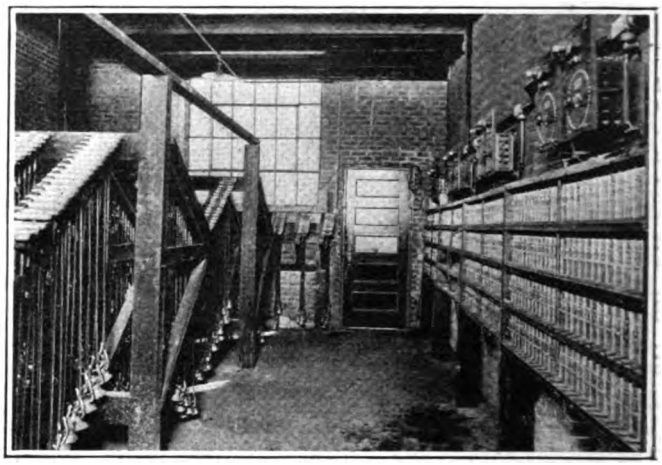
The total operating cost for current where all power is purchased will vary from about 7c. per ton for highly favorable conditions such as large output and nearly continuous operation to about 10c. per ton for less favorable conditions and less constant operation. An average for the state would be about 8.5c. per ton under the conditions normally prevailing.

When compared with the other costs incurred in coal mining, particularly that of labor, it will be found that the item of purchased energy is the smallest of all the various components making up the total expense of producing a ton of coal.



In the Basement of a Big Electric Hoisthouse

This view taken at the Orient No. 2 plant of the Chicago, Wilmington & Franklin Coal Co., shows some of the elaborate wiring that supplies current to the diverse electrical equipment installed on the floor above.



Interior of Lamp-Charging Station

Charging storage batteries, regardless of whether they supply current to cap lamps, locomotives or other devices, is one of the few operations about the mines, aside from pumping and ventilation, that can be done at night.

The total operating cost of power generated in privately owned plants will vary because the same conditions affect it that affect the cost of purchased energy. Actual average costs for several mines having fairly efficient steam plants and operating about the average number of days that mines work in this state in normal times, are as in Table III.

Table III—Operating Cost of Privately Owned Plants

	Cost Cents per Ton of Coal Hoisted
Labor, including hoisting engineers, firemen, coal passers, oilers, janitors, etc.	3.6
Coal, water supply, operating supplies, lubricants, etc.	4.5
Repairs, repair labor, supplies and miscellaneous	2.2
Total	10.3

The total operating cost of power produced in privately owned steam generating plants varies from about 10c. per ton for efficient installations at mines of large output to approximately 15c., or even 20c. per ton in many mines operating under less favorable conditions. An average for the mines of the state where generated power is used for all purposes would be about 12c. per ton.

FIVE HOURS IN EVERY SIX IDLE

Under normal conditions the average coal mine in Illinois operates about 180 eight-hour days per year. In other words, a full power supply for the operation of the average mine in this state is required during slightly less than one-sixth of the total number of hours in the year. The power necessary for hoisting, haulage, cutting and preparation has an annual load factor of about 15 to 18 per cent. That required for ventilation has a load factor of from 50 to 100 per cent, depending upon whether the fan is operated at constant speed throughout the year or is run at reduced speed when coal is not being mined. As a result the total load

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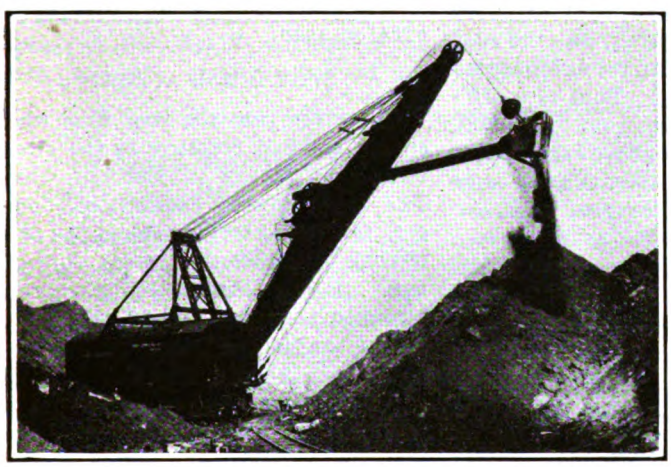
factor for all the power requirements of Illinois coal mines varies from a minimum of about 20 per cent up to a maximum of approximately 35 per cent in mines requiring large volumes of air and operating much more constantly than the average working time of the state. It is difficult to design a steam-power plant that will generate current efficiently under such conditions. The losses from banked fires are relatively large, and the labor cost incident to operating the boiler plants are high. Bearing in mind that the mines are working for only about one-sixth of the total time throughout the year, the unit costs of producing the small quantity of power required during their active periods are relatively extreme.

The reasons why it is best for coal mines to buy their power instead of generating it are as follows:

(1) Because the concentration of large production in big generating stations, serving a large lighting and industrial load as well as mines, affords a high load factor with resultant economy in current generation.

(2) Because the large diversity factor between the maximum loads of individual coal mines and the maximum load of a large transmission system serving many



Stripping Coal Electrically at Cuba, Ill.

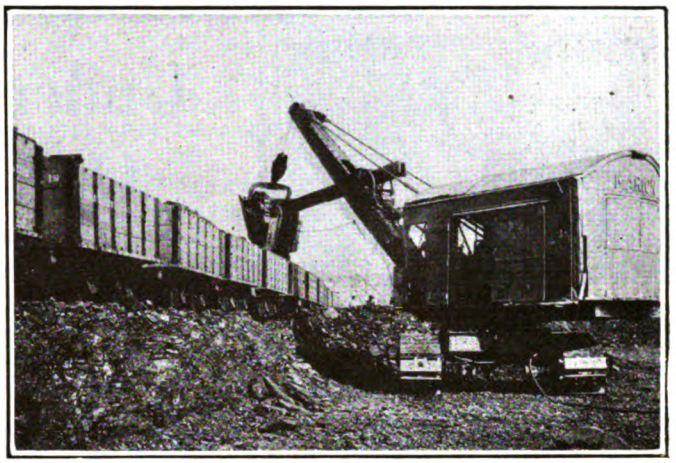
Many coal beds lie close enough to the surface to be mined by the stripping method. For this purpose the electric shovel possesses many advantages over its steam-actuated predecessor. This illustration shows the United Electric Coal Co.'s stripping.

such mines, as well as other industries and large lighting loads reduces the peaks that would otherwise overload the equipment or make undue expenditures on equipment necessary.

(3) Because coal mining loads in Illinois, excepting only those for ventilation, pumping and lighting, occur between the hours of 7:30 a.m. and 4 p.m., whereas the lighting loads of central-station systems develop after 4 p.m.

(4) Because the grouping of many coal mines lowers the peaks, because the coal-mining loads occur only in the daytime, and because of the further consideration that the same central stations furnishing these requirements supply also large lighting demands, result in a system load factor at the generating stations of from 45 to 60 per cent as compared with those of individual mining plants of from 20 to 35 per cent. The generating equipment installed in central stations serving such diversified loads is, therefore, used for a variety of purposes, and the high load factors of such systems greatly aid in reducing the production costs.

Even if a generating station were established for a group of mines, it would not be possible to obtain the low cost of investment and production which occurs with



Loading Out Stripped Coal by Power

The advantages of electrical operation in the strip pit need not be confined to the earth-moving shovel. This shows a small power shovel loading out coal that has been uncovered by the big stripper.

a modern central-station transmission system, because the load factor of a group of mines, at least in Illinois, cannot well exceed 35 per cent as compared with load factors of from 45 to 60 per cent for central-station systems. In addition, all the capacity can be used only for mine operation so that the investment costs are relatively high. It is true that a power plant serving a group of mines secures some of the economies inherent to a central station, but full advantage cannot be taken of the diversity of demand and high load factors of these latter systems.

WHAT PURCHASED POWER AFFORDS

The chief advantages to mine operators accruing from the purchase of power are approximately as follows: (1) Elimination of power-plant investment. (2) Reduced cost of purchased power as compared with that generated. (3) Independence of the water supply which is necessary if a power plant is located at the mine. (4) Reliable power supply available during strikes and periods when the the mine is not being operated; this results in a saving in labor costs. (5) Great flexibility in the supply of power necessary for increasing the output of the mine from time to time upon short notice. (6) Ability to locate motor-generator sets near the working face.* (7) The purchase of energy enables all the men at the mine to devote their undivided attention to the production of coal without being distracted by the generation of power.

When it is considered that only about fifteen years ago there were no mines in Illinois purchasing their power and that at present purchased current is used wholly or in part for the production of at least 75 per cent of the state's output, it is immediately apparent that central-station energy is the most important factor entering into the production of coal within this state. Most of the new large mines sunk during the past few years have been constructed for complete electrification with purchased energy from the start.

In many coal fields throughout the United States as much as 90 per cent of all of the power required is purchased. Undoubtedly a similar result will be attained in Illinois within the comparatively near future now that it has adequate power systems everywhere.

*This advantage can be secured by any mine generating its own power. In Illinois, however, about 90 per cent of all the installations of this kind were made at the time purchased power was adopted and are now used in connection with this source of energy.

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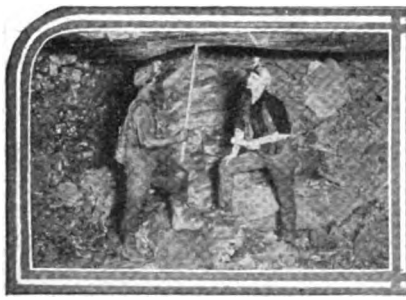
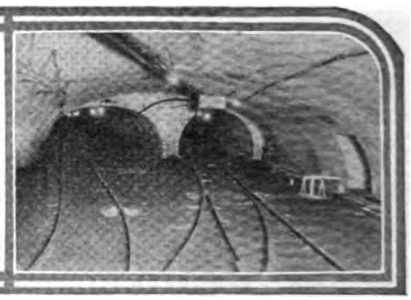


Underground Operation



When Mine Roof Breaks, Can It Fall?

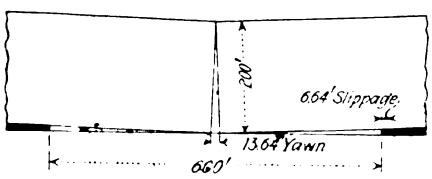
If a Free Piece of Roof Resting on Ribs Breaks and Tries to Tilt Into the Mine Workings It Must Open a Wide Crevice and Slide Up on the Pillar

By R. D. Hall
Engineering Editor, *Coal Age*

Last week appeared in this department of *Coal Age*, Edward O'Toole's interesting and illuminating remarks on roof control and incidentally on roof failure also. If more persons would study the roof as a girder or rather as a continuous beam, many strange fallacies, now widely current, would be exploded.

Mr. O'Toole puts all his confidence in the main resisting stratum. However, it must be remembered that the materials near the neutral axis are subject to but little compression or tension (according as they are above or below the axis respectively) and only the outer fibers of the girder experience the maximum stress—until the girder breaks and begins to fall. Then the neutral axis rises higher and higher, finally reaching the top of the girder, all the unbroken parts progressively becoming in tension.

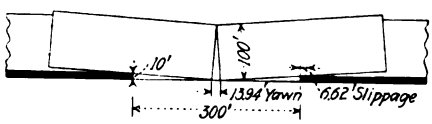
Because the load, when within the sustaining limits of the girder, brings little stress on the material near the neutral axis, girders are made light at this point and heavy at the parts more distant therefrom. In the case of the roof if the material near the neutral axis is weak it may nevertheless be strong enough to meet the stress laid on it. This fact may explain why roofs give extraordinary resistance, so long as one layer cannot slide on another.



How the Roof Would Break If Free at Its Edges

A vertical crevice opening from the bottom up would divide the slab in two and with the dimensions of span, thickness and fall as shown, the opening or "yawn" of the crevice would be over 13 ft. wide.

Mr. O'Toole says that a girder will fail more readily than a mine roof because in failing it can be drawn into the opening, but the roof being held by the surrounding areas cannot be so drawn. That is a difficult saying. The roof probably breaks somewhat above the pillar when it fails for as Mr. O'Toole says there is stress in the roof over the pillar, but it is interesting to note that the *bottom flange* of a girder which fails and drops does not slide *into* the opening but rather slides *out* of it during the early part of its fall.



Note What Happens Over Rib

In order to open the crevice, the bottom of the slab must slide upward on the rib and that will push back the unbroken measures about 6 ft. But these will not go back, so there is something wrong in the assumption that the slab is free to fall as it pleases.

YAWNS MORE THAN IT FALLS

Let us take Mr. O'Toole's example: Suppose the beam is 200 ft. deep and the span is 600 ft. The girder tears and ultimately opens up as if there were a hinge in the upper flange at midspan. The fracture yawns and that yawn if the fall is 10 ft. is 13.64 ft.

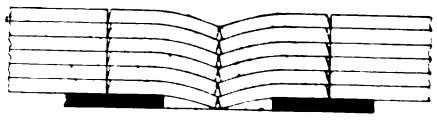
It is easy to calculate that the slant distance to the pier along the lower flange is no longer 300 ft. but 293.36 ft. so that motion of the point in the lower flange over the edge of the pier is backward toward the pier and the measure of it is 6.64 ft. It is because this movement in the case of the roof is prevented that the roof shows much strength. It is a thrust and not a pull that is being resisted by the adjacent strata.

Changing the thickness of the girder to 100 ft. and the span to 300 ft., using Mr. O'Toole's factor of three and assuming the roof to fall 10 ft., the yawn will be 13.94 ft. and the slide at the edge of the pier 6.62 ft. and in the same direction, backward toward the pier as in the previous case. The figures are naturally much the same as for the greater span.

WHY BREAK AT RIB?

But given that the roof falls what should make it fracture at the ribs? It is easy to say it does but why? The weak layers between the coal and the load-carrying band, as Mr. O'Toole significantly terms it, may fail. Being beams of no great strength they are nipped off. They are of the nature known as *encastré* or built-in beams, one end possibly on the floor and the other nipped in between the load-carrying band and the coal. Possibly these weaker layers, which are all that can be seen, do break on a line inclined 15 deg. to the vertical as Mr. O'Toole has noted, the ends projecting over the broken area, but it is difficult to see what should break off the load-carrying band unless it be the dynamic effect of the fall. The strain of the drop, most of which is almost instantaneous, must be enormous and perhaps Mr. O'Toole is correct in saying the rock breaks near the pillar, but it must be dynamic and not static strain that causes the break. More will be said about that later.

Now looking at the size of the



What Really Happens to Slab

The solid roof splits horizontally into a series of drawrocks, that is, rocks that are free of each other and which no longer act as a single integral slab, or monolith. These fit themselves to the space afforded them, pressing back the side rocks a little, but not six feet as the other illustrations show.

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yawns between the fractured rocks and at the movements at the edge of the pillar no one can deny that they are unbelievably large. They surely do not occur in any such measure or the rocks would be thrust several feet into the air. What really happens is that the roof fractures not only vertically but horizontally. Each stratum in the load-carrying band slips a little past its neighbor. The hinge effect is not achieved; the yawn is not nearly what the figures purport to show, the distortion by horizontal shear between layers making it possible for the rock to fail without the fracture opening in the manner of a hinge on a door. The rectangles lose their rectangular form and become rhomboids, or possibly, rather slightly distorted rectangles of relatively shallow depth.

When All Is Drawrock

This horizontal movement that separates all the layers and makes of them separate small beams of no great strength is doubtless the cause of the failure at the rib. This is aided by the dynamic effect of the roof fall. The load-carrying band is no longer a unit. It has become a series of drawrocks that have no strength and are easy prey to the stresses involved in roof motion.

These considerations, perhaps, show why sandstone is so strong. It does not have much greater tensile strength than a good slate. But tension only opens the way to failure. The roof fails mainly from a yielding to compression, within the elastic limits, of the fractured member and of the measures surrounding it and from the sliding of one stratum on another. Consequently the important elements of strength are the ability to resist compression and horizontal shear, two qualities that in general discussion have always been overlooked. Tension and vertical shear are usually held exclusively accountable for roof failure, but is that view tenable?

How to Make Machine Loader A Popular Innovation

In discussing with coal operators the application of mechanical shoveling to coal mining, few, to date, have put due emphasis on the human element which is so necessary to the success of the undertaking. The miner, naturally, by means of the "grape-vine telegraph" gets early advice that the staff at the mine is discussing an addition to the equipment.

He knows that the purchase of more mine cars or more locomotives or additional cutting machines means, generally, that he will get better service and that he will be able to load more coal or, perhaps, will be enabled to load what he feels like loading in a shorter time. He does not entertain for a moment the thought that he will have to take less per ton or per yard for his services. The new equipment seems likely to increase the tonnage he will be able to get out and to make jobs for a few more motormen and cutters. That's fine. He likes to see things on the jump. It adds to the excitement of camp life, and it indicates, to him, that the rumors of a shutdown, perhaps, are not true.

Loaders, That's Different

Then comes the rumor that the company is considering the use of shoveling machines. That's different. That means cheaper coal, and he argues that cheaper coal means lower rates or wages for him. Nobody corrects that erroneous impression, and a machine is brought to the mine and put to work.

The man on the machine and those working about it, laying track, drilling holes and shooting them and generally preparing the working places are getting as good wages as they formerly got at other work but no more. Why then "cut loose" to get more coal and cheaper coal when it means no increase in the loader's earnings. But suppose, and why not, the loaders are, in due time, appraised of an arrangement whereby they will have a chance to make more money by the use of the large capacity of the machine. That again is different!

Interesting Labor

Suppose they are grouped about a shoveling machine in an ample, well-defined and compact territory, embracing rooms and narrow work, eleven men, including the group foreman. These men take care of the entire preparation, loading and haulage to the nearest lieway, including all dead work. Give them the wages that are current for the various classes of work for an output that profitably warrants the purchase of the machine.

This is all right as far as it goes, but the worker's psychology has not yet been taken into account. How are we to make a fair arrangement whereby the interested capital and the partially interested worker can both be interested to the fullest extent?

The plan that would at once suggest itself, is that of paying in specified amounts for each unit of increase in joint performance, above the base production. It is a system of more pay for more coal, and more coal is what cuts the mine overhead. Such an arrangement honestly undertaken and fairly administered will surely be productive of enthusiastic team work which is so vital to the largest output at the smallest cost.

Everyone a Handyman

It is fair to say that under this group system of operation, no man is a specialist but that each man will do a fair day's work at whatever the foreman directs him to do. For example, if the cutting is completed and the drilling lags behind, the cutters will help in the drilling and so on. In a short season, under this plan the work would not suffer because one group failed to report.

It will be surprising and gratifying to note the increased *esprit de corps* that will permeate the whole organization. From a study of men in coal mines over a period of twenty-five years, it is my belief that mechanical shoveling is destined to show only mediocre results just so long as the men are not allowed to share, to a proper extent, in the benefits made possible by the shoveling machine.

Free Miners from Precedent

The sooner, be it said, the mining of a ton of coal is regarded less as an established practice and more as a problem of excavation and delivery, the sooner will the benefits from mechanical shoveling accrue. Another advantage, which does not generally show itself as an item on the cost sheet is the greater safety of the men. Our casualty list is a serious blot on the history of American coal mining. With mechanical loading fewer men are necessary for a given tonnage and a complete supervision of such men as are employed is rendered comparatively simple. The introduction of machines is bound to result in a great saving of life and limb. Experience has proved this to be true where machines have been introduced.

C. H. Thompson.

Hollins, Va.

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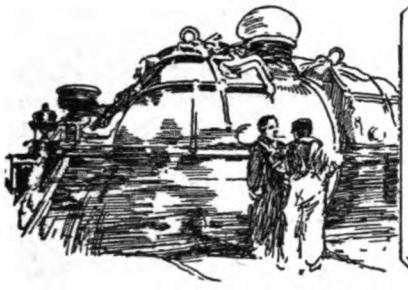
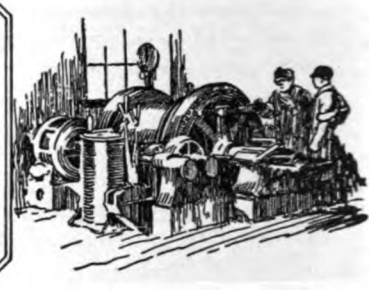


Practical Pointers For Electrical And Mechanical Men

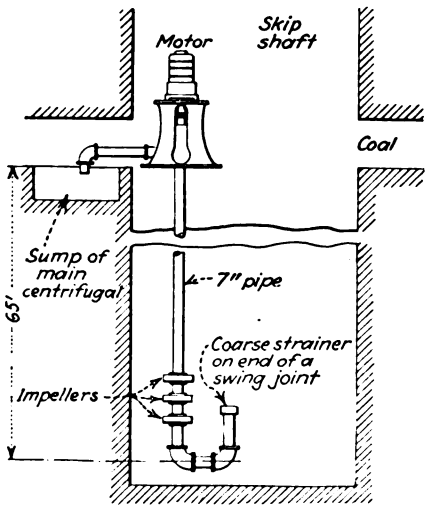


Vertical Pump Driven by Motor at Lower Landing Lifts Sludge from Sump

Removing the water and sludge from the sump at the bottom of a skip shaft in many cases is a somewhat annoying operation. It is annoying rather than difficult because the liquid is laden with an appreciable quantity of solid matter and the ordinary horizontal direct-connected centrifugal pump, if placed in the sump would be subjected to the action not only of drip but that of the skip spillage sifting down upon it as well. This probably represents the hardest kind of conditions under which an electric motor can be called upon to work.

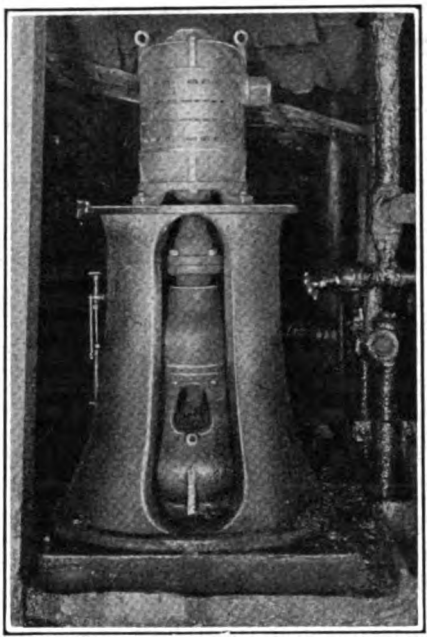
At the Bartley mine of the Pond-Creek Pocahontas Coal Co., near English, W. Va., these various difficulties are surmounted by placing a vertical centrifugal pump near the bottom of the sump and driving it with a motor installed at the level of the coal. By this means the pump is placed down close to its work, whereas the motor is up in a really accessible position, one that frees it from the action of both water and fine coal.

As may be seen from the accompanying drawing, the pump intake



How Sump Pump Is Installed

Making the pump vertical and driving it through a long shaft from a motor installed at the level of the coal bed removes the motor from the harmful action of both excessive dampness and dirt.



Pump Motor Works in the Dry

This motor is mounted on a substantial foundation approximately 65 ft. above the motor that it drives. It is thus well removed from the dirt and dampness of the skip pump.

or suction opening is approximately 65 ft. below the level of the coal bed. The suction pipe is turned upward at its extremity which is further protected by means of a coarse strainer. The pump itself is a three-stage machine, the diameter of the impellers being about 12 in. The discharge pipe is of 7-in. diameter, and delivery is made to the sump of the main mine drainage pump. The 10-hp. vertical driving motor operating at 440 volts, alternating current, is shown in the photographic illustration.

This pump, which is of Layne & Bowler type, was put into service, July 1, 1925, and so far has handled the sump sludge without difficulty and apparently without much wear. The chief advantage of this type of unit, however, as already pointed out is that the motor and working head are above the sump and consequently up out of both water and dirt. A further advantage is ease of access. Neglect usually follows where a piece of equipment cannot be reached readily or only with discomfort.

Grinding Valves Eliminate Pump Difficulties

Much trouble and expense was experienced in the upkeep of the boiler-feed pump in our 1,000-kw. power plant. The main troubles were these: The pump ran too fast, water-valve seats were continually being knocked out, valve stems broke frequently, and there was much wear on the rocker arms and on the rods of the steam valves.

New Valves No Better

New brass water valves and seats, in the condition in which they came from the factory were installed, but this did not seem to help matters. The first step taken was to determine what speed the pump should run to supply the proper quantity of water for the boilers. This was determined easily from readings of a feed-water meter which is a part of the regular equipment of the water line. By calculating the displacement of the pump plungers it was found that the pump should be making five to six strokes per minute instead of twenty-four to twenty-five strokes, which it was actually making. The natural deduction was, "leaky water valves."

Valve Ill-Seated

A new seat and valve were closely examined. It was found that the valve touched the seat only in spots. To the eye it appeared to seat well, but by using a feeler gage as much as 0.005 and 0.006 in. opening was found in spots between the valve and its seat. A new set of valves and seats were made up by grinding the valve to the seat, with valve grinding compound, until there was a good seat over the entire bearing surface. After the new seats had been placed in the pump, the valves were given a final grinding to their seats. When the pump was again started, all troubles had disappeared. The pump carried the load by operating at a speed of six strokes per minute and ran that way without any further expense for over eighteen months.

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As a result of the above experience the same practice was followed with brass-valve mine pumps. These pumps would deliver a much greater quantity of water, after the valves were ground to their respective seats.

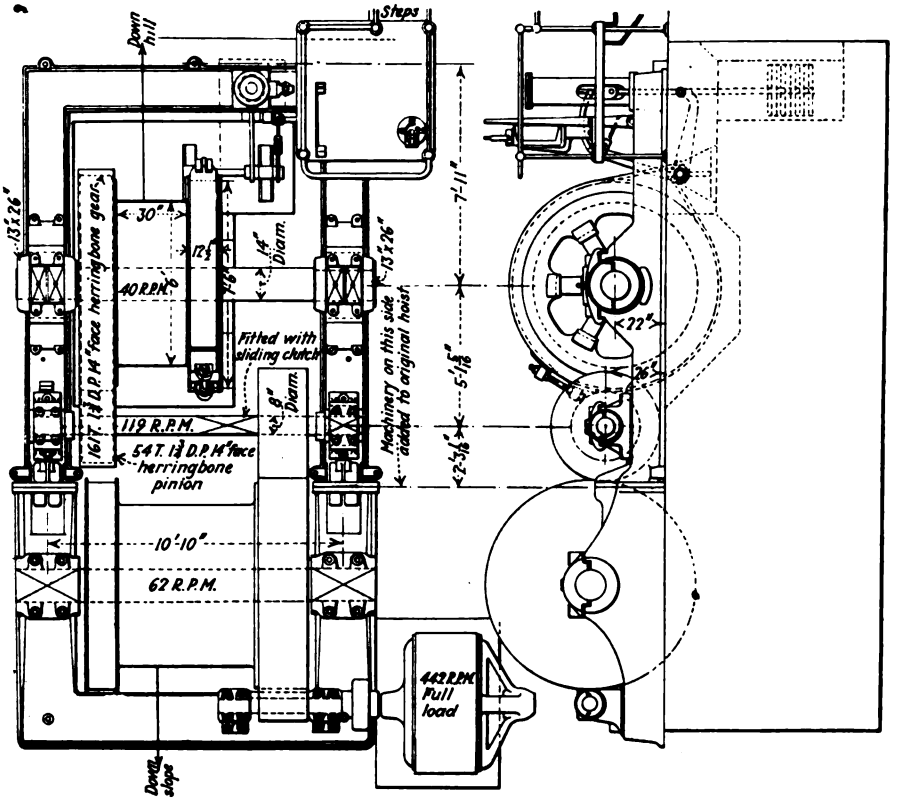
R. R. WEBSTER,
Chief Electrician.
Elkhorn-Piney Coal Mining Co.,
Weeksbury, Ky.

Counterweight on Hillside Balances Slope Trips

Hoisting in balance is to be preferred to unbalanced hoisting. On slopes a counterweight within the slope itself can sometimes be used. This should equal the weight of the cars and half the weight of the coal in the trip to be hoisted. The machine thus consumes as much power in lowering a trip of empties into the mine as it does in bringing out a string of loads. Some mines are so located that a counterweight may be used on the surface.

At Sublet, Wyo., the bed in which the No. 5 mine of the Kemmerer Coal Co. is opened outcrops at practically the top of a hill, the hoist house in fact being located slightly over the crest, at an elevation of nearly 8,000 ft. above tide. The somewhat peculiar situation and local topography make it possible to use a counterweight moving up and down a track laid on the surface.

Originally an electrically driven hoist was installed at this point which served the slope but without the assistance of any counterbalance. The Vulcan Iron Works of Wilkes-Barre, Pa., however, furnished a drum for controlling the counterweight. The present machine is shown in the accompanying illustration. As one rope winds off the drum serving the slope the other winds onto the other drum thus lifting the counterweight and vice versa.



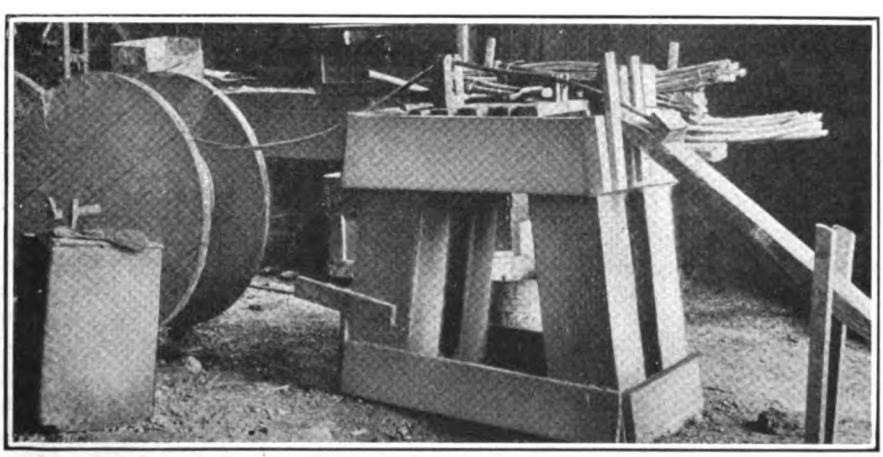
Counterbalance on Hoist Almost Halves Load on Motor

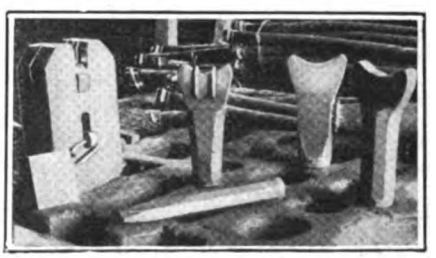
As originally installed this machine was intended merely to haul trips out of, and lower them into, the slope as dead weight. The addition of a counterweight on the hillside and a means of controlling it materially decreased the power consumption, or what is the same thing, permitted the machine to handle 10-car trips whereas before it could handle trips of only 5 to 6 cars.

The power consumed in hoisting is thus materially reduced.

A small railroad car filled with rock and weighing approximately 90 tons serves as a back balance or counterweight. This moves up and down on a track laid on the hillside on an inclination of 12½ per cent. The relative speed of the two drums is such that the counterweight moves 1,600 ft. while the trip in the slope travels 2,500 ft. The speed of the trip in the slope when coming up is 1,200 ft. per minute and when going down 1,320 ft. per minute. Ten-car trips are handled. The weight of the cars, empty, is 2,500 lb. and they hold 5,000 lb. of coal each. The grade of the slope is 18 deg.

The present arrangement is quite flexible. It may be used for hoisting or lowering materials and supplies on the slope independent of the counterweight. The motor driving the hoist is a 500-hp. 2,300-volt induction machine operating at a no-load speed of 450 and a full-load speed of 442 r.p.m. Gomer Reese, the general superintendent of the company, states that this hoist now handles 10-car trips as easily and readily as it formerly handled 5- or 6-car trips before the counterweight and its drum equipment were added.





Electric Bonding "At Home"

The extensive bonding program of a large coal company prompted it to manufacture its own arc-weld bonds. Above is a close-up of die and tools used to apply copper-sheet terminals to the stranded wire. These bonds are for application by the copper-electrode method.

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Viewpoints of Our Readers

Should We Make Our Mine-Car Wheels Of Cast Steel or of Cast Iron?

I have been much interested in your editorial entitled "Lighter Wheels and Heavier Loads," appearing in *Coal Age*, Feb. 18, 1926, and in the criticism signed by "Wheelman" in your April 15 issue.

I began using cast-steel mine-car wheels when operating coal mines in Canada in 1910, and continued to use them up until I left the Dominion in 1917. After my arrival at Ansted, I ordered 100 sets of English cast-steel mine-car wheels. These were delivered about two years ago. The wheels I used in Canada were of 18-in. diameter, bronze-bushed, and were installed on a 3-ton mine car. We used sprags made from 1½-in. pipe; consequently, the service was severe, taking into consideration the extremes we would have in weather and also the steep grades.

Five Years and Still Working

In order to illustrate the good service we got from these English cast-steel wheels, I can state that we purchased eighty-four trucks and put them into service in 1912. I can vouch for the fact that upon my leaving in 1917 every wheel was in service, having been used continuously from the time it was installed, which covered a period of over five years. The results were so extraordinarily good that when I came to West Virginia I immediately began to look around for American-made cast-steel wheels. I was successful in getting some excellent wheels, which I put into service in 1918. These are still in use and giving splendid service.

As stated earlier in my letter, I have also installed one hundred sets of English cast-steel wheels of 14-in. diameter, equipped with bronze bushings. We have had some difficulty with these, which was due to no fault of the wheels themselves, but to the fact that we used too heavy grease in lubrication, causing some of the bushings to wear. These had to be replaced. They are all in service at the present time.

We have also just recently ordered from an American company fifty sets of cast-steel wheels, after having tried out ten of their wheels equipped with a special bearing. It is a fact —and we have experienced it—that when the thread of the cast-steel wheels is made too thin they will flatten between the spokes. I had one set of American-made cast-steel wheels which did this, and upon taking it up with the manufacturers they increased the thickness of the tread, and I am convinced now that the wheels will stand up well.

The writer of the letter printed in the issue of April 15 must have had experience with some very inferior cast-steel wheels, as he says that they wore out in one round trip. We have here extremely hard service, having an outside haul of over five miles—our cars being equipped with brakes—and in each trip the brakes are applied, causing slipping and sliding of the wheels. When cast-iron wheels slip on the rails the tread is often flattened and this action tends to increase on succeeding trips. When the brakes are applied to slip the cast-steel wheels little flattening is experienced—in fact upon close examination the cast-steel wheels do not flatten like a cast-iron wheel.

Weight Cut in Two

The statement in your editorial in regard to the difference in weight is conservative, as my experience has been in weighing several cast-iron wheels and cast-steel wheels, including the pedestals, a set of same-dimension cast-steel wheels will weigh approximately one-half as much as the cast-iron wheels and pedestals. As you mention in your editorial, this is an important item.

Having used cast-steel wheels over a period of sixteen years, I am thoroughly convinced that for mine service this wheel is far more economical than the cast-iron wheel.

R. H. Morris,
General Manager.
The Gauley Mountain Coal Co.,
Ansted, W. Va.

West Virginia Won Doubtful Victory at Jacksonville

Many have been the declarations, appearing in *Coal Age*, of those whose business has been adversely affected by the Jacksonville agreement, but we in West Virginia can assure those in other states that we are not showing any signs of affluence as the outcome of that agreement. Nor were we helped by the anthracite strike which might have been expected to have aided all the bituminous operators whether working on the 1917 or any higher scale of wages.

The United Mine Workers perhaps intended that the anthracite strike should help the miners wherever production had been handicapped by the Jacksonville agreement. Whatever the union purposed, the Jacksonville signatories made little out of the strike and have been the first to feel the effect of the anthracite settlement and the slump that has followed. They are beginning to come to the 1917 scale, and when they do, competition with this state will be more intense. Thus the outlook in West Virginia is the darkest in many years.

Slow Progress in Merging

Consolidations might aid but any worth-while amalgamation seems unlikely. Some time ago an article on coal-company consolidations was published in the local papers and copied in New York and Chicago. The author made the statement that the main reasons why consolidations had not come to the relief of the industry were three:

First, that the promoters with the money worked under cover. Second, that the unfortunate mine owners with properties to consolidate were loath to advertise that they had "white elephants" on their hands which they desired to unload on someone else. Third, and perhaps the most important, that most of the coal men who were shaping the policies of the industry did not own the controlling stock and were drawing, relatively speaking, fairly good salaries to keep things going on as they were. They did not know where they would come out in a merger, so they sat still and said nothing.

For these reasons there was destined to be no more concerted action in the bituminous-coal business than in a government without a head. You can heap all the vitriol you please upon operators for not co-

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operating, but it is pure communism to expect it. Ownership is the only sound basis for legitimate control of corporational activities.

When operating officials take this position, it is because they know that were their companies to go into a merger large enough to effect any improvement in the condition of the industry they would not be the presidents of them and would probably do well to get a superintendent's job. These are the facts, and everyone might just as well face the music.

Last year, if ever, should have been a profitable coal twelve months in West Virginia. The talk of profiteering among the operators certainly is disgusting, yet sufficient instances of coal companies trying to grab a little something out of the New England situation have occurred to lend it color. Egg went once to $3.50 per ton, but it went off almost immediately to $2.25.

WEST VIRGINIAN.

Back-Laid Fan Ill-Suited To Mine Ventilation

In the March 18 issue of *Coal Age* you published an article edited by Louis Huber setting forth many advantages of the fan with back-curved blades for mine ventilation. It is true that this fan has certain characteristics which are desirable in some special cases for the ventilation of mines, but it is my opinion that for such purposes the undesirable features of this fan overbalance its desirable qualities. Judging from inquiries received on this subject, the article has conveyed a wrong impression to the mine operator. Mr. Huber probably had in mind the use of fans for small volumes and high pressures, such as are adapted to forced draft, etc., for the data set forth do not state results obtained in the ventilating of mines.

WOULD FIGURE THUS

Let us investigate a 10 per cent drop in pressure as outlined on page 396. This means a 10 per cent drop in resistance for the volume passing. Suppose a fan is delivering 100,000 cu.ft. at 3 in. of water gage and a door is opened and the short circuit thus caused decreases the resistance 10 per cent for the above volume; the mine will then pass 100,000 cu.ft. at 2.7 in. of water gage. According to the premises in Mr. Huber's article, this fan is running at maximum efficiency and constant speed. Now the maximum volume which can be produced is found by the proportion

$$100{,}000^2 : x^2 :: 2.7 : 3 = 105{,}400 \text{ cu.ft.}$$

This is an increase in volume of 5,400 cu.ft. or 5.4 per cent instead of the 26 per cent increase stated in the article. The horsepower curve will show just about 5.6 per cent increase instead of 28 per cent.

The next item to consider is the effect on volume for a 10 per cent increase in resistance and consequently a 10 per cent increase in pressure for 100,000 cu.ft. at 3 in. of water gage. As there is a 10 per cent increase in resistance caused by falls, etc., for 100,000 cu.ft. it means that the resistance has been increased to 3.3 in. for 100,000 cu.ft. According to Mr. Huber's article the fan is running at constant speed at maximum efficiency, hence the problem is stated as follows:

$$100{,}000^2 : x^2 :: 3.3 : 3 = 95{,}300 \text{ cu.ft.}$$

The above proportion shows that a 10 per cent increase in resistance reduced the volume 4,700 cu.ft. or a decrease in volume of only 4.7 as against 84 per cent as stated in the article. The horsepower decrease will be approximately 4.6 as against the 64 per cent decrease stated by Mr. Huber.

PROVED BY PRACTICE

This shows conclusively that a 10 per cent drop in resistance or a 10 per cent increase in resistance is taken care of efficiently and effectively by a forward-curved bladed wheel. These data are obtained in actual practice, and it is in this fact that the mine operator is primarily concerned.

Mechanical efficiency is also important. It is stated that the efficiency of a backward-curved bladed fan is 15 to 20 per cent greater than with other types. I have conducted a long series of tests on both types of fans and have found that the backward-curved bladed wheel is no more efficient than any of the other types. An investigation of published data from other manufacturers who build both types of fans does not bear out the statement that the backward-curved bladed wheel is more efficient than the forward-curved bladed wheel of the same proportions.

There are two redeeming features with a backward-curved bladed wheel. The first is where a small volume of air is required, and this volume is to be delivered against a high resistance. This duty would permit direct connection to a motor of reasonable speed. The other is where a full backward-curved bladed wheel is used and a motor is provided at approximate maximum efficiency for the fan. Then no matter what conditions are encountered at this given fan speed, there is no danger of overloading the motor.

SLOWER, SAFER, CHEAPER

The forward-curved bladed wheel has distinct advantages. The normal ventilating resistance found in coal mines is equal to 3 in. of water gage. The necessary rim or peripheral speed of a forward-curved bladed fan for this pressure is approximately 5,300 ft. per minute, whereas the peripheral speed of a full backward-curved bladed wheel is approximately 8,000 ft. per minute. It must be evident to the operator that a fan wheel operating at 5,300 ft. per minute is a much safer installation than one operating at 8,000 ft. per minute. The assurance of reliability is a much greater asset than experimentation with high peripheral speeds for mine ventilation. A breakdown on the ventilating system puts the mine out of commission, and the direct loss through the shutdown is the main item to be considered, not the cost of repair to the ventilating equipment.

Another item which must be taken into consideration is the cost of the backward-curved-bladed wheel. Due to the unusually high peripheral speed, a much larger shaft must be provided, and great care must be exercised in the manufacture of the fan.

PERFECT BALANCE IMPERATIVE

No oil or foreign matter can be permitted to accumulate on blades which might jeopardize the balance of the wheel, and this calls for the highest class of bearings. It is found that the cost of this type of fan is from 50 to 75 per cent greater than that of a forward-curved-bladed fan of equal capacity.

Both types of fans are manufactured by the several fan builders and where conditions exist that call for a backward-curved-bladed fan, it will be specified. However, for the ventilation of the average mine, the forward-curved-bladed wheel will be found suitable for a wide range of pressures; efficient as to the volumes delivered and most reliable in operation.

W. J. MONTGOMERY.
The Jeffrey Manufacturing Co.,
Columbus, Ohio.

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News Of the Industry



Emergency Coal Control Now Allowed By Statute; Continuous Fact-Finding Unconstitutional, Gandy Testifies

Washington, D. C., April 27.—Authority to exercise emergency control over the coal industry already has been written into the federal statutes, according to Harry L. Gandy, executive secretary of the National Coal Association. "Additional legislation, therefore, such as is possible under the Constitution," he told members of the House committee on interstate and foreign commerce at the hearings on coal regulation yesterday, "could have only the effect of duplication or of transferring the authority from places where it is now lodged to some other department or commission of the government." Any program for continuous, compulsory fact-finding, he contended, would be clearly unconstitutional.

Compulsory arbitration also is beyond the power of the government. The organic law of the Department of Labor, however, authorizes the Secretary of Labor to act as a mediator and to appoint conciliators in labor disputes "whenever in his judgment the interests of industrial peace may require it to be done." That law, Mr. Gandy pointed out, is still in force, and probably represents the limits to which the government may go in intervening in labor troubles.

New Legislation Not Needed

Control of distribution during times of emergency is to be found in sections 15, 16 and 17 of the Transportation Act of 1920. The validity of that control, exercised by the Interstate Commerce Commission, has been sustained by the Supreme Court of the United States in *Advent vs. United States*, 220 U. S. 127, and in *Koenig Coal Co. vs. United States*, decided this month. "The placing of additional authority concerning distribution in any other department of the government," remarked Mr. Gandy, "would provide for duplication unless the authority should be withdrawn from the Interstate Commerce Commission. I submit that inasmuch as the law has been in existence for more than six years, additional legislation thereon is in no wise needed."

The recommendations of the United States Coal Commission, said the witness, embrace a wide range from fact-finding to control of distribution and the licensing of dealers. They rest upon the proposition that coal is clothed with a public interest and that the production and transportation of coal constitute a single service. But the Supreme Court has time and again contradicted that proposition, so that the recommendations "are at variance with the decisions of the highest tribunal of the land and hence outside the jurisdiction of Congress to legislate."

Mr. Gandy opened his presentation of the case for the bituminous operators with a review of the conflicting proposals and testimony given before the committee by proponents of further legislation. The only thing upon which there was agreement, he commented, was that there was no monopoly in bituminous coal. There was, he said, no danger of the exhaustion of our soft-coal resources for many generations yet unborn.

Compares Efficiency of Industries

Replying to the critics who have charged the industry with being inefficient and grossly overdeveloped, Mr. Gandy stated:

"If you will study the peaks and valleys of production in the manufacturing industries in the United States and compare them with the movement in the production of bituminous coal, you will find that the two lines approximately coincide. Until that person or that government arrives that can change the habits of the buying public and can underwrite continuous performance of manufacturing industry generally, there can be no complete stabilization of the load of production of bituminous coal."

Industry generally is developed to take care of peak loads. The so-called "overdevelopment" in soft coal has been a means of national security in times of strikes and abnormal demand. Moreover, the bituminous industry compares favorably with other business in the matter of excess capacity. During the twelve years ended Dec. 31, 1924, production of steel ingots and castings fluctuated between 33.70 and 85.76 per cent of capacity; refined copper, between 18.50 and 77.24 per cent, and bituminous coal, between 50.71 and 88.93 per cent of capacity. In the boot and shoe industry, 14.5 per cent of the existing plants could take care of 95 per cent of the demand; 2.8 per cent of the flour mills supply 62.1 per cent of the output and have reserve capacity to take care of the entire demand.

The American coal miner is better paid and produces more tons per man than his foreign competitors. The United States leads in the use of mining machinery. If the American coal industry is so inefficient, why is there a steady stream of foreign operators coming over to study American methods? American coal is cheaper than foreign coal. The cost of fuel and power for all manufacturing industries is but 2.6 per cent of the value of the finished product and less than 11 per cent of the total railroad operating expenses.

Mr. Gandy thought it hardly fair to criticize the bituminous industry as "unorganized" when the Sherman anti-trust law effectively prevented any agreement on prices or production, although labor was protected under the Clayton act. He contrasted this situation with that prevailing in European coal-producing countries where the cartel, the syndicate and the comptoir are permitted and often directly encouraged. In the United States, on the other hand, the operator is caught between a combination of labor and a community of interests among large consumers. Nevertheless, wherever the operator may legally co-operate he is doing it through membership in local and national organizations, shippers' advisory boards and with government bureaus.

Proposals for compulsory fact-finding, argued Mr. Gandy, contravene the Fourth Amendment. "The inviolability of private business matters is a common law right, protected by constitutional guarantee. The Supreme Court has affirmed this with unswerving consistency. It rests not upon technical legal requirements but upon the broad, comprehensive, solid foundation of public policy, public comfort, liberty and the pursuit of happiness. The protection extends to corporations as well as to individuals: *Silverthorne Lumber Co. vs. United States*, 251 U. S. 385.

Cites Precedent Cases

Continuing his attack upon the constitutionality of fact-finding in his testimony this morning, Mr. Gandy read extracts from the decisions in *Gould vs. United States*, 255 U. S. 298; *Federal Trade Commission vs. Baltimore Grain* Co., 284 Fed. 886, and *Federal Trade Commission vs. American Tobacco Co.*, 264 U. S. 298. He followed these up with citations from *Heisler vs. Thomas Colliery*, 260 U. S. 245; *Oliver Iron Co. vs. Lord*, 262 U. S. 172; *D., L. & W. vs. Yurkonis*, 238 U. S. 439; *Kidd vs. Pearson*, 128 U. S. 1; *Crescent Cotton Oil Co. vs. Mississippi*, 257 U. S. 125; *Coe vs. Errol*, 116 U. S. 517; *Arkadelphia Milling Co. vs. St. Louis Southwestern Ry. Co.*, 249

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U. S. 134, and *McCluskey vs. Marysville & Northern Ry.*, 243 U. S. 36, to show that neither mining nor manufacture could be construed as interstate commerce.

Wolff Co. vs. Industrial Court, 262 U. S. 522, was drawn upon to prove that coal was not affected with a public interest. Mr. Gandy also gave his interpretation of the decisions in *United Mine Workers vs. Coronado Coal Co.*, 259 U. S. 344; 268 U. S. 963, which have been cited frequently as supporting the view that Congress has the power to enact regulatory legislation for the coal industry. "The court," he explained, "certainly did not mean to suggest, and the language used bears no such interpretation, that the mining of coal in all its phases would become subject to regulation even if there was some practice that might be likely to obstruct, restrain or burden interstate commerce. The federal power extends only to a removal of such obstructions or restraint and does not reach beyond a regulation of the production of coal in other respects.

"The bituminous coal industry," said Mr. Gandy in concluding his direct statement, "asks nothing more than the right to live, a free agent for good among a free people. The bituminous industry does not believe it would be wise to entrust the domination of the fuel supply of the United States to one or even to a few persons."

Mr. Gandy Questioned

Mr. Gandy, who was still on the stand when the committee recessed for the day, was questioned closely by Congressmen Hoch (Kansas), Huddleston (Alabama) and Newton (Minnesota) on the legal phases of coal control. If the government could not compel mediation and fact-finding, they wanted to know upon what basis it could act voluntarily in those matters. The witness was unable to give the legal basis for such voluntary activities. Mr. Huddleston thought the protection of the Fourth Amendment extended only against unreasonable search and seizure. Mr. Newton intimated that the right of Congress to gather facts as the basis for specific legislation might be broadened to continuous fact-finding by an agency of the government.

The power of the Interstate Commerce Commission, explained Mr. Gandy, is over distribution, not production. He did not think it necessary to re-enact a federal fuel distribution bill although the Interstate Commerce Commission had been doubtful of its authority in 1922, because the Supreme Court has since interpreted the emergency powers given the Commission under the Transportation Act. Whether the Commission could divert shipments as well as set up priorities was a question upon which the witness would express no opinion.

Mr. Newton asserted that neither the spokesmen for management nor for labor had offered any solution for the recurring interruptions to production and intermittent employment at high daily rates. Mr. Gandy replied that the Sherman Law barred action by the operators. Repeal or modification of that statute would be helpful when consumption more nearly approaches productive capacity. "When the normal pre-war rate of increase in demand is restored," said Mr. Gandy, "some of the troubles will be lessened."



Harry L. Gandy

"Assuming there is a national strike in both anthracite and bituminous; under those circumstances there would be no interstate commerce because, as we conceive it, you can't have interstate commerce without coal. Do you still feel that the federal government would be powerless?" inquired Congressman Newton.

"In so far as compulsion is concerned, yes," reponded Mr. Gandy.

Congressman W. R. Coyle, Pennsylvania, at the opening of the hearing, on Monday, filed without reading a statement condemning several of the bills referred to the committee and pled for a settlement of the industry's troubles within the industry.

After the bituminous operators have concluded the presentation of their case the committee will hear representatives of other branches of the industry. Daniel T. Pierce, vice-chairman, and Walter Gordon Merritt, general counsel, Anthracite Operators' Conference, probably will be the chief spokesmen for the hard-coal industry. Ira Cochran, commissioner, American Wholesale Coal Association, will appear for the wholesalers.

Morrow in Pittsburgh Coal Co.

John D. Morrow, nationally known in the coal industry, has been appointed vice-president in charge of sales of the Pittsburgh Coal Co., to succeed James H. Woods, resigned. Mr. Morrow was formerly executive secretary of the National Coal Association, which position he resigned to organize the Morrow-Callahan Coal Co., of which he was president. Later he joined the Joy Machine Co., and became its vice-president.

Sealed proposals will be opened by the Supt. of Lighthouses, Charleston, S. C., 12 o'clock noon, May 18, 1926, for approximately 4,000 tons of steam coal (bituminous) and 150 tons of stove coal (anthracite), delivered on board vessels at Contractor's Wharf, Charleston, S. C., in quantities of 10 to 100 tons as ordered during fiscal year 1927. Information upon application.

Baldwin Raises Hopes Of Breaking Deadlock In British Coal Industry

Hope was felt early this week that an agreement ending the three-weeks impasse in negotiations between the British coal miners and operators would be reached before May 1, when the term of the present subsidy expires. This optimism was based on the untiring efforts at mediation by the Premier, Stanley Baldwin, who held conferences on Monday with the industrial committee of the Trades Union Congress' General Council, which is acting in behalf of the miners' executives, and with the representatives of the mine owners.

Reopening of national negotiations on wages was the chief subject of discussion on Monday, according to a joint statement issued that evening by the industrial committee and the miners' federation executives. An attempt by the operators to force a district instead of a national settlement of wages has been the stumbling block to an agreement. After a conference with representatives of the operators Mr. Baldwin told the industrial committee that the colliery owners were studying his suggestions and stated that he proposed to resume the joint conferences the following day, when he expected a reply from the operators.

Although the present subsidy expires on May 1, it is believed in some quarters that continuance of financial assistance by the government may be necessary, perhaps under another name. The mines department of the government is engaged in drafting a scheme embodying the government's idea of a temporary loan to assist in the organization of the industry, the interest on which would be provided by the government, the operators and the miners each paying one-third. Definite reorganization would be made a condition of granting the loan.

Late last week a special delegate conference of the miners' federation was summoned for Wednesday to hear various reports and decide on the miners' policy. On Thursday a conference of executives of trade unions affiliated with the Trade Union Congress was to be held. Should the negotiations break down, it was expected that this conference would decide on the action to be taken to support the miners in their struggle.

Six Weeks' Summer Course At West Virginia University

The annual summer course in coal mining at West Virginia University, Morgantown, W. Va., will be held from June 14 to July 26. This course is intended to fit miners for fireboss and mine certificates and is always followed by a state examination for these certificates. The course will include a study of West Virginia mining laws, explosives, methods of mining, geology of coal, timbering, mine gas, electricity in mines, drainage, pumping, ventilation, hauling, hoisting, mine fires, first aid, mine rescue, safety lamps, pillar drawing, mine management, safety organizations and administration.

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Tangible Evidence Lacking Of Government Influence In Jacksonville Agreement

By Paul Wooton
Washington Correspondent of *Coal Age*

Frequent and reiterated denials that the government had any part in the Jacksonville agreement, other than to suggest friendly mediation, apparently have not been accepted by the United Mine Workers. Despite the fact that no one has been able to cite any letter or utterance from a government source to contradict the administration's declaration that nothing ever was said to anyone as to terms, Philip Murray, vice-president of the United Mine Workers, in his testimony before the Interstate and Foreign Commerce Committee of the House last week, baldly stated that it was the desire of Mr. Hoover that the contract be continued three or four years. He also declared that Mr. Hoover had suggested, in a private conference with John L. Lewis, a continuation of the old rates. As to the latter statement the committee will need go no further than to Mr. Lewis to get a denial. Mr. Lewis never has charged that Secretary Hoover ever advocated terms or even discussed terms with him, so far as is known.

Government Connection Not Proved

By way of substantiation for his statement Mr. Murray also cites the position of Messrs. Donaldson and Armstrong, of the Pittburgh Coal Co., in urging a five-year contract because "it was the desire of the government." He failed to bring out that whatever Messrs. Donaldson and Armstrong said at Jacksonville was an expression of their opinion of what the government wanted. Neither Mr. Donaldson nor Mr. Armstrong ever has made any claim of having anything tangible on which their opinion was based. The Pittsburgh Coal Co. never has claimed to have been influenced to go to Jacksonville by anything more than the open correspondence between C. J. Goodyear, of the Pittsburgh Coal Producers' Association, and Secretary Hoover in which Mr. Hoover said: "My advice is that your representatives should attend this conference and, together with the other representatives from the Central fields, should make every proper endeavor to continue an agreement with the United Mine Workers and thus avoid a suspension of coal production."

Mr. Murray, however, in his effort to establish that the government is a party to the Jacksonville agreement and ought to enforce it, brings in a new point He tells of a letter which the President sent Mr. Lewis complimenting him on the arrangement effected at Jacksonville. This letter, it develops, was nothing more than the perfunctory, courteous acknowledgment of Mr. Lewis' telegram telling of the happy outcome of the negotiations. The operators also sent a similar message, and a courteous letter of acknowledgment also was sent to them by the President.

It is going to be difficult to establish that such letters commit the government to the Jacksonville agreement. Frequently a hundred letters of that type leave the White House in a day. In this instance the President hardly could have replied to the enthusiastic telegrams he received from Jacksonville by asking why they entered into an agreement or by stating that his letter was not to be interpreted as an approval of the terms of an agreement of which obviously he knew no details. One friend might write another that he had succeeded in negotiating a loan with a bank. The friend might send a congraulatory reply, but it hardly could be regarded as a pledge to help pay back the money. Incidentally Mr. Lewis seems to have regarded this letter of courtesy as a government document entitling him to call on the federal authority to enforce this particular labor agreement.

Both Sides Welcome Peace

The government could produce from its files evidence that both the miners and the operators were very happy over the Jacksonville agreement for several months after it was put into effect. Some persons in the industry wrote extravagantly of their love for peace and how splendidly it had been consummated. Then came the slump in prices and with it a change of heart, but some expressions of opinion during the first six months of the agreement might prove embarrassing if produced today.

Socony to Burn Coal

The Standard Oil Co. of New York is converting the fireboxes at certain of its refineries to burn coal instead of fuel oil, according to a story in the New York *Times*, April 16. This is being done because the company finds it cheaper to burn coal than oil at present, as the price of the latter has advanced in the open market during recent months. This switching from oil to coal, it was explained, takes place often in the company's plants, as they are constructed in a manner to enable the company to burn either coal or oil, whichever is cheaper.

The latest switch from oil to coal, however, is especially significant because the company can obtain its supply of fuel oil at primary prices. The fuel-oil market along the Atlantic seaboard and at interior points has been strong for several months, due to the decline in crude-oil production in this country and in Mexico as well as to the larger amount of crude oil converted into gasoline. In former years, when the demand for gasoline was smaller, oil companies found it unprofitable to refine heavy crude oil for gasoline. Improved cracking processes, however, have now made the operation more profitable.

Bids will be opened May 5 for supplying the School Department of the City of Boston with 28,000 tons of bituminous coal and 6,000 tons of anthracite or coke.

Live Topics Scheduled for Discussion by Engineers

Plans for the sectional meeting of the Southern West Virginia and Eastern Kentucky Chapter of the American Institute of Mining and Metallurgical Engineers, at the Kanawha Hotel, Clarksburg, W. Va., on May 6 and 7, which were completed last week, reveal that the opening session at 10 a.m. will be devoted to safety. Robert M. Lambie, of Charleston, chief of the state Department of Mines of West Virginia, and Dr. T. T. Read, of New York City, assistant secretary of the American Institute of Mining Engineers and formerly safety director of the U. S. Bureau of Mines, will make the chief addresses.

At the afternoon session, from 2 to 5 o'clock, the following subjects will be discussed: "Construction and Development of Byproduct Ovens," L. D. Malleis, Pittsburgh, Pa., chief chemist of the Koppers Co., who will illustrate his address with lantern slides; "Marketing the Output of Byproduct Ovens with Particular Reference to Coke and Gas." A banquet will be held at 7 p.m. at the Kanawha Hotel, with J. G. Bradley, of Dundon, W. Va., president of the West Virginia Coal Association, as toastmaster. The principal speakers at the banquet will be Samuel A. Taylor, of Pittsburgh, Pa., president of the American Institute of Mining and Metallurgical Engineers; former Governor William A. MacCorkle, Charleston, and W. H. Cunningham, Huntington, W. Va., secretary of the West Virginia Coal Association.

At the morning session of May 7, Ralph Sweetser, Columbus, Ohio, will speak on the "Evaluation of Coal"; Howard N. Eavenson, of Pittsburgh, Pa., consulting engineer, on "The Mechanization of Mines"; representatives of the National Coal Association and the Society of Mechanical Engineers will speak on "The Effect of Mechanization on the Product of the Mine," and W. W. Freeman, of Cincinnati, president of the Union Gas & Electric Co., will speak on "The Relation of Artificial Gas Either from Coke Ovens or Producer Plants to Natural Gas and the Eventual Replacement of Natural Gas by Other Types of Gas and the Proper Location of Plants and Their Equipment."

C. & O. to Buy 13-Mile Line

The Interstate Commerce Commission has entered an order authorizing the Chesapeake & Ohio Ry. to acquire control of the Pond Fork & Bald Knob R.R. by purchase of its common stock for $250,000. The road extends from West Junction to a point near Rock Lick, W. Va., a distance of approximately 13 miles. The C. & O. filed a petition with the Commerce Commission about two months ago asking authority to acquire the Pond Fork & Bald Knob, which is owned by the Cole & Crane interests. The latter road, which is in Boone County, has a junction with the Chesapeake & Ohio at West Fork, which is connected by a branch line to Madison.

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Grant Honored for Settling Hard-Coal Strike

Outside interference by governmental and other agencies is the chief cause for the failure of capital and labor to adjust industrial disputes quickly and effectively, said Richard F. Grant, president of the Susquehanna Collieries Co., speaking at the fortieth annual dinner of the Ohio Society, at the Waldorf-Astoria, New York, on April 26. Mr. Grant, whose home is in Cleveland, was the guest of honor, and many tributes were paid to his work in bringing about a settlement of the recent anthracite strike.

"Labor knows its own needs," Mr. Grant said, "and so does capital. Neither wants a strike. Let us assume the time has come to negotiate a contract between them in a given industry. If they could only get together somewhere, away from reporters, away from well-intentioned politicians, interfering under the cloak of public interest, they could quickly make that contract.

"But that isn't what happens. It isn't what happened in the anthracite strike. Some one comes along; usually some one in public office who wants to walk the stage. He offers a plan. It is unsound from every economic standpoint, but it appeals to one side and is seized upon eagerly. That starts a battle and the first step is taken to impede rapid and sane adjustment of the trouble. From then on the difficulties increase. Along comes another well-meaning intervener, and the result is a long-fought contest.

"Labor and management," continued Mr. Grant, "can and must determine rules of their own game."

Mr. Grant dismissed the possibility of government operation of coal mines with the remark that experience with government railroad operation had answered that question with an emphatic negative.

National Retailers Map Out Live Convention Program

A program crammed with topics of practical interest discussed by leaders in the industry has been mapped out for the ninth annual convention of the National Retail Coal Merchants' Association, which meets at Washington, D. C., May 17-19.

Among the subjects listed are: The future of anthracite; importance of retail representation in local and national business and civic associations; trade-marked coals from the standpoint of the producer and the distributor; what part retailers should take in the distribution of coke; how to meet oil competition; the future of screened low-volatile coal; retail advertising; retail salesmanship; how salesmen should be compensated; efficient storage and handling; the future of bituminous coal in anthracite-consuming territory.

Among the men who have been asked to address the convention are Daniel T. Pierce, vice-chairman, Anthracite Operators' Conference; Martin L. Garvey, president, New River Coal Operators' Association; Ray D. Kelly, president, Mid-West Coal Association; Owen F. Fox, executive vice-president, Chicago Coal Merchants' Association; Walter Barnum, president, Pacific Coast Co.; W. A. Clark, president, New England Coal Dealers' Association.

Other speakers include W. C. Atwater, president, Pocahontas Operators' Association; Hiram Blauvelt, vice-president, Comfort Coal & Lumber Co.; Marshall Keig, vice-president, Consumers Co.; T. F. Farrell, vice-president, Burns Bros.; M. E. Robinson, Jr., president, Milton E. Robinson Coal Co.; Roderick Stephens, vice-president, Stephens Fuel Co.; W. M. Bertolet, secretary, Pennsylvania Retail Coal Merchants' Association; C. Solon Kellogg; J. C. Tattersall, president, Tattersall Co.; G. W. Malcomson, president, Detroit Coal Exchange; W. R. Feuquay, secretary, St. Joseph Coal Service Bureau; C. Benson Ferebee, president, Nottingham & Wren Co., and Harold Almert, chief, Fuel Service Bureau.

Industrial Coal Stocks Ebb To 46,313,000 Tons

Coal stocks in the hands of industrial consumers on April 1 totaled 49,150,000 tons, according to the National Association of Purchasing Agents. Based on the average rate of consumption during March, this was sufficient for 33 days, comparing with stocks on March 1 of 60,014,000 tons, or a 35-day supply. Supplies at steel plants on April 1 were good for 26 days; electric utilities and coal-gas plants, 47 days; byproduct coke plants, 20 days; railroads, 23 days; other industries, 33 days.

Industrial coal consumption during March is estimated at 46,313,000 tons, compared with 43,747,367 tons in the short month of February. Although anthracite output increased to a marked extent during March the consumption of bituminous coal fell off to a greater degree than the use of hard coal gained.

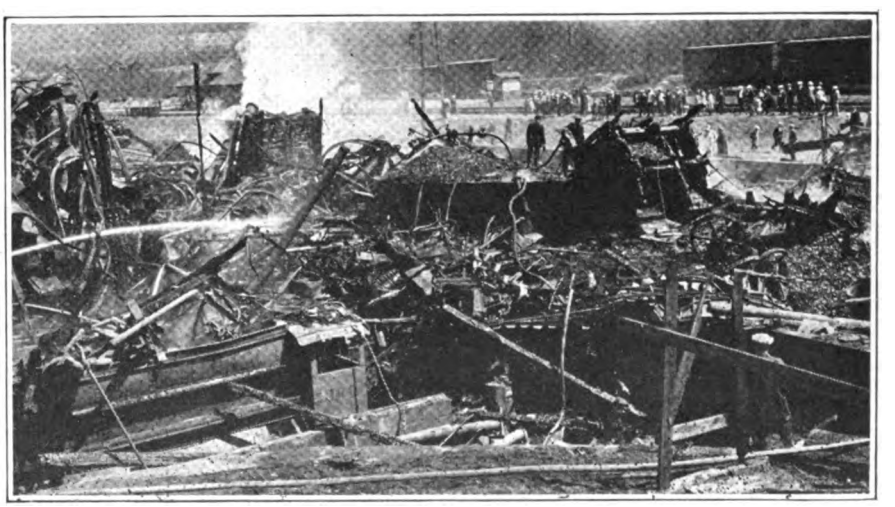
Interesting Talks at Meeting Of Fayette Institute

R. M. Lambie, chief of the state Department of Mines of West Virginia, was the headliner at the Fayette County Mining Institute April meeting held in Mt. Hope, W. Va. Mr. Lambie, who helped organize the association more than six years ago, when he was serving as mine inspector in the local district, spoke on mine explosions and their prevention. After pointing out that coal dust along the passageways, on ribs, roof and floor, is an ever-present danger due to its liability of being thrown in suspense in the mine air, thus serving as an agent to propagate flame or an explosion throughout the mine, Chief Lambie emphasized the value of rock-dusting in limiting the effects of fires and explosions. He stated that the cost of rock-dusting was nominal and urged its use in mines considered dangerous from the standpoint of gas and dust explosions.

W. D. Givan, Charleston, W. Va., described the new match-head detonator. In this device the two wires leading to the detonating charge in the cap are provided with a lead shunt which by short-circuiting the electric current prevents ignition of the explosive charge by accidental cause. A shell of insulating material placed around the detonating charge guards against its discharge in case the copper casing accidentally comes in contact with an electric current.

R. J. Holmes, of Pittsburgh, Pa., gave an interesting talk on the self-rescuer, a device designed as a protection against carbon-monoxide poisoning. Another feature was a two-reel motion picture, "The Story of Sulphur," shown through the courtesy of the Pittsburgh Station of the U. S. Bureau of Mines.

Sealed proposals will be opened by the Supt. of Lighthouses, Custom House, Boston, Mass., at 2 p.m., May 3, 1926, for furnishing 3,500 tons of bituminous coal at New Bedford, Mass. Information upon application.



Alaska Breaker Passes Away in Clouds of Smoke

This breaker of the Philadelphia & Reading Coal & Iron Co., at Mt. Carmel, Pa., was destroyed by fire on April 17. Within two hours $350,000 of damage was done and the breaker had been burned almost level with the ground.

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169 Miners Meet Death By Accidents in March; Decline in Fatality Rate

Accidents at coal mines during March, 1926, caused the death of 169 employees, compared with 164 in the preceding month, according to reports furnished by state mine inspectors to the U. S. Bureau of Mines. The total production of coal for the month was 54,927,000 tons, of which 46,137,000 tons was bituminous and 8,790,000 anthracite. There were 132 fatalities in the bituminous mines and 37 in the anthracite mines. Fatality rates per million tons of coal produced were 2.86 and 4.21, respectively, with 3.08 for the industry as a whole, compared with 3.37 in February.

The accident record for the first three months of 1926 showed 658 fatalities while that for the corresponding period of 1925 showed 630. The production of coal for these months was 157,422,000 tons and 150,178,000 tons, respectively, indicating a rate for 1926 of 4.18 and for 1925 of 4.20. The three months' fatality rate in 1926 for bituminous mines alone was 4.17 based on a production of 146,376,000 tons and 4.35 for anthracite, based on an output of 11,046,000 tons. The corresponding rates for the first three months of 1925 were 3.77 for bituminous mines and 6.70 for anthracite mines.

Comparing the figures for all mines for the three-month period, January to March, with those for the same months last year, a reduction is noted in the per-million-ton fatality rates from all of the principal causes except gas and dust explosions, which materially increased due to the major disasters. The comparative rates were as follows:

	Year 1925	Jan.–Mch. 1925	Jan.–Mch. 1926
All causes	3.811	4.195	4.179
Falls of roof and coal	1.842	1.851	1.734
Haulage	0.615	0.732	0.641
Gas or dust explosions	0.590	0.759	1.308
Explosives	0.174	0.246	0.101
Electricity	0.144	0.146	0.101

Oil More Costly Than Coal As Domestic Fuel

The use of oil for domestic heating in the average New England home costs annually about $200 more than the use of bituminous coal and about $150 a year more than the use of anthracite, according to figures given to a representative of the National Coal Association by R. T. Haslam, professor in chemical engineering, Massachusetts Institute of Technology, and a recognized authority on the subject. In arriving at these figures Professor Haslam takes into consideration both the depreciation of an oil burner and interest charges. He also qualifies his statement to the effect that the margin between ultimate oil and coal costs will be slightly reduced if the coal is not consumed smokelessly. His convincing answer to the question as to the most economical fuel is a statement that he burns low-volatile bituminous coal in his home.

Pittsburgh Terminal Corp. Closes Avella Mine

The Avella mine of the Pittsburgh Terminal Coal Corporation has been closed, due to a falling off in business, the company announces. It was stated, however, that the closing is not permanent.

The closing down of this mine has attracted more than ordinary attention in the Pittsburgh market because the Pittsburgh Terminal Coal Corporation has been running its seven mines in this district on the Jacksonville scale almost full for nearly two years, while other mines working on the same scale were choking from the competition of the non-union operations.

According to officials of the company, it is planned to continue operations at the other six mines.

Railroad Coal Cost Higher

Average cost of coal used in March by Class 1 railroads of the United States in locomotives in transportation train service, according to a report by the Interstate Commerce Commission, was as follows, by districts: Eastern district, $2.69; Southern district, $2.21; Western district, $2.91; United States, $2.63. Compared with the preceding month this was an increase of 4c. in the Eastern district; 1c. increase in the Southern district; 1c. decrease in the Western district; 2c. increase in the country as a whole. Compared with February a year ago there was a decrease of 19c. in the Eastern district; 15c. in the Southern and Western districts, and 18c. for the United States.

Coal-Mine Fatalities During March, 1926, by Causes and States

(Compiled by Bureau of Mines and Published by *Coal Age*)

State	Underground											Shaft				Surface							Total by States	
	Falls of roof (coal, rock, etc.).	Falls of face or pillar coal.	Mine cars and locomotives.	Gas explosions and burning gas.	Explosives.	Suffocation from mine gases.	Electricity.	Animals.	Mining machines.	Mine fires (burned, suffocated, etc.).	Other causes.	Total.	Falling down shafts or slopes.	Objects falling down shafts or slopes.	Cage, skip or bucket.	Other causes.	Hoist.	Mine cars and mine locomotives.	Electricity.	Machinery.	Boiler explosions or bursting steam pipes	Railway cars and locomotives.	Other causes.	Total.	1926	1925
Alabama	2	....	1	....	....	....	1	....	....	....	....	4	....	....	....	....	....	....	....	....	....	....	....	....	4	6
Arkansas	....	1	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	1
California, Idaho, and Nevada	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0
Colorado	2	1	1	....	....	....	....	....	....	....	....	4	....	....	2	....	2	....	....	....	....	....	....	....	6	7
Illinois	7	....	1	3	....	....	....	....	....	....	....	11	....	....	....	....	....	....	....	....	....	....	....	....	11	7
Indiana	4	....	1	....	1	....	....	....	....	....	....	6	....	....	....	....	....	....	....	....	....	....	....	....	6	11
Iowa	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	1
Kansas	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	1
Kentucky	5	....	5	....	....	....	....	....	....	....	....	10	....	....	....	....	....	....	....	....	....	....	....	....	10	12
Maryland	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Michigan	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	1
Missouri	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	1
Montana	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	0
New Mexico	2	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	2	2
North Dakota	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Ohio	3	....	4	....	....	....	....	....	....	....	....	7	....	....	....	....	....	....	....	....	....	....	....	....	7	7
Oklahoma	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	1	1	2	0
Pennsylvania (bituminous)	12	1	2	1	1	....	....	....	....	....	....	17	....	....	....	....	....	1	....	....	....	....	3	4	21	28
South Dakota	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Tennessee	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	1	1
Texas	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	1
Utah	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	3
Virginia	3	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	3	4
Washington	....	1	....	....	....	....	....	....	....	....	1	2	....	....	....	....	....	....	....	....	....	....	....	....	2	1
West Virginia	17	2	10	19	1	....	1	....	1	....	....	51	....	....	....	....	....	....	....	....	....	....	....	....	51	61
Wyoming	1	....	1	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	1	....	3	2
Total (bituminous)	61	6	26	23	3	....	2	....	1	....	1	123	....	....	2	....	2	1	....	....	....	1	5	7	132	158
Pennsylvania (anthracite)	18	5	6	....	3	....	....	....	....	....	....	32	....	2	....	....	2	1	1	....	....	1	....	3	37	41
Total, March, 1926	79	11	32	23	6	....	2	....	1	....	1	155	....	2	2	....	4	2	1	....	....	2	5	10	169	....
Total, March, 1925	76	11	31	40	8	2	7	1	1	....	6	183	....	1	2	....	3	2	1	....	....	2	8	13	....	199

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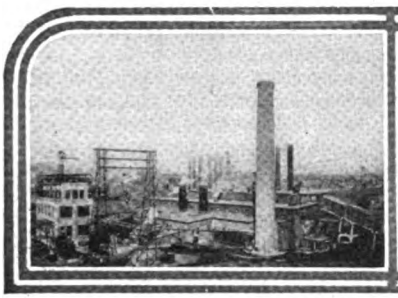
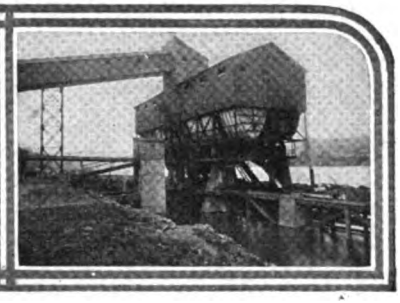


News Items From Field and Trade



ILLINOIS

The Clarkson Coal & Mining Co., Nashville, installed a new shortwall cutting machine April 1.

The Cripple Creek mine, at Bryant, has closed down for the summer.

The Binzel Coal Co., Farmington, has filed a petition in bankruptcy, listing its liabilities at $115,620, of which $104,113 is in unsecured claims. A payroll of $10,483 also is listed. The assets are stated to be $124,410, including real estate valued at $53,100 and tools and machinery at $70,000.

The Kathleen mine of the Union Colliery Co., at Dowell, was closed down April 17 for repairs and improvements. It probably will reopen early in May.

INDIANA

The Paxton Coal Co., of Sullivan, has filed a certificate of dissolution with the Secretary of State.

Bids for providing coal for Indiana state institutions will be received by the state joint purchasing committee May 1 in Indianapolis. The committee received bids in March, but all bids were rejected because the board felt they were too high. The contracts terminate May 1, but the committee will not consider new bids until about May 19. Coal that will be needed in the interim is to be bought either under the old contract or in the open market.

The coal miners employed at the Carlisle mine completed the withdrawals of their liens recently, and as a consequence work preliminary to reopening the mine has been started. The mine is being operated by the Carlisle Fifth Vein Coal Co., composed of Carlisle men, who hold a one-year lease on the property. The new directors are W. L. Cooper, J. A. Bummere, R. A. Duffer, L. J. Kixmiller, C. M. Ott, S. A. Sproatt and D. O. Schilling. Mr. Duffer is president; Mr. Kixmiller, vice-president, and Mr. Schilling, secretary-treasurer.

The Western Indiana Mining Co., of Terre Haute, has filed a final certificate of dissolution with the Secretary of State.

KANSAS

The Reliance Coal Co. on April 17 sold its steam-shovel mine east of Pittsburgh and near Litchfield to J. J. Stephenson, Harry Miller and James Fennimore, all of Pittsburgh, who are the principal owners of the Litchfield Coal Co., The consideration was $150,000. The plant includes a 225-Bucyrus shovel, loading machinery, trackage and tipple. There is considerable acreage yet to be worked. With this sale the Reliance Coal Co. disposed of its last steam shovel operation but still operates a deep mine six miles northwest of Pittsburgh and has large coal land holdings in that vicinity.

The Kansas Supreme Court in a recent decision on a compensation case held that X-ray photographs are admissible as evidence toward proving injury to lungs in mine explosions. Previously such photographs had been admitted as evidence only on bone fractures or displacements.

KENTUCKY

The Kentucky-Knox Coal Co., of Barbourville, has leased a mine near Artemus, with an output at present of three cars per day, which will be increased.

The South Diamond mine, operated by the West Kentucky Coal Co. in Hopkins County, has been shut down after continuous production for forty years. The company's policy of cutting operation costs was given as the reason for the close-down. Four mines have been closed by the company recently.

Fire of undetermined origin April 17 destroyed the tipple and was burning in the Zion coal mine, six miles from Henderson, causing damage estimated at $20,000 and throwing seventy-five persons out of employment. The flames were under control at 5 p.m. The mine is owned by John and Thomas Baskett, of Henderson, but is leased to C. A. Moss, Jr., and others of Zion. No one was in the mine when the fire started.

MINNESOTA

Two furnaces are being built at the University of Minnesota, Minneapolis, to test the smelting of low-grade iron ore without coke. Should the experiments prove successful it is probable that there will be a new market for vast quantities of fuel.

NEW YORK

The contract for furnishing 25,000 tons of high-volatile slack coal to the Buffalo schools during the coming school year has been awarded to the firm of E. L. Hedstrom on its bid of $4.34 delivered. The contract for furnishing 20,000 tons of low-volatile mine-run (Diamond smokeless) coal to the schools was awarded to the Weaver Coal Co. on its bid of $5.59 delivered.

OHIO

The Pennsylvania R.R. has entered into a contract for the delivery of ten carloads of smokeless coal a day at Cincinnati, which marks the end of a contest of years' standing with Gordon Rowe, head of the city Smoke Department. Having contended for a half dozen years that the railroads are the largest contributors to the "smoke nuisance" of Cincinnati, Mr. Rowe has urged not alone the installation of smoke-consuming devices but the use of low-volatile coal for engines and roundhouses. According to R. C. Barnard, superintendent of the local division of the Pennsylvania terminal, locomotives, roundhouses and all equipment will use smokeless coal.

OKLAHOMA

Petition for a receivership of the Eastern Coal & Mining Co., owner of the Degnan-McConnell Mine at Wilburton, where more than 90 miners lost their lives in January, was asked in federal court at Okmulgee last week.

PENNSYLVANIA

May Settle Tax Mix Up.—Mayor E. B. Jermyn and City Solicitor C. B. Little, of Scranton, have negotiations under way with coal companies operating in the city for the settlement of litigation resulting from an appeal by the companies from an increased assessment on coal lands. In 1924 the assessors boosted the valuation on coal lands from $320 to $800 per foot acre. The companies appealed and have since been paying taxes on a basis of a $200 assessment, so that the city, whose 1925 and 1926 budgets were based on a $320 figure, has about $220,000 due from the companies on this valuation.

Annual Hard-Coal Output Low.—Output of anthracite in Pennsylvania last year was 61,351,543 net tons as compared with 87,277,440 in 1924. The effect of the strike was to reduce production by at least 25,925,897 tons, according to figures just made public by the State Department of Mines. The figures show that the production for 1925 was in excess of normal for the first eight months of the year. The strike, commencing Sept. 1, 1925, was still in existence at the end of the year, and its effects will be reflected in the figures for this year, as it did not end until Feb. 18.

The Youghiogheny & Ohio Coal Co., it is reported, plans to establish a mine on the 1917 scale in the Pittsburgh district within a short time, probably the first week in May. The mine said

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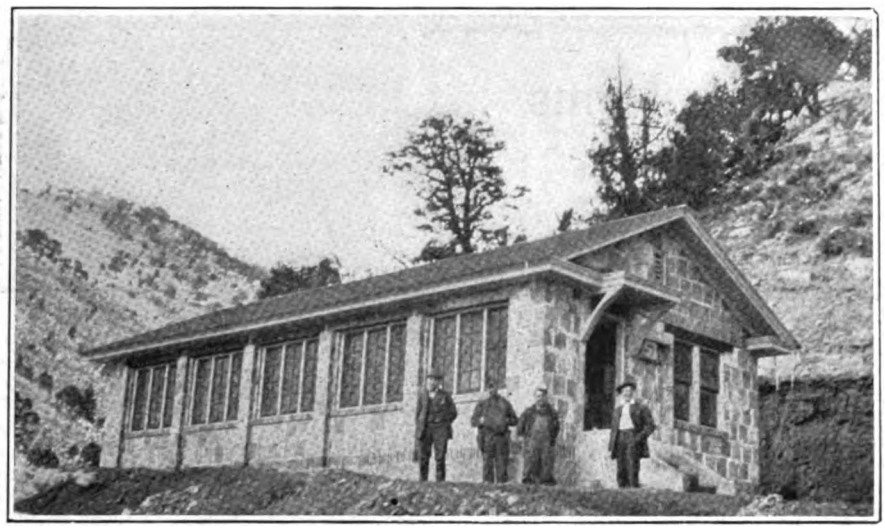

Check Cabin of Standard Coal Co., Standardville, Utah

All the buildings at Standardville are well built. This one, though back in the hills, is not an exception. The country is by no means arid. Note the two trees behind the building.

to have been selected is the mine at Wyano, which heretofore has been working on the union scale. The same company has operations in the Pittsburgh district which are working on the Jacksonville scale.

While plans are not yet announced, it is believed that the next mine to be opened by the Pittsburgh Coal Co. will be a river mine. The company has a number of river mines, located principally on the Monongahela River, but of the 11 mines now in operation on the 1917 scale none is shipping by river. The company, it is believed, would find a steady market for its river coal if operations were resumed, but the chief difficulty to date is said to have been that the river mines have not been in auspicious labor territory.

The Union Trust Co. of Pittsburgh and S. A. Taylor, of Bolivar, have been appointed receivers of the Ridgeview Coal Co., of Bolivar, near Blairsville. John M. Raybourn, of Pittsburgh, and W. B. Hammond, of Bolivar, were appointed appraisers of the concern.

Madeira, Hill & Co. recently closed down its breaker at Marion Heights. Hereafter the coal formerly prepared at this plant will be sent through the Greenough breaker which is of concrete and steel construction. Not many years ago the Marion Heights breaker was considered one of the most modern in the lower anthracite field but now it doesn't compare with breakers in which the latest machinery has been installed. The Greenough breaker has a capacity of 3,000 tons of coal each day. The breaker was put to several hard tests several weeks before the old breaker was abandoned.

Will Rebuild Alaska Breaker.—The Philadelphia & Reading Coal & Iron Co. has decided to rebuild the Alaska breaker at Mount Carmel, recently destroyed by fire at a loss of $350,000. The new structure will be of steel construction and modern in all respects. The origin of the fire has not been determined, but the general opinion is that sparks from a passing engine ignited the structure. The Alaska breaker was equipped with sprinklers, but the flames gained such headway that employees could not reach the main valve which regulated the sprinklers. Several hundred men and boys have been thrown into temporary idleness as a result of the breaker's being destroyed.

In order to replace worked-out areas officials of the Lehigh Valley Coal Co., at Centralia, are contemplating sinking the Continental shaft another lift, or 125 ft. deeper than the present level. The work probably will be started within a few weeks. According to H. J. Heffner, superintendent of the coal company, the coal will be taken from this new level and sent underground to the Centralia breaker for preparation. The present shaft at the Continental is 275 ft. deep.

VIRGINIA

Virginia Iron, Coal & Coke Co. reports for the quarter ended March 31, 1926, net loss of $10,017 after interest, etc. This compares with net income of $9,752, or 39c. a share on $2,500,000 preferred stock, in preceding quarter, and $217,306, or $1.75 a share, on common after allowing for preferred dividends in the first quarter of 1925.

WEST VIRGINIA

The Morgantown Coal Co., with general offices at Beckley and operating a mine at Morganette, Fayette County, has filed a voluntary bankruptcy petition at the office of the clerk of the U. S. District Court in Charleston. The inventory gives the company's indebtedness at $94,862.09 and its assets as $57,688.03, of which $15,000 represents real estate, $25,000 its leasehold and improvements and $10,000 the value of the machinery and tools.

Organization Drive Deferred. — Although it had generally been expected that the United Mine Workers would soon launch another effort to organize the non-union workers in northern West Virginia, Van A. Bittner, chief international representative, states that "It is impossible to say at this time when such a call will be issued. We were expecting it early in May, but circumstances may delay it and the present economic situation can hardly be considered a propitious time to issue a strike call. With practically all the union and non-union mines closed down, a strike call would not be productive of any substantial results. Frankly, we would want such a strike to have a certain effect. What could be expect from a strike now, with coal production almost at a standstill without a strike?"

A motion has been heard in the Circuit Court of Fayette County by Judge Early to discharge the receivers for the Tioga Coal Co., of Tioga, Nicholas County. The receivers are R. L. Porter, of Charleston, and a Mr. South, of Philadelphia. They were represented in court by Joseph Kenna and J. Raymond Gordon, of Charleston. T. W. Ayers, of Richwood, represents the creditors.

Formation of a safety club under the supervision of the West Virginia Department of Mines was started recently at the Booth mine of the River Seam Coal Co., at Almina. Three hundred and twenty-five miners were present. Thomas Jarrett, William B. Riggleman and Lazear McGee, of the mine safety department made addresses at the organization meeting.

"Eviction notices issued by the Cleveland-Morgantown Coal Co. at Pursglove, Monongalia County, are without effect, we believe, as this company has a signed agreement with the United Mine Workers, and every legal defense known will be made to protect the rights of the miners and their families," declared Van A. Bittner, head of the union forces in West Virginia, last week.

E. M. Posey, of Charleston, has been awarded the contract to erect a conveyor line 1,200 ft. long for the Webb Coal Mining Co. at Garrison, Boone County.

Stockholders of the Crab Orchard Coal & Land Co. met on April 16, in Charleston, and elected these directors: Isaac Prince, Beckley; W. O. Abeny and E. G. Smith, of Charleston; S. Dixon, Price Hill, and Richard Ellison, Cincinnati. These officers were chosen: President, Isaac Prince; secretary and treasurer, J. M. Clark. The company owns 8,000 acres of coal land in Raleigh County. The Stonega Coke & Coal Co. mines coal on the holding company's acreage.

Stockholders of the Cabin Creek Consolidated Coal Co. re-elected the following directors at the recent annual meeting: James McKay, Malcolm Jackson, B. B. Brown, E. W. Knight, G. H. Caperton, W. A. Ohley, Josiah Keeley, Azel Ford, Ockawaha, Fla., and C. R. Moriarity. Officers were re-elected as follows: President, Josiah Keeley; first vice-president, C. R. Moriarity; second vice-president, Azel Ford; third vice-president, W. A. Ohley; secretary and treasurer, E. B. Needham.

Coal loading along the Norfolk & Western Ry. in March aggregated 3,428,305 tons. Production in the various districts was as follows: Pocahontas, 31,019 cars; Tug River, 12,453 cars;

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Thacker, 13,513 cars; Clinch Valley, 3,664 cars; Kenova, 4,922 cars. Privately owned cars loaded totaled 1,496. Coal produced by the largest concerns in that month was as follows: Pocahontas Fuel Co., 6,661 cars; United States Coal & Coke Co., 8,109 cars; Fordson Coal Co., 2,844 cars; Consolidation Coal Co., 2,541 cars.

A certificate was filed recently in the office of the secretary of state in Charleston showing that C. M. Moderwell & Co., coal wholesalers, with offices in the First National Bank Building, Huntington, had surrendered its authority to transact business in the state.

The Vester Coal Co., of Morgantown, has been dissolved by a deed of sale, according to papers filed in the office of the Secretary of State on April 13. W. R. Burr has acquired the property, which is located in Monongalia County, according to the deed.

John L. Lewis, president; Philip Murray, vice-president and Thomas Kennedy, secretary-treasurer of the United Mine Workers, filed a petition in the Kanawha Circuit Court, in Charleston, on April 15, asking for authority to sell the oil and gas in certain property at River Side, in the Cabin Creek district, to Godfrey L. Cabit, Inc. Objections must be filed to the sale or persons appear May 22.

The Birch Fork Coal Co., Charleston, has called in the remaining bonds of $29,000 for payment. The company will retire these bonds, it is said by T. E. B. Siler, the president.

The Webb Coal Co., operating at Garrison, in Boone county, has awarded a contract for the installation of a conveyor line, which is to be completed within two months. The Webb company operates in the Winifrede seam on the line of Chesapeake & Ohio Ry.

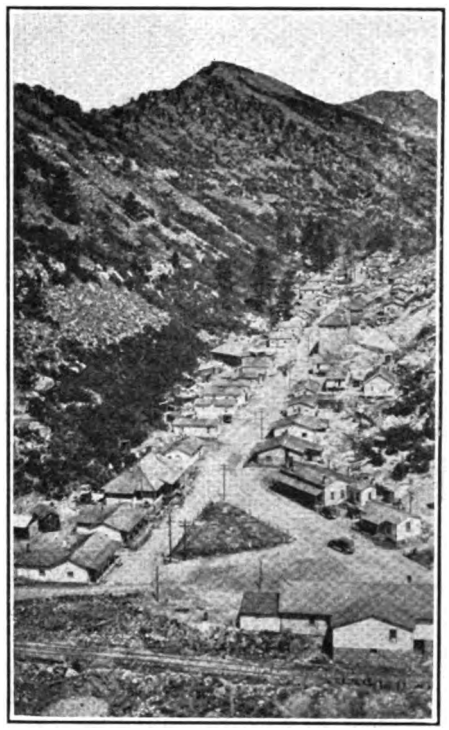
CANADA

Output of coal in Canada in January was 1,223,648 tons, compared with 1,560,975 tons for December. Coal exports from Canada in January totaled 65,047 tons, against 116,585 in December and the preceding five-year average for January of 138,720 tons. Anthracite imports into Canada for January were 65,848 tons from Great Britain and 9,582 from the United States. Bituminous imports were 891,934 tons from the United States and 1,111 from Great Britain. December imports of bituminous were 1,284,918 tons from the United States, and 2,908 tons from Great Britain.

During March the production of by-product and gas-house coke in Canada was 152,480 tons, a decrease of 8 per cent from the February total but an increase of 13,697 tons, or 10 per cent, over the output for March of last year. Imports of coke into Canada showed an increase in March over February, the figures being 102,485 tons compared with 73,796 tons. The exports were 5,332 tons against 4,449 tons for March.

The Cape Breton strike in 1925 greatly curtailed coal purchases by the Canadian National Rys. in Nova Scotia. In answer to a question by I. D. Macdougall (Conservative, Inverness), Charles Dunning, Minister of Railways, stated that the quantity of coal purchased in Nova Scotia last year was 718,826 tons. In 1924 the purchases in Nova Scotia totaled 1,251,539 tons, and in 1923, 1,573,456 tons. The roads purchases of coal mined in the United States last year totaled 2,917,706 tons, compared with the previous year's total of 3,012,401 tons and of 5,292,556 tons in 1923. Purchases of coal produced in western Canada during 1925 totaled 1,146,667 tons against 818,358 tons in 1924, and 1,622,266 tons in 1923.

Every coal mine in Cape Breton is ready to open full blast, day and night, as soon as ice conditions in Cabot Strait and the Gulf make shipping up the river possible, it was learned at Dominion Coal Co. headquarters, Glace Bay. All the mines are now working, but not steadily, the general average being approximately half time.



Rains, Carbon County, Utah

A cheerful village in a pleasing country. Here the Castle Gate seam is mined, which shows at this point a thickness of 9 ft. Note the village triangle with its grass plot.

Traffic News

Widens Differentials Favoring Birmingham District Mines

Readjustment of the relationship in the rates on coal from southern Illinois, western Kentucky and the Birmingham district of Alabama to destinations in Tennessee, Alabama, Mississippi, Louisiana, Arkansas and Texas has been ordered by the Interstate Commerce Commission in *Alabama Mining Institute vs. Illinois Central R.R. Co., et al.* The general effect of the decision will be to widen the differentials paid by southern Illinois and western Kentucky, although in some cases there will be a reduction.

The basis adopted by the Commission in prescribing the differential adjustment over the Birmingham base rate is an increase of 5c. per net ton for every 25 miles or major fraction thereof in which the average distance from Illinois Central mines in the southern Illinois-western Kentucky districts exceeds the average distance from Frisco group 2 and Southern Ry. groups 4, 11 and 12 in Alabama. From this adjustment, however, the Commission excepts destinations such as Memphis, Tenn., where no line serves the destination at the base rate from the Alabama field, on the one hand, and the western Kentucky and Illinois fields, on the other.

Ten years ago, in *Galloway Coal Co. vs. Alabama Great Southern R.R. Co.*, 40 I. C. C. 311, the Commission approved a differential approximating 30c. per ton to certain points east of the Mississippi River. In this case Alabama sought differentials ranging from 25c.@$1. How these compare with the adjustment authorized by this decision is shown in the following table. To the points covered by this table, complainant had asked a differential of 75c.

To Mississippi	From Ill.-Ky. Distance, Miles	From Ill.-Ky. Rate per Ton, Cts.	From Alabama Distance, Miles	From Alabama Rate per Ton, Cts.	Present Differential in Favor of Alabama, Cts.	Differential Prescribed, Cts.
Clarksdale	333	247	270	245	2	15
Greenville	407	236	256	211	25	30
Greenwood	380	247	179	217	30	40
Grenada	347	234	216	219	15	25
Winona	370	234	173	202	32	40
Durant	400	266	196	236	30	40
Ackerman	453	266	143	209	57	60
Newton	448	277	231	222	55	45
Jackson	458	277	248	247	30	40
Vicksburg	476	269	326	239	30	30
Natchez	553	267	346	242	25	40
Brookhaven	512	298	302	253	45	40
McComb	536	299	326	259	40	40
Columbia	543	300	333	285	15	40
Laurel	498	277	296	242	35	40
Hattiesburg	548	277	310	247	30	50
Gulfport	618	255	380	230	25	50
Alabama						
Mobile	610	255	324	180	75	55
Louisiana						
New Orleans	642	255	416	230	25	45
Baton Rouge	622	267	415	242	25	40
Hammond	589	310	379	270	40	40
Bogalusa	572	310	362	305	5	40

The complainant also attacked the divisions allowed certain short-line delivering carriers in the lower Mississippi River valley by the Illinois Central on Illinois and Kentucky coal on the theory that these divisions were so "liberal" that they unjustly discriminated against the Alabama operators when seeking railroad-fuel contracts from such short-lines. The Illinois Central justified these divisions on the return haul of higher grade traffic it received from those connections. Attention also was called to the fact that Alabama in 1924 captured the fuel business of one of the short lines. The Commission refused to sustain complainant's charge of undue prejudice and discrimination with respect to these divisions.

The question of the cost of the transportation of coal from the Maritime Provinces and Alberta to points in Ontario has been taken up by the Canadian Board of Railway Commissioners, which under orders from the Dominion Government began a comprehensive investigation into the matter on April 16. The hearings are being held in public and experts from the provinces concerned and from the railways will testify.

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Among the Coal Men

E. L. Michie, who for the last year has been manager of operations of the Elkins division of the West Virginia Coal & Coke Co., has resigned to enter business for himself. Mr. Michie had been in charge of the Elkins division of the West Virginia Coal & Coke Co. since the company's reorganization about a year ago. Previous to that time he was in charge of mines owned by the Hutchinsons in the Kanawha field.

L. T. Putnam, for several years assistant to General Superintendent George Campbell, of the Old Ben Coal Corp., Chicago, Ill., has been transferred to the Eastern field and will look after the operation of Old Ben properties in the non-union field.

Frank D. Rash, former president of the St. Bernard Mining Co., later vice-president of the West Kentucky Coal Co., now president of the Kentucky Mine Owners Association and Inland Waterways Co., Louisville, Ky., was elected president of the Technology Club of Kentucky at the annual meeting, on March 26, of Massachusetts Tech graduates living in Kentucky and southern Indiana.

Stephen Arkwright, general manager of the Paisley coal operations in Monongalia County, West Virginia, has moved his residence from Fairmont to Morgantown, where he expects to make his permanent home.

Fred Raines, for a score or more years in charge of the Cincinnati office and Western distribution for Castner, Curran & Bullitt, resigned, effective April 1, and has taken charge of the Old Ben Coal Corporation's new offices in the Dixie Terminal Building, Cincinnati. This was to be expected with the acquisition of the Ed White and Glen Rogers properties by the company, but another angle was injected when a large number of Castner, Curran & Bullitt employees went with their old chief to his new post.

Charles Gates has been made superintendent of the Caples mine of the Central Pocahontas Coal Co., of Welch, W. Va. This was formerly known as the Shannon Branch mine.

E. M. Robinson, for four years Norfolk manager for the Eastern Coal & Export Co., has accepted a position as Richmond manager for the Sugar Creek Coal Sales Co., effective immediately. He will succeed W. B. Wooldridge, who has been the company's Richmond manager for a number of years and is now being transferred to New York. Mr. Robinson's successor has not been appointed, but W. R. Evans, from the Richmond office of the Eastern Coal & Export Co., has taken charge of the Norfolk office temporarily.

Georgie J. Mechau, widely-known in the Buffalo trade, has left his position with the Acme Coal Mining Co. to accept the management of the Toronto office of the F. P. Weaver Co., of Canada, with headquarters in Montreal.



Capt. T. V. Peake

Captain T. V. Peake, manager of the Cannock & Rugeley Colliery Co., Ltd., Staffordshire, England, who is making an observation tour of American coal fields. Accompanied by Norman Forrest, agent of the Holly Bank Coal Co., Ltd., in the same British field, he recently inspected a number of mines in southern West Virginia, followed by a trip to the Pittsburgh district.

Fred Carr has been made sales manager of the Lion Coal Co., of Ogden, Utah, succeeding James T. Hill, who resigned recently. The Lion company may consolidate with the Superior Rock Springs Coal Co., the Premier Coal Co. and another company, unnamed, according to Mariner A. Browning, president of the Lion company.

C. H. Mead has been elected secretary of the Winding Gulf Operators Association, succeeding George Wolfe, who resigned shortly after the first of the year. Mr. Mead has had wide experience in the coal business, being interested extensively in coal operations in the Winding Gulf field. He located in Raleigh, W. Va., about ten years ago and has been largely instrumental in the formation of a number of large companies. He is now the president and general manager of the C. H. Mead Coal Co., operating mines at East Gulf, the general offices of the company being in Beckley.

W. D. Givens, of Charleston, W. Va., local manager of the Atlas Powder Co., addressed the Fayette County Mining Institute at Mount Hope, W. Va., on April 1 on the match-head detonator. By displaying a "harmless" model he explained the piece of mechanism in detail.

Frank W. Newhall, of Uniontown, Pa., chief engineer of the Republic Iron & Steel Co.'s coal mines in Pennsylvania, has been re-elected president of the Uniontown Tennis Club, an office which he has filled for several years.

Obituary

John Kimberly Mumford, well known as a war correspondent and special writer for newspapers and magazines, died April 17 at Singapore, British East India, aged 62. At various times he had been connected with the New York *World*, *American* and *Herald Tribune*, *Harper's Weekly* and the *Red Cross Magazine*. He also was the author of books on industrial subjects, among them "Wire," "Bakelite" and "Anthracite." At the time of his death he was collecting material for a book on rubber.

James S. McAnulty, of Scranton, Pa., died April 15 from heart trouble. He was one of the organizers of the Connell Anthracite Mining Co., and served as secretary and treasurer from 1903 to 1923, when he was made president upon the death of W. L. Connell. He also was president of the East Point Coal Co., of White Haven, Pa., and the Scranton Life Insurance Co. He is survived by one daughter.

Frank P. Christian, of Scranton, Pa., former president of the Peoples Coal Co., died at Geneseo, near Clifton Springs, N. Y., on April 13. He is survived by his wife, one daughter and a son.

William G. Payne, prominent coal operator, died April 13 at his home in Kingston, Pa., following an attack of appendicitis. He was 82 years old. Born in Minersville, Pa., Mr. Payne moved to Wilkes-Barre early in life and became associated with his uncle in the coal business. At the time of his death he was president of the East Boston Coal Co., Consumers' Coal Co., Dolph Coal Co., and Pierce Coal Co.

Samuel Irwin Sawyer, owner and operator of the mine bearing his name at Punxsutawney, Pa., was killed by a Pennsylvania R.R. train a few days ago. He was standing on the station and as the train started up seemed to become dizzy and fell under the wheels. He was about 58 years old and is survived by a widow and two children.

W. W. Brunson, formerly a steam-shovel coal operator in the Pittsburg (Kan.) district, an associate of Joseph F. Klaner, with whom he went to Pittsburg from Colorado, died April 6 in Idaho Springs, Colo., after a long illness. He was 47 years old. While in the Pittsburg district he was associated with the Ellsworth, Klaner Coal Co., B.R.&H. Coal Co., Liberty Coal Co. and North Cherokee Coal Co. He returned to Colorado three years ago on account of his health.

William Schanzenbacher, manager of one of the Louisville (Ky.) yards of the St. Bernard Mining Co., who was shot by two young bandits, in an attempted robbery, on April 3, as he was entering his home with company money taken home for safe keeping, died on April 9, as a result of the injury, having been shot through the stomach.

Col. Morgan Jones, 86 years old, operator of coal mines and reputed to be one of the wealthiest men in Texas, died at Abilene, April 11 after several months of ill-health.

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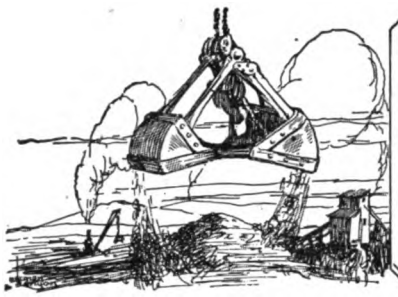
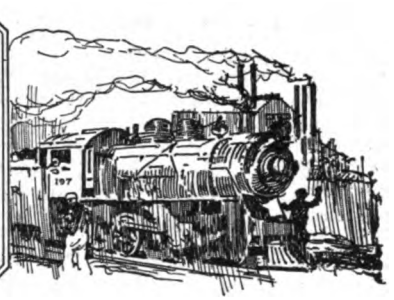


Production And the Market



Soft Coal Market Has But Few Bright Spots; Anthracite Moving Slowly

Unevenness continues to characterize developments in the bituminous-coal trade, with depressing influences overshadowing those of an encouraging nature. Backwardness of spring temperatures in the Middle West has served to provide a number of small orders for domestic sizes for current needs, but little stocking for winter requirements is being done. Dejection has overspread the mining districts of Illinois and Indiana because of the numerous shutdowns and the knowledge that western Kentucky will take over much of the business.

Inability of the lake season to get under way as well as warm weather has caused an easing up in the movement of Kentucky coal, so that dependence must be placed in day-to-day business. As a result operation in western Kentucky is only about one-third of capacity and in eastern Kentucky even less, but comparison with previous years is encouraging. Movement at the Head of the Lakes also is ahead of last year. Typical spring quiet marks the trade in the West and Southwest

Lake Movement Under Permit Control

A firmer tendency pervades the Cincinnati market due to dealer inquiry and signs of interest in the West and Northwest. While the embargoes on lake coal to Toledo and Sandusky have not been lifted, the permit system being used to control such traffic, these infuences have had a steadying effect. The central and eastern Ohio situation, however, is dull and featureless. The trade in western and central Pennsylvania continues to sink into the depths, and in Buffalo, too, no ray of hope pierces the gloom.

Quiet industrial conditions in New England hold out little encouragement against the keen competition for what little business is in sight. Spot trade at New York has improved slightly; distress tonnage has been cut down considerably but prices are still low. At Philadelphia and Baltimore the recent dullness is unrelieved, though export possibilities are seen in the event of a British strike.

Contracting is slow, the railroads in most instances piecing out remaining stocks with open-market purchases at low prices. Most of the large industrial consumers also are following this practice.

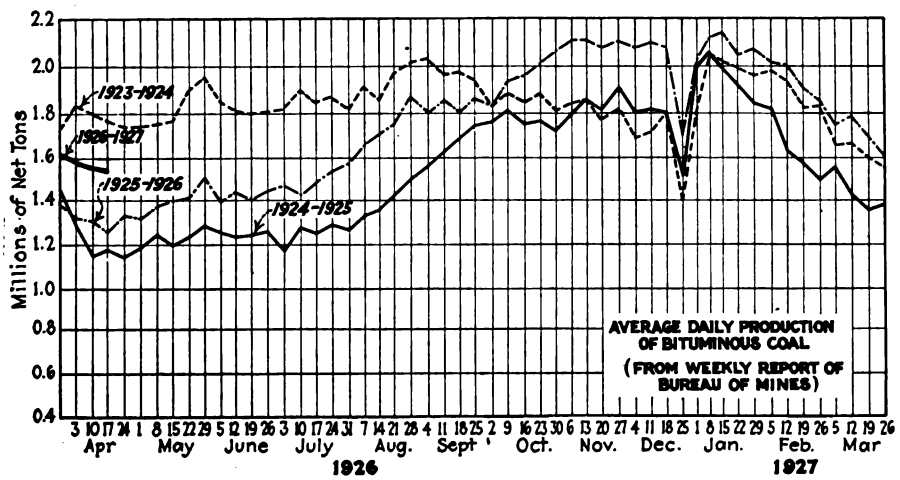
A slight further advance in prices has taken place since last week, *Coal Age* Index on April 26 standing at 159 and the corresponding price at $1.93, compared with 158 and $1.92, respectively, on April 19.

Output of bituminous coal during the week ended April 17 is estimated by the Bureau of Mines at 9,295,000 net tons, a decline of 125,000 tons from the preceding week.

Anthracite Demand Lacks Life

Hard-coal demand at both New York and Philadelphia is quiet. Warnings and recommendations that consumers lay in winter supplies early lack the pulling power of spring discount inducements in past years. Company producers are getting most of the business, independents being unable to obtain more than 25c. above company circulars, and not much of their product is moving at that. Pea is an exception, however, this size in some instances bringing as much as $1.25 over company quotation. At Baltimore, on the other hand, domestic consumption has been heavy and many fill-up orders have been forthcoming. Trade in steam sizes is dull. Company output is not moving easily at circular prices and the independents are glad to get business at prices well below bottom company quotations.

The Connellsville coke market shows few signs of life and output continues to decline.



Estimates of Production

(Net Tons)

BITUMINOUS

	1925	1926
April 3	7,547,000	9,040,000
April 10 (a)	7,843,000	9,420,000
April 17 (b)	7,515,000	9,295,000
Daily average	1,253,000	1,549,000
Cal. yr. to date (c)	146,359,000	169,003,000
Daily av. to date	1,612,000	1,860,000

ANTHRACITE

April 3	1,438,000	1,549,000
April 10	1,672,000	1,793,000
April 17	1,522,000	2,086,000
Cal. yr. to date (c)	25,581,000	15,389,000

BEEHIVE COKE

April 10 (a)	212,000	228,000
April 17 (b)	201,000	233,000
Cal. yr. to date (c)	3,749,000	4,518,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalise number of days in the two years.

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Hand-to-Mouth Policy Rules

A hand-to-mouth policy still controls railroad buying in the Middle West. Although bids have been in for some time, most carriers are meeting current requirements with open-market orders at low prices. A number of industrial contracts for 5,000 to 50,000-ton lots of screenings have been placed, but the largest consumers are following the lead of the railroads. On the whole, the spot market in steam coals is good.

Continued cold weather has served to maintain a steady flow of small orders for domestic sizes. Little is being done, however, in the way of stocking for the winter. The price situation for the coming months is an uncertain quantity. In the mining regions of Illinois and Indiana the wholesale closing down of operations and the knowledge that much of the business will go to western Kentucky this season have created an air of gloom. All producing districts have coal on track at the mines.

Shippers of high-volatile coal from the East still comb the Chicago market for business. Prices on prepared sizes range from $1.85 up to $2.75, with an occasional order at $3. The smokeless interests are keeping consignment coal away from this territory. Competition between anthracite and coke at Chicago has been further intensified by reductions of 50c.@$1.75 in oven prices on domestic sizes. Aside from a weather demand, which helps the small-lot movement of the medium and cheaper grades, the local St. Louis market is devoid of notable change.

Spring Takes Toll of Kentucky

The advent of real spring temperatures has slowed up the movement of Kentucky coal. Lake business has not yet got under way, so that the state must depend upon day-to-day current demand for orders. Western Kentucky is running about 33⅓ per cent of capacity, but the eastern part of the field is not equaling that percentage. Nevertheless, compared with previous years the present seasonal volume is encouraging.

Prices show little change. Some shippers in the Jellico and Straight Creek districts are asking $2.50 for choice block, but the general range is $1.75@$2.25. Eastern Kentucky lump, egg and nut are $1.75@$2; mine-run, $1.35@$1.60, and slack, $1@$1.10. Western Kentucky 6-in. block is $1.65@$1.85; lump and egg, $1.40@$1.65; nut, $1.35@$1.60; mine-run, $1@$1.50, and screenings, $1@$1.10.

Despite a falling off in shipments from the docks at the Head of the Lakes during the past fortnight, the movement is well ahead of last year—possibly by as much as 2,000 cars. List prices on the better grades of coal are well maintained but concessions are frequent on slower-moving stock. Prepared sizes of smokeless, which threatened to be a drug, are fairly well cleaned up, and reserves of mine-run and screenings are not burdensome.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	Apr. 27 1925	Apr. 12 1926	Apr. 19 1926	Apr. 26 1926†
Smokeless lump	Columbus	$2.60	$2.85	$2.85	*$2.50@$2.75*
Smokeless mine run	Columbus	1.85	1.90	1.90	1.85@ 2.00
Smokeless screenings	Columbus	1.40	1.10	1.10	**1.10@ 1.30**
Smokeless lump	Chicago	2.85	2.60	2.60	2.50@ 2.75
Smokeless mine run	Chicago	1.95	1.80	1.80	1.65@ 2.00
Smokeless lump	Cincinnati	2.75	2.75	2.75	2.50@ 3.00
Smokeless mine run	Cincinnati	2.00	1.90	1.85	1.75@ 2.00
Smokeless screenings	Cincinnati	1.50	1.35	1.35	1.25@ 1.50
*Smokeless mine run	Boston	4.15	4.20	4.30	*4.00@ 4.25*
Clearfield mine run	Boston	1.95	1.85	1.85	1.75@ 2.00
Cambria mine run	Boston	2.15	2.10	2.10	**2.00@ 2.35**
Somerset mine run	Boston	2.05	1.95	1.95	**1.85@ 2.10**
Pool 1 (Navy Standard)	New York	2.55	2.65	2.65	2.50@ 2.85
Pool 1 (Navy Standard)	Philadelphia	2.60	2.80	2.80	2.65@ 3.00
Pool 1 (Navy Standard)	Baltimore	1.95	2.05	2.05	*1.90@ 2.00*
Pool 9 (Super. Low Vol.)	New York	2.00	2.25	2.20	*2.00@ 2.25*
Pool 9 (Super. Low Vol.)	Philadelphia	2.00	2.35	2.35	2.20@ 2.50
Pool 9 (Super. Low Vol.)	Baltimore	1.85	1.90	1.90	*1.70@ 1.80*
Pool 10 (H.Gr.Low Vol.)	New York	1.85	1.85	1.85	1.70@ 2.00
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.65	2.05	2.05	1.90@ 2.25
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.70	1.75	1.75	*1.55@ 1.65*
Pool 11 (Low Vol.)	New York	1.50	1.65	1.70	*1.50@ 1.75*
Pool 11 (Low Vol.)	Philadelphia	1.55	1.70	1.70	1.55@ 1.85
Pool 11 (Low Vol.)	Baltimore	1.45	1.60	1.60	*1.45@ 1.50*
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.45	1.45	1.45	1.30@ 1.60
Pool 54-64 (Gas and St.)	Philadelphia	1.45	1.45	1.45	1.35@ 1.55
Pool 54-64 (Gas and St.)	Baltimore	1.50	1.30	1.30	*1.25@ 1.30*
Pittsburgh se'd gas	Pittsburgh	2.40	2.40	2.40	*2.25@ 2.40*
Pittsburgh gas mine run	Pittsburgh	2.00	2.05	2.05	2.00@ 2.15
Pittsburgh mine run (St.)	Pittsburgh	1.80	1.95	1.95	1.90@ 2.00
Pittsburgh slack (Gas)	Pittsburgh	1.65	1.55	1.55	1.50@ 1.60
Kanawha lump	Columbus	2.10	2.05	2.05	1.85@ 2.25
Kanawha mine run	Columbus	1.40	1.55	1.55	1.40@ 1.70
Kanawha screenings	Columbus	1.15	.85	.85	**1.00@ 1.10**
W. Va. lump	Cincinnati	1.85	1.85	1.85	*1.65@ 2.00*
W. Va. gas mine run	Cincinnati	1.40	1.45	1.50	**1.40@ 1.65**
W. Va. steam mine run	Cincinnati	1.30	1.30	1.30	**1.35@ 1.50**
W. Va. screenings	Cincinnati	1.25	1.00	.85	**.90@ 1.10**
Hocking lump	Columbus	2.25	2.35	2.35	2.25@ 2.50
Hocking mine run	Columbus	1.40	1.55	1.55	1.40@ 1.70
Hocking screenings	Columbus	1.20	1.05	1.05	**1.10@ 1.20**
Pitts. No. 8 lump	Cleveland	2.15	2.20	2.25	**1.80@ 2.65**
Pitts. No. 8 mine run	Cleveland	1.80	1.80	1.80	1.80@ 1.85
Pitts. No. 8 screenings	Cleveland	1.50	1.60	1.40	1.35@ 1.45

Midwest	Market Quoted	Apr. 27 1925	Apr. 12 1926	Apr. 19 1926	Apr. 26 1926†
Franklin, Ill. lump	Chicago	$2.60	$2.60	$2.60	$2.60
Franklin, Ill. mine run	Chicago	2.35	2.40	2.40	2.35@ 2.50
Franklin, Ill. screenings	Chicago	2.10	1.85	1.85	**1.85@ 2.00**
Central, Ill. lump	Chicago	2.35	2.30	2.30	2.25@ 2.40
Central, Ill. mine run	Chicago	2.10	2.05	2.05	**2.00@ 2.15**
Central, Ill. screenings	Chicago	1.90	1.30	1.30	**1.40@ 1.60**
Ind. 4th Vein lump	Chicago	2.60	2.40	2.40	2.25@ 2.60
Ind. 4th Vein mine run	Chicago	2.35	2.15	2.15	2.10@ 2.25
Ind. 4th Vein screenings	Chicago	1.90	1.70	1.70	**1.75@ 1.90**
Ind. 5th Vein lump	Chicago	2.25	2.15	2.15	2.00@ 2.35
Ind. 5th Vein mine run	Chicago	1.95	1.95	1.95	1.85@ 2.10
Ind. 5th Vein screenings	Chicago	1.55	1.30	1.30	**1.30@ 1.45**
Mt. Olive lump	St. Louis	2.50	2.50	2.50	2.50
Mt. Olive mine run	St. Louis	2.25	2.15	2.15	2.15
Mt. Olive screenings	St. Louis	1.75	1.40	1.40	1.40
Standard lump	St. Louis	2.25	2.50	2.50	2.50
Standard mine run	St. Louis	1.80	1.80	1.80	1.75@ 1.85
Standard screenings	St. Louis	1.70	1.15	1.15	1.15@ 1.20
West Ky. block	Louisville	1.85	1.75	1.75	1.65@ 1.85
West Ky. mine run	Louisville	1.35	1.25	1.25	1.00@ 1.50
West Ky. screenings	Louisville	1.20	1.00	1.00	**1.00@ 1.10**
West Ky. block	Chicago	1.85	1.75	1.75	1.65@ 1.85
West Ky. mine run	Chicago	1.30	1.15	1.15	.80@ 1.50
South and Southwest					
Big Seam lump	Birmingham	2.25	2.00	2.00	1.75@ 2.25
Big Seam mine run	Birmingham	1.75	2.00	2.00	1.75@ 2.25
Big Seam (washed)	Birmingham	1.85	2.00	2.00	1.75@ 2.25
S. E. Ky. block	Chicago	2.10	2.25	2.25	2.00@ 2.50
S. E. Ky. mine run	Chicago	1.65	1.65	1.65	1.50@ 1.85
S. E. Ky. block	Louisville	2.10	2.05	2.05	*1.75@ 2.25*
S. E. Ky. mine run	Louisville	1.30	1.55	1.45	**1.35@ 1.65**
S. E. Ky. screenings	Louisville	1.10	1.05	1.05	1.00@ 1.10
S. E. Ky. lump	Cincinnati	2.10	2.10	2.10	2.00@ 2.25
S. E. Ky. mine run	Cincinnati	1.35	1.45	1.50	**1.35@ 1.75**
S. E. Ky. screenings	Cincinnati	1.30	1.00	.85	**.90@ 1.25**
Kansas lump	Kansas City	4.25	4.25	4.25	4.00@ 4.50
Kansas mine run	Kansas City	3.00	2.85	2.85	2.75@ 3.00
Kansas screenings	Kansas City	2.75	2.50	2.50	2.50

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**; declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	April 27, 1925 Independent	April 27, 1925 Company	April 19, 1926 Independent	April 19, 1926 Company	April 26, 1926† Independent	April 26, 1926† Company
Broken	New York	$2.34	.....	$8.00@$8.50	.....	$8.15@$9.25	.....	$8.15@$9.25
Broken	Philadelphia	2.39	.....	9.15	$9.25	9.00@ 9.25	$9.25	9.00@ 9.25
Egg	New York	2.34	$8.50@$8.75	8.25@ 8.50	9.25@ 9.75	8.75@ 9.25	*9.25@ 9.50*	8.75@ 9.25
Egg	Philadelphia	2.39	8.50@ 9.20	8.30@ 8.50	9.25@ 9.85	9.15@ 9.25	9.25@ 9.85	9.15@ 9.25
Egg	Chicago*	5.06	7.76@ 8.40	7.42@ 8.08	8.75	8.13	*8.48*	8.13
Stove	New York	2.34	8.75@ 9.00	8.50@ 8.90	9.50@ 10.00	9.25@ 9.50	*9.25@ 9.75*	9.25@ 9.50
Stove	Philadelphia	2.39	9.10@ 9.55	8.75@ 8.90	9.60@ 10.10	9.35@ 9.50	9.60@ 10.10	9.35@ 9.50
Stove	Chicago*	5.06	8.12@ 8.60	7.82@ 8.00	8.88	8.58	*8.84*	8.58
Chestnut	New York	2.34	8.50@ 8.75	8.25@ 8.50	9.25@ 10.00	8.75@ 9.15	*9.25@ 9.50*	8.75@ 9.15
Chestnut	Philadelphia	2.39	8.50@ 9.35	8.40@ 8.50	9.25@ 9.75	9.00@ 9.15	9.25@ 9.75	9.00@ 9.15
Chestnut	Chicago*	5.06	7.94@ 8.25	7.59@ 8.00	8.88	8.33@ 8.53	*8.71*	**8.38@ 8.58**
Pea	New York	2.22	4.50@ 5.25	5.00@ 5.50	6.50@ 7.25	6.00@ 6.35	*6.50@ 7.00*	6.00@ 6.35
Pea	Philadelphia	2.14	5.00@ 5.75	5.25@ 5.30	6.50@ 7.00	6.00@ 6.50	6.50@ 7.00	6.00@ 6.50
Pea	Chicago*	4.79	4.91@ 5.36	4.69@ 5.00	5.65	5.65@ 5.80	**6.03**	5.65@ 5.80
Buckwheat No. 1	New York	2.22	2.00@ 2.50	2.50@ 3.00	1.75@ 2.25	3.00@ 3.50	1.75@ 2.25	3.00@ 3.50
Buckwheat No. 1	Philadelphia	2.14	2.00@ 2.75	2.50	2.25@ 2.75	3.00	2.25@ 2.75	3.00
Rice	New York	2.22	1.75@ 2.10	2.00	1.50@ 2.00	2.00@ 2.25	*1.50@ 1.85*	2.00@ 2.25
Rice	Philadelphia	2.14	1.75@ 2.00	2.00	2.00@ 2.25	2.25	2.00@ 2.25	2.25
Barley	New York	2.22	1.40@ 1.50	1.50	1.25@ 1.60	1.60@ 1.75	*1.10@ 1.40*	1.60@ 1.75
Barley	Philadelphia	2.14	1.50	1.50	1.50@ 1.60	1.75	1.50@ 1.60	1.75
Birdseye	New York	2.22	1.40@ 1.60	1.60	1.25@ 1.60	2.00	*1.00@ 1.50*	2.00

*Net tons, f.o.b. mines. †Advances over previous week shown in heavy type; declines in *italics*.

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Screenings of all grades, in fact, have been in active demand.

Future of Anthracite in Doubt

The future of hard-coal in the Northwest is much in doubt. Many householders, forced to use other fuels last winter, balk at paying the prices asked for anthracite. Moreover, the number of consumers who will use anthracite but who normally laid in supplies early has greatly diminished. Further expansion in the sale of coke for domestic purposes is expected.

No new features developed in the situation at Milwaukee during the last week. Industrial demand is fairly satisfactory, but the call for domestic fuel is fading. Prices are unchanged. Coal movement continues to slow down in the Twin Cities, the weather having turned warm. Contract business is backward and inquiries have been mostly only preliminary. Retail demand is weak, regardless of the inducement of a discount on hard coal.

The trade in Kansas has reverted to its normal spring somnolence after six weeks of activity. Operators report an accumulation of close to 150 cars of coal on Kansas tracks, but as many mines are idle and some working only two or three days a week, this is not causing much concern. Crushers are again in use to help fill the demand for screenings. As stocks in consumers' bins and retail yards are unusually low, the operators are hopeful that summer storage demand will be brisk.

Colorado Market Steady

The third week in April witnessed no material change in the Colorado market. The smaller domestic sizes are scarce, but there is a surplus of lump. Mines are averaging 65 per cent running time, but the surplus labor has migrated to other fields. There has been little demand for coal for storage in spite of the substantial reductions made on fuel for that purpose. Lump, grate and nut from the Kemmerer and Rock Springs districts of Wyoming are selling at $3.50. Quotations on Wyoming steam coals are erratic.

Utah mines are not averaging over two days a week. "No bills" block the mine tracks. Little or no tonnage is moving to the domestic trade. The absence of demand for prepared sizes is keeping up the market in screenings. The principal industrial buyers at the present time are the metal interests, railroads, packing plants and brick producers.

Tone Improves at Cincinnati

At Cincinnati a better tone is in evidence as a result of dealer inquiry, high-volatile slack buying by utilities and industries and a display of interest from the West and Northwest. Embargoes against Toledo and Sandusky are still in force and the permit system is in use to move lake coal, but these have proved steadying influences.

Low-volatile lump has been hard to get at $2.75, some asking $3, which it is believed will be the May circular price. Egg is now $2.50@$2.75; nut, $2 @$2.25. Mine-run is unchanged, but screenings are firm at $1.50, only off-grades being obtainable at $1.25. High-volatile lump from West Virginia is weak, but Hazard, Harlan and Elkhorn offerings are firm at $2. Egg is hard to move. Mine-run and screenings have tightened up about 10c. a ton.

Retail business during the last fortnight has exceeded expectations. May prices will show no change from those now prevailing. River conditions are excellent and the movement is normal.

With lake traffic held back by embargoes at the lower ports and ice in the passages to the upper ports, the coal trade in central Ohio continues dull and featureless. Blocking the lake movement means sharper competition in the Ohio local markets from non-union coal. Steam consumers still play the open market. Domestic trade is quiet and retailers show no inclination to buy ahead for the winter months. As a result, domestic prices are somewhat easier.

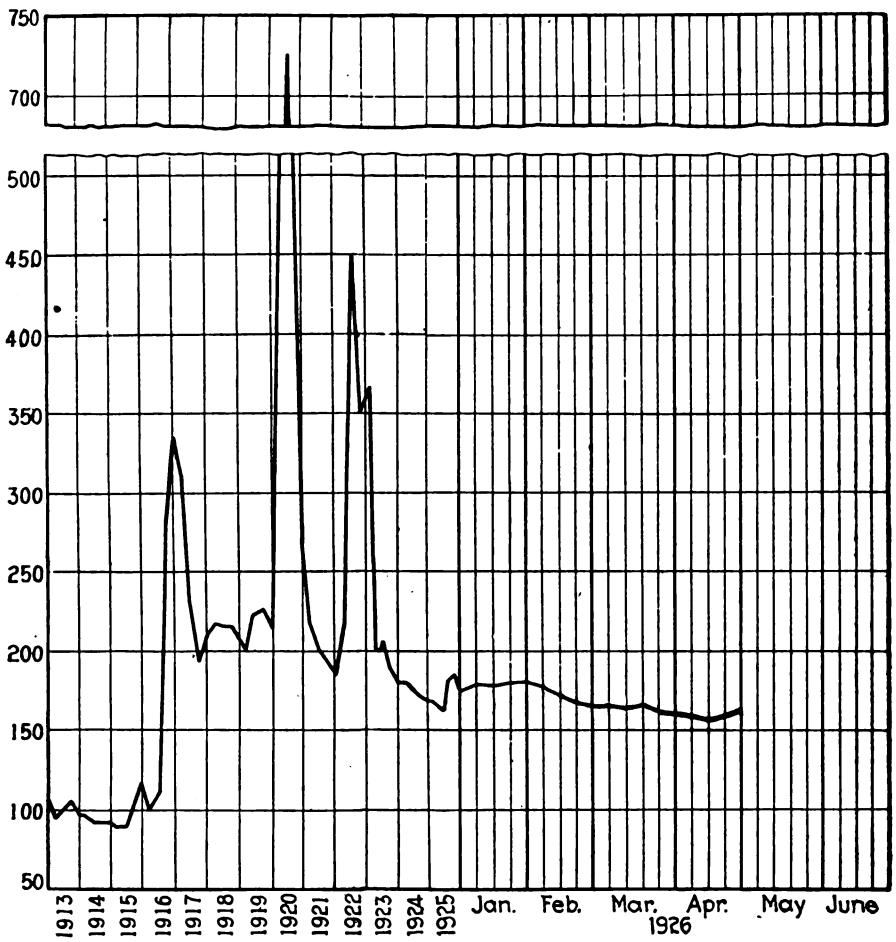
Eastern Ohio Lags in Depths

The tendency to weakness in eastern Ohio is more marked, though spot prices are practically unchanged. It is a long time since both steam and domestic activity was at so low an ebb, "no bills" being more numerous than at any time for a year. Even distress coal which finds its way to market is hard to move at figures under the market. During the week ended April 17 the eastern Ohio No. 8 district produced 212,000 tons, or about 30 per cent of capacity, an increase of 13,000 tons over the preceding week and 19,000 tons over the corresponding week of 1925.

Pittsburgh Trade Still Drooping

Three-quarters coal in the Pittsburgh district has yielded further to the selling pressure induced by moribund demand. Last week gas lump was down to $2.25@$2.40 and three-quarter steam dropped to $2.15@$2.25. Slack, however, holds at $1.40@$1.50 for steam grades and 10c. higher for gas coal. The Pittsburgh Coal Co. started up another mine last week, but the general labor situation in western Pennsylvania is unchanged. In the Bessemer district open-shop operations find current coal prices a losing venture.

Central Pennsylvania production is still on the decline. Up to April 17 loadings had totaled 30,388 cars, as compared with 40,804 cars for the corresponding period in March. Most of the tonnage rolling is on spot orders. Pool 1 is quoted at $2.35@$2.50; pool 9, $2.20 @$2.35; pool 10, $1.90@$2.20; pool 11, $1.70@$1.85, and pool 18, $1.60@$1.70.



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926				1925	1924
	April 26	April 19	April 12	April 5	April 27	April 28
Index	159	158	158	160	162	171
Weighted average price..	$1.93	$1.92	$1.91	$1.93	$1.96	$2.07

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.

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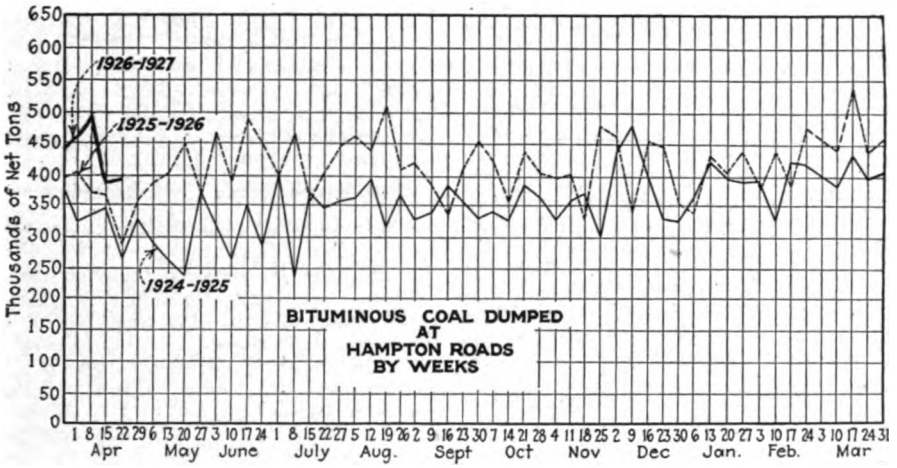


Pessimism Enthroned at Buffalo

If there is a ray of light in the Buffalo bituminous market, factors in that trade decline to admit its existence. Slack prices are slightly stronger, but only because there is no demand for screened sizes. Nominal list prices show Fairmont lump at $1.60@$1.75; mine-run, $1.40@$1.50; slack, $1.25@$1.40; Youghiogheny gas lump, $2.15@$2.35; No. 8 and Pittsburgh steam lump, $1.65@$1.85; gas and steam slack, $1.40@$1.55, and Allegheny Valley mine-run, $1.60@$1.85.

In the domestic trade, Buffalo is absorbing a fair amount of coke at $10@$10.50, curb. There is a slight demand for low-volatile coal for house-heating purposes, but sales difficulties are increasing. Retail business at Toronto has eased up with the appearance of milder weather. Stove now leads in anthracite demand and supplies are ample to take care of all orders. Canadian industrial buyers appear interested only in immediate requirements.

Gloom Shrouds New England

In New England there is every indication of continued close competition for contracts to be closed this season. Extremely low prices have been named both wholesale and retail, and even though output in the West Virginia districts is being curtailed by reasonably good co-operation the amount of distress coal at the Virginia terminals is a constant menace to quotations.

On board vessels at Norfolk and Newport News there is ample No. 1 Navy Standard Pocahontas and New River available at not over $4.25, with 15c. less being freely quoted. In that respect the spot market is under more depression than a week ago.

Purchasers everywhere are taking note of current conditions, and there is no disposition to buy in April and May when most consumers have on hand comfortable reserves for the next 60 to 90 days.

Coals from central Pennsylvania are scarcely heard from in the open market. With lowering prices on cars at the tidewater distributing points the range of smokeless coals is spreading and the territory open to all-rail coals is an always narrowing ribbon along the Connecticut River.

The spot bituminous trade at New York registered another slight improvement last week. Considerable reduction was effected in the distress tonnage on cars and in barges, but open-market quotations remain at low levels. Whatever contracting has been done has been done very quietly. For the most part buyers feel themselves well protected—barring a British strike. Should that take place, shippers look for increased export business and some orders already have been closed for South America.

At Philadelphia the psychological depression is as deep as ever. A substantial volume of coal is moving to industrial consumers, but the prices at which the coal is sold bring no joy to the shippers. The railroad attitude toward the situation continues a sore point with the producers. As long as surplus stocks accumulated last winter last and distress tonnage can be snapped up, it is not likely that the railroads will be willing to pay higher figures.

Factors in the Baltimore trade find it more pleasant to contemplate the possibilities of a strong export demand if the British miners go out than to consider the low state of the domestic market. So far, however, there has been little in the way of export inquiry. Spot prices for American consumption are weaker and purchasing agents are stronger in their determination to avoid contracts, except upon their own terms.

Spot steam coals are moving moderately well in the Birmingham market, and with output holding close to trade needs, prices are quotably unchanged. Industrial and railroad consumption is heavy and bunker demand is unusually brisk. Few new contracts are reported, but old ones are readily renewed as they expire. Production, which is close to 400,000 tons weekly, is well ahead of a year ago. Foundry coke is in good demand at $5.50@$6.50, spot or contract; egg and nut are in such light request that some is being stored by producers.

Hard-Coal Demand Soft

Domestic demand for anthracite is easy at both New York and Philadelphia. Campaigns to induce early buying by the householder are not meeting with overwhelming success. Most of the buying favors the low-circular shippers. Independents at New York are unable to obtain over 25c. above company prices and not much coal is changing hands on that basis. Philadelphia is no more kindly disposed to paying premiums. The one size which is the exception is pea. As high as $1.25 over company circular has been obtained. On the other hand, some has been sold at circular in conjunction with orders for egg.

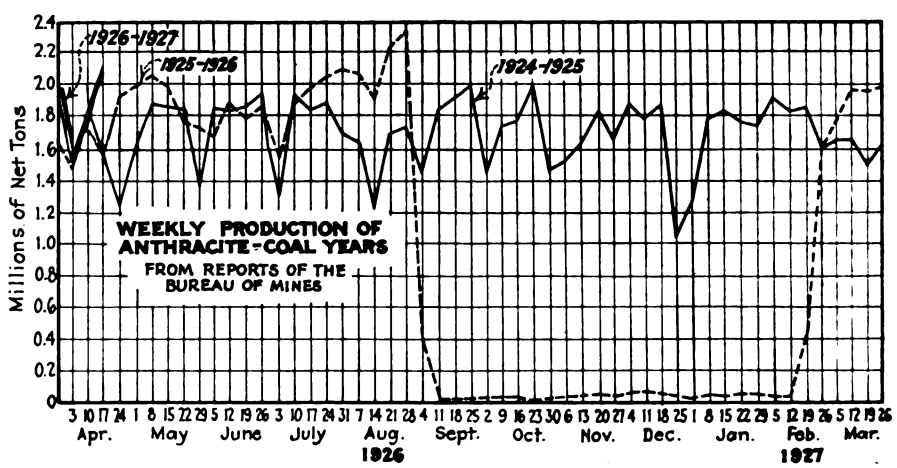
The steam coal market is dull. Company tonnage is not finding a ready market at circular prices and independents are frankly seeking orders at considerably less than the company minimum. The domestic trade, however, is welcoming the domestic buckwheat offered by the D. L. & W. at $3.50 and the collieries shipping that coal are behind on their orders.

Domestic business at Baltimore is on a firmer basis than farther north. April consumption has been heavy and many householders have been giving their orders for spring and summer fill-ups.

Connellsville Coke Market Sinking

The Connellsville coke market is making new records—in stagnation. Spot demand is dead and interest in new contracts moribund. Production of furnace coke, however, is so closely regulated that there is no surplus tonnage to further depress the spot range of $3@$3.15. A slight overproduction of foundry grades, on the other hand, has sent the level for that coke down to $4@$4.50—a net decline of 50c. since February. The odd lots of miscellaneous coke offered as anthracite substitutes are begging in vain for buyers at any price.

Output during the week ended April 17, according to the Connellsville



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Car Loadings and Supply

	Cars Loaded—All Cars	Cars Loaded—Coal Cars
Week ended April 10, 1926	929,506	163,897
Preceding week	928,092	156,909
Week ended April 11, 1925	917,284	138,065

	Surplus Cars—All Cars	Surplus Cars—Coal Cars	Car Shortages All Cars	Car Shortages Coal Cars
April 8, 1926	274,219	127,084	.....	.....
March 31, 1926	247,549	104,280	.....	.....
April 7, 1925	344,258	184,461	.....	.....

Courier, totaled 175,500 tons. Furnace oven production was 102,400 tons, a decrease of 3,900 tons when compared with the preceding week. Merchant oven output dropped to 73,100 tons, a decrease of 330 tons.

The district is shipping very little steam or gas coal and not a great deal of byproduct coal to the commercial market.

March Exports Increase

Exports of coal and coke from the United States during March showed increases in all divisions over February figures. Bituminous exports were 1,143,060 gross tons, as compared with 1,013,158 tons in February; anthracite exports jumped from 37,157 tons to 297,316 tons; coke shipments increased from 67,697 tons to 86,857 tons.

March exports by countries were as follows:

To	Anthracite, Gross Tons	Bituminous, Gross Tons	Coke Gross Tons
France	.....	7,028	1,004
Germany	.....	.....	560
Italy	.....	115,219	....
Netherlands	.....	.....	3
Portugal	.....	2,711	....
United Kingdom	.....	.....	100
Canada	287,351	740,207	82,133
British Honduras	.....	166	....
Costa Rica	.....	.....	15
Guatemala	.....	5	2
Honduras	15	5	....
Nicaragua	.....	662	2
Panama	.....	20,009	....
Salvador	3	3	10
Mexico	138	16,498	174
Miquelon and St. Pierre	.....	1,942	....
Newfoundland and Labrador	125	2,003	....
Bermuda	.....	2,995	....
Barbados	.....	6,844	....
Jamaica	.....	5,863	....
Trinidad and Tobago	.....	1,376	....
Other Br. West Indies	.....	3,226	....
Cuba	9,632	62,984	1,748
Dominican Republic	.....	3	....
Dutch West Indies	27	5,622	....
French West Indies	.....	3,641	....
Haitian Republic	.....	7,222	25
Virgin Islands	.....	6,073	....
Argentina	.....	27,240	....
Brazil	.....	83,157	....
Colombia	5	41	24
British Guiana	.....	2,117	....
Dutch Guiana	.....	200	....
Peru	.....	9,625	....
Venezuela	20	208	1,057
Japan (including Chosen)	.....	173	....
Egypt	.....	1,007	....
Algeria and Tunis	.....	6,985	....
Total	297,316	1,143,060	86,857

Argentine Imports Decline

Total imports of coal into Argentina during 1925 are reported at 2,973,852 tons, compared with 3,299,392 tons in 1924 and 2,579,466 in 1923, so reports Assistant Trade Commissioner Sherwood H. Avery, Buenos Aires. Of the 1925 imports, 2,610,045 tons, or about 89 per cent, came from Great Britain, 186,933 tons from Germany, 124,950 tons from United States; 47,922 tons from the Netherlands and the remainder from Chile and Brazil.

Daily Average Coke Output Declines in March

Byproduct coke output in March increased over that of the short month of February by 277,000 tons, or 7 per cent, although the daily rate was less, according to the Bureau of Mines. Compared with January, both monthly and daily output decreased, the coke plants operating at about 91 per cent of capacity. In March, the total production was 3,777,000 net tons and the daily, 121,825; in February, 3,500,000 and 125,006 tons, respectively, and in January, 3,804,000 and 122,718 tons. Of the 80 byproduct plants in existence, 74 were active this month.

Beehive coke production, however, continued to decline in March when the output was estimated at 1,158,000 net tons; 244,000 tons, or 17 per cent, lower than in February.

The production of all coke totaled 4,935,000 tons, byproduct plants contributing 77 per cent and beehive plants 23 per cent.

Output of Byproduct and Beehive Coke in the United States by Months*

(In Thousands of Net Tons)

	Byproduct Coke	Beehive Coke	Total
1923, monthly average	3,133	1,615	4,748
1924, monthly average	2,833	806	3,639
1925, monthly average	3,332	893	4,225
December, 1925	3,760	1,307	5,067
January, 1926	3,804	1,381	5,185
February, 1926	3,500	1,402	4,902
March, 1926	3,777	1,158	4,935

* Excludes screenings and breeze.

Coal consumed in beehive and byproduct coke plants in March amounted to 7,252,000 tons, 5,426,000 tons at byproduct plants and 1,826,000 tons at beehive plants. This is 11,000 tons more than was used in February for this purpose at all plants.

Estimated Monthly Consumption of Coal in Manufacture of Coke

(In Thousands of Net Tons)

	Consumed in Byproduct Ovens	Consumed in Beehive Ovens	Total Coal Consumed
1923, monthly average	4,523	2,507	7,030
1924, monthly average	4,060	1,272	5,332
1925, monthly average	4,787	1,371	6,158
December, 1925	5,403	2,062	7,465
January, 1926	5,466	2,178	7,644
February, 1926	5,029	2,212	7,241
March, 1926	5,426	1,826	7,252

Of the total output of byproduct coke during March, 3,120,000 tons, or 82.6 per cent, was made in plants associated with iron furnaces, and 656,000 tons, or 17.4 per cent, was made at merchant or other plants.

Uruguayan Coal Imports Gain

Following an increase of 65 per cent in Uruguay's coal imports during February as compared with the preceding month, a further expansion took place in March, reports Consul G. O. Marsh, Montevideo, in a cable to the Department of Commerce. Shipments received during the first 27 days of the month totaled 33,000 tons as compared with 20,000 for the entire month of February, an increase of about 67 per cent. Of the 33,000 tons received 7,000 came from the United States and the remainder from Great Britain.

Coal Leases in Montana and Utah to Be Sold

Sale by public auction of coal leases on three tracts of public land in Montana and Utah has been authorized at the Interior Department.

One of the tracts in Montana comprises 160 acres in Richland County. Under the terms of the lease, the successful bidder must make an initial investment of $5,000 during the first three years of the lease and must produce 5,000 tons of coal annually commencing with the fourth year of the lease. A royalty of 10c. per ton, mine-run, must be paid the government on all coal produced.

The other tract in Montana authorized to be leased includes 40 acres in Roosevelt County. An initial investment of $500 must be made on this tract and a minimum production of 410 tons of coal annually after the third year. Both of these coal leases will be offered for sale at the local land office at Great Falls, Mont., the exact date of the sale to be announced later from that office.

The third tract is situated in Sevier County, Utah, and comprises 80 acres. The successful bidder for the tract must make an initial investment of $1,000 during the first three years of the lease with a minimum production of 550 tons per year after the third year, at the same time paying the government 15c. per ton, mine-run, on all coal produced. The date of the sale covering this lease will be announced later from the local land office at Salt Lake City, where it will be held.

Coal-Loading Record Shifts To Sewalls Point

The Virginian Ry. coal pier No. 2, at Sewalls Point, Va., the new $3,000,000 electrically operated terminal, set up a new world's record for coal dumpings April 20, when it loaded 11,875 gross tons of coal on the steamer "Lemuel Burrows" in 2 hours and 55 minutes. The pier trims automatically. This achievement surpasses the performance at the Curtis Bay pier of the Baltimore & Ohio Ry., at Baltimore, on April 13, when 11,353 tons was dumped in the "Lemuel Burrows" in 3 hours and 1 minute, which did not include time for trimming. On March 7 the Sewalls Point pier dumped 11,953 tons of coal in an ocean-going vessel in 3 hours flat. Only two conveyor cars were used in each operation.

New South Wales Coal Output High in 1925

New South Wales, Australia, produced 11,396,199 gross tons of coal, valued at the pitmouth at £9,302,515, in 1925. Production in other parts of Australia approximated 2,000,000 tons. The highest output of New South Wales was in 1924, when 11,612,216 tons, valued at £9,589,547, was raised.

Sealed proposals will be opened by the Supt. of Lighthouses, Portland, Me., at 2 p.m., May 17, 1926, for furnishing anthracite chestnut, f.o.b. mines or tidewater Portland, Me. Information upon application.

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Foreign Market And Export News

Rising Demand for Coal Reopens Many Welsh Pits; Buyers Increase Reserves

London, England, April 13.—The Welsh steam-coal market is in a very strong position, though business has not yet quite settled down after the Easter holidays. The better arrival of shipping has served to clear off accumulations at the collieries, and ships are now waiting for cargoes. Many of the pits that had been closed down for some months have reopened and in many cases additional men have been taken on at the collieries. Nothwithstanding these facts, the collieries are well booked for the early part of May, and very little coal is going at the ruling prices at present.

Many buyers are accumulating stocks, especially the public utilities, and many of the railroads are increasing their normal three-months' supply of coal. The pressure on the collieries resulting from the tendency of domestic and foreign buyers to stock coal will, of course, be compensated for later when the collieries must slow up on deliveries. In addition to this, some business has been lost owing to heavy contracts placed for American and German coal for delivery over the next six months.

The Newcastle market reflects the Welsh improvement, though to a lesser degree. Most of the collieries have sufficient business on hand for the present, but the outlook for the future is uncertain. The best business is in gas coals, many of the European gas plants still coming to Durham for their fuel, in spite of German competition.

Output by British collieries during the week ended April 10, according to a special cable to *Coal Age*, totaled 3,696,300 gross tons, compared with 4,633,400 tons the preceding week.

Coal exports during March totaled 4,702,536 gross tons, as compared with 4,340,006 tons in February and 4,148,042 in January. The volume of exports for the first three months exceeds that of last year, but the value is nearly £2,000,000 less. The per ton value of exports during the first quarter of last year was 21s. 1d., against 18s. 3d. this year.

Belgian Market Unsettled

Easter holidays and fluctuating exchange rates have further upset the Belgian coal market, reports Brussels under date of April 15. In the domestic trade anthracite alone holds firm. Stocks of other domestic fuels are increasing and prices are wavering. In many cases official quotations have been cut 10 fr. per ton.

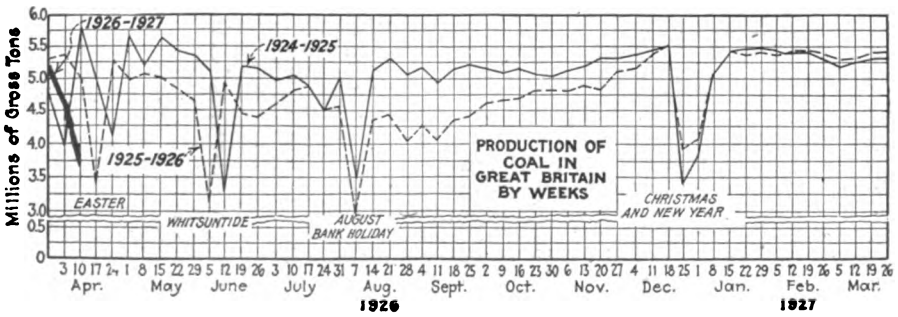
Industrial coals maintain their position. Semi-bituminous raw smalls are ordinarily quoted at 75 fr.; semi-washed smalls, 87 fr.; lean smalls, 66 fr.; washed duffs, 76 fr.; lean washed duffs, 55 fr.; lean raw duffs, 38 fr.; semi-bituminous peas, 105 fr.; lean peas, 95 fr.; coking smalls, 85 fr.; briquets, 112.50 fr. Except in the case of briquets, which show an advance of 7.50 fr., these prices are the same as those prevailing on March 1. Special grades of briquets are up as much as 20 fr.

Agreement finally has been reached on prices for fuel supplied to the Belgian State Rys. For the first quarter of 1926 and for April the prices on smalls with an ash content of 12 per cent have been fixed at 84@88 fr., according to classes. Briquets have been fixed at 100 fr. for the first quarter and 110 fr. for April.

Taxes Boost Quotations on French Coal Offerings

Paris, France, April 15.—The end of the Easter holidays finds the French coal market showing no material change. Industrial demand continues on a satisfactory basis. Domestic business reveals a normal seasonal inactivity. Rail transportation from the Nord and Pas-de-Calais fields is more regular and a good tonnage is moving via the canal routes.

To offset increased taxes, French producers have raised prices 0.70 fr. Imported coals are subject to the same advance. In addition, import duties recently were increased 30 per cent. On coal this is equivalent to 0.36 fr. per ton. On top of all this, the French railways have asked permission to increase their rates from 330 to 355 per cent of the prewar basis. If this is granted, rates to Paris from the Pas-de-Calais field and from the Belgian frontier will go up 2.25 fr.



During March the O. H. S. received 509,400 metric tons of coal, 298,900 tons of coke and 32,700 tons of lignite briquets from the Ruhr. Receipts of reparation coke by the O. R. C. A. for the first twelve days of April totaled 98,029 tons.

In February the French mines produced 4,088,172 metric tons of coal and lignite. The country imported 1,064,764 tons and exported 418,776 tons. Consumption for the month, excluding Saar imports and stocks as of Jan. 31, approximated 5,274,160 tons. The French mines also coked enough coal to make 277,967 tons of coke. Imports were 448,251 tons, and exports, 52,905 tons. These coke figures are exclusive of coke produced by the steel industry and merchant ovens not affiliated with the collieries. Patent fuel output by the mines totaled 330,568 tons; imports, 140,102 tons; exports, 29,231 tons.

Export Clearances, Week Ended April 22

FROM HAMPTON ROADS

	Tons
For Cuba:	
Amer. Str. Glendora, for Guantanamo	2,986
Nor. Str. Bratland, for Havana	2,910
For Canada:	
Amer. Str. Aetna, for Montreal	2,411
Amer. Str. Oscar J. Lingeman, for Montreal	2,113
Nor. Str. William Blumer, for Quebec	5,735
Br. Str. Lairg, for Quebec	3,492
Br. Str. Warkworth, for Montreal	7,214
For Brazil:	
Ger. Str. Neuwark, for Rio de Janeiro	5,429
Br. Str. Haggersgate, for Rio de Janeiro	7,803
Br. Str. Mistley Hall, for Pernambuco	6,117
For Miquelon:	
Nor. Str. Laly, for St. Pierre	1,594
For Jamaica:	
Dan. Str. Niels R. Finsen, for Kingston	2,662
Br. Str. Sheaf Field, for Kingston	3,595

Hampton Roads Coal Dumpings*

(In Gross Tons)

	Apr. 15	Apr. 22
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week	128,020	124,837
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	86,978	89,821
C. & O. Piers, Newport News:		
Tons dumped for week	124,063	139,041

*Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS

	April 17	April 24†
Pool 1, New York	$5.50@$5.75	$5.50@$5.75
Pool 9, New York	5.10@ 5.25	*5.05@ 5.25*
Pool 10, New York	4.75@ 5.00	4.75@ 5.00
Pool 11, New York	4.50@ 4.75	4.50@ 4.75
Pool 9, Philadelphia	5.10@ 5.40	5.10@ 5.40
Pool 10, Philadelphia	4.80@ 5.15	4.80@ 5.15
Pool 11, Philadelphia	4.25@ 4.50	4.25@ 4.50
Pool 1, Hamp. Roads	4.35@ 4.40	*4.25*
Pool 2, Hamp. Roads	4.10@ 4.15	*4.05*
Pool 3, Hamp. Roads	3.90@ 4.15	*3.90@ 4.00*
Pools 5-6-7, Hamp. Rds.	3.90@ 4.00	*3.90*

BUNKERS

Pool 1, New York	$5.75@$6.00	$5.75@$6.00
Pool 9, New York	5.35@ 5.50	*5.30@ 5.60*
Pool 10, New York	5.00@ 5.25	5.00@ 5.25
Pool 11, New York	4.75@ 5.00	4.75@ 5.00
Pool 9, Philadelphia	5.35@ 5.65	5.35@ 5.65
Pool 10, Philadelphia	5.05@ 5.40	5.05@ 5.40
Pool 11, Philadelphia	4.50@ 5.75	4.50@ 5.75
Pool 1, Hamp. Roads	4.40	*4.35*
Pool 2, Hamp. Roads	4.15	4.15
Pools 5-6-7, Hamp. Rds.	4.00	4.00

Current Quotations, British Coal, f.o.b. Port, Gross Tons

Quotations by Cable to *Coal Age*

Card ff:	Apr 1 17	Apr 1 24†
Admiralty, large	25s.6d.	**26s.6d.**
Steam smalls	16s.6d.	**17s.@18s.**
Newcastle:		
Best steams	17s.	*18s.6d.*
Best gas	20s.6d.@22s.	*20s.*
Best bunkers	17s.6d.	17s.6d.

† Advances over previous week shown in **heavy** type; declines in *italics*.

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Coming Meetings

Chamber of Commerce of the United States. United States Chamber of Commerce Bldg., Washington, D. C., May 10-13.

Chemical Equipment and Process Engineering Exposition, under the auspices of the Association of Chemical Equipment Manufacturers, Inc., at the Public Hall, Cleveland, Ohio, May 10-15. Secretary, Roberts Everett, 1328 Broadway, New York City.

Mine Inspectors' Institute of America. Annual meeting, Seventh Avenue Hotel, Pittsburgh, Pa., May 11-13. Secretary, G. B. Butterfield, Hartford, Conn.

International Railway Fuel Association. Hotel Sherman, Chicago, Ill., May 11-14. Secretary, J. B. Hutchinson, Omaha, Neb.

National Retail Coal Merchants' Association. New Willard Hotel, Washington, D. C., May 17-19. Resident vice-president, Joseph E. O'Toole, Transportation Bldg., Washington, D. C.

The American Mining Congress. Annual Exposition of Coal Mining Equipment, May 24-28, at Cincinnati, Ohio, with operating conference. Assistant secretary, E. R. Coombes, Washington, D. C.

International Geological Congress. Fourteenth congress, Madrid, Spain, May 24, 1926. Secretary, E. Dupuy de Lome, Plaza de los Mostenses, 2, Madrid, Spain.

Midwest Retail Coal Merchants Association. Annual meeting, May 25 and 26, at Kansas City, Mo. Secretary, James P. Andriano, St. Joseph, Mo.

Pennsylvania Retail Coal Merchants' Association. Annual meeting, York, Pa., May 27 and 28. Secretary, W. M. Bertolet, Reading, Pa.

Western Canada Fuel Association. Annual meeting at Winnipeg, Manitoba, Can., May 27 and 28. Secretary, W. H. Morrison, Winnipeg.

West Virginia Coal Mining Institute. Annual meeting, June 1-2, Bluefield, W. Va. (tentative). Secretary, R. E. Sherwood, Charleston, W. Va.

American Wholesale Coal Association. Annual meeting at Toledo, Ohio, June 7-9. Treasurer, R. B. Starek, Union Fuel Bldg., Chicago, Ill.

Association of Iron & Steel Electrical Engineers. Exposition and convention at Hotel Sherman, Chicago, Ill., June 7-10. Secretary, J. F. Kelly, 1007 Empire Bldg., Pittsburgh, Pa.

National Coal Association, June 9-11, at Drake Hotel, Chicago, Ill. Executive secretary, Harry L. Gandy, Southern Bldg., Washington, D. C.

American Institute of Electrical Engineers. Annual convention, White Sulphur Springs, W. Va., June 21-25. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

Illinois Mining Institute. Annual summer meeting on steamer "Cape Girardeau," leaving St. Louis, Mo., June 24 and returning June 26. Secretary, Frank F. Tirre, Central National Bank Bldg., St. Louis, Mo.

New Equipment

This Pipe Joint Will Tighten As Pressure Rises

A flexible joint for use in connection with steel, wrought-iron, or cast-iron pipe is being manufactured by the Victaulic Co. of America, 26 Broadway, New York, N. Y. The joint is adaptable to plain-end piping that has a small groove near the ends. The groove is about the depth of the ordinary screw thread.

The joint consists of a sectional housing clamped around the intersection of the pipe. Inside of the housing is a hollow inner ring. This ring seals the joint without pressure from the housing. The housing holds the inner ring in place, engaging in grooves in the pipe. An increase in pressure from the inside is said to add to the tightness and to the sealing qualities of the ring. An angle of 5 deg. on either side of the horizontal can be obtained by means of the joint.

It can be used on a vacuum or on a pressure up to 1,000 lb. It is claimed that lines equipped with the joints have been used over a period of five years for carrying oil, gas and water. The joints can be used on pipe lines where the temperature is not greater than 175 deg. F. Piping adapted for the joints is said to be now stocked in pipe mills.

Saws Six Times as Fast as A Man Can Saw by Hand

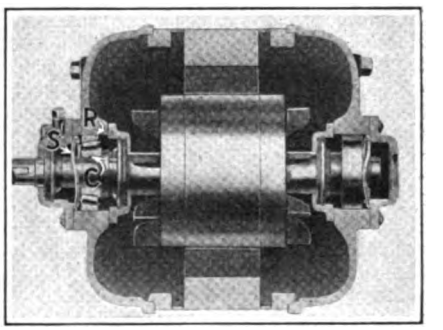
An electrically-driven, hand-guided wood-cutting device known as the Skilsaw has been developed and is now being marketed by the Michel Electric Hand Saw Co., 3814 Ravenswood Ave., Chicago, Ill. This device is a combination in one machine of an 8-in. circular saw and a ½-hp. universal motor, each the product of a well-known manufacturer. The saw may be set to cut to any depth from nothing up to 2⅜ in. The tool complete weighs 19 lb. and consequently is readily portable.

This machine is now being used in no less than forty-three different businesses. About the mines it will prove particularly useful in car building as well as in construction and repair work. It is approximately six times as rapid as fast hand cutting. Unlike a hand saw, however, it can be adjusted to cut to an exact depth. Thus for instance, it can be so set as to just cut through a floor without touching the concrete beneath or nicking the joists.

Day by day we are finding more and more ways of relieving human muscles of the work that it was once thought they alone could perform. The power hand saw is one of the latest steps in this direction. It is doubtless destined to receive wide adoption in many arts and trades. The building and repair of mine cars as well as the performance of other construction and maintenance work about the mines will be among these applications.

These Motor Bearings Keep Themselves in Center

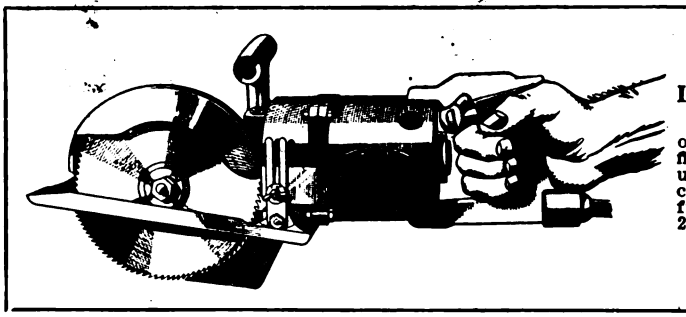
It is said that 95 per cent of all motor troubles may be traced to the bearings. Many of them are the result of the bearings wearing to such a degree as to allow the rotor to rub on the stator. In order to insure a continuous uniform air gap in motors, the Howell Electric Motors Co., Howell, Mich., has brought out a line of motors with anti-friction bearings, in which



Cross-Section of Motor Showing Bearings

Spring ring automatically takes up wear by its pressure on the tapered bearings. Consequently the rotor does not lose center nor rub against the stator.

any looseness in the bearing, caused by wear or otherwise, is automatically adjusted so as to keep the rotor centered and thus maintain a uniform air gap. This is accomplished, as shown in the figure, by the use of a Timken tapered roller bearing, shimmed with a fluted wire spring, which acts as a compression member.



Let Power Do It

This saw, weighs only 19 lb. and is fitted with a ½-hp. universal motor. It cuts to a depth of from nothing up to 2⅜ in.

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The inner race or cone *C* of the bearing is fitted on the shaft with a light press fit. The outer race *R* is fitted into the bearing housing with a sucking fit that allows creeping of the outer race. The spring *S* is held tightly against this outer race by the grease cap pushing the race against the rollers and keeping the bearings tight at all times. This type of bearing is put in each end of the motor and keeps the rotor automatically centered, and the bearing does not need to be adjusted for wear or any other looseness. The spring allows for any lateral expansion of the shaft that might occur due to heat.

These bearings are arranged for grease lubrication, and effective seals are used to keep the grease in and to keep out foreign matter, such as dust, dirt or abrasives. The motors can be mounted in any position without changing the end bells. They will operate in any vertical position as well as horizontal, as these bearings have a thrust capacity equal to their radial capacity.

General-Purpose Shovel Of Medium Size

A 3-cu.yd. revolving shovel for general use has been developed by the Bucyrus Company, of South Milwaukee, Wis., recently. It is said to represent a new departure in that it is built along lines never before used in general-utility shovels. In design it follows the basic plan developed by the company in building the 120-B, a 4-cu.yd. mine-and-quarry full-revolving shovel announced last year. In principle it offers a machine that combines the advantages of a small revolving shovel with those of the railroad-type shovel, but has a working range considerably greater than either. The makers claim that it has the speed of action, big dipper capacity, ruggedness, and power of the railroad-type shovel, with the mobility, the full-revolving swing, and the maneuvering ability of the small revolving shovel. It is remarkedly close-coupled, the boom length being only 29 ft. 6 in. and the rear-end radius 16 ft. Throughout, the clearances have been held within close limits.



Shovel Combines Features of Railroad and Smaller Types

The railroad shovel is speedy, has large capacity, is rugged and powerful. The small shovel is readily manoeuvered. This equipment is of intermediate size and lays claim to the advantages of both.

Clamp Holds Both Trolley and Feeder Lines

Simplicity, safety and economy in the support of auxiliary feeder wire in the mines is afforded by the new Sure-Grip combination clamp, shown in the accompanying illustration and made by the Electric Railway Equipment Co., of Cincinnati, Ohio. This improved trolley-feeder clamp was designed in order that both trolley wire and feeder could be supported from one insulated support, thus elminating the need for feeder taps or jumpers. The advantages of combining the trolley and feeder-wire support in one device are many.

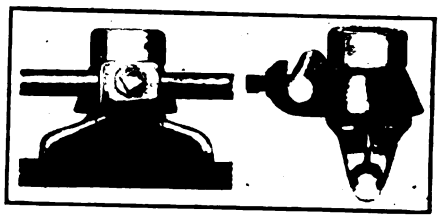
In most mines some of the haulage locomotives in use require more current than a 4/0 trolley wire will carry without an excessive drop in voltage. To overcome this difficulty it has been customary to run feeder wire along the "rib" of the main entry connecting it to the trolley at intervals by means of "jumpers." This arrangement entails the purchase of extra insulated supports, the expense of installing a separate feeder together with the necessary jumpers as well as the extra maintenance of a separate line.

The tendency always has been to use entirely too few taps between the feeder and the trolley wire, with a resulting increased voltage on the trolley line. This combination clamp eliminates all need for such taps.

Balanced Voltage Assured

In this new device the lug that supports the feeder wire is made a part of the compression ring of the well-known Sure-Grip trolley clamp. This entirely does away with all supports for the feeder as well as with the maintenance of two separate lines. In addition it insures balanced voltage in both feeder and trolley wires, as each supporting clamp gives a good electrical contact and dispenses with all tap connections. The greatest point of merit in this device, however, is the fact that the trolley wire and feeder are clamped independently of each other making it possible to draw up the "slack" in either without disturbing the other.

A break in the trolley wire does not cut off current beyond the point of rupture. If the current requirements of the mine are such that only the carrying capacity of the trolley wire is required during the first few months of operation, it is necessary only to install this wire in the combination clamp. The feeder wire may then be placed in position at any future date without in any way disturbing the original anchorages of the trolley line.



Holds Both Trolley and Feeder

Any size or shape of trolley wire and any size of feeder up to 4/0 may be installed in this clamp. Slack in either conductor can be taken up without disturbing the other.

Another advantage lies in the fact that the feeder wire is not carried directly over the trolley but either to the right or left of it as conditions may require. Thus "slack" in the feeder wire does not interfere with the operation of the trolley wheel. The set screw in the new clamp provides the means of mechanically fastening the feeder wire in position and also insures good electrical contact between it and the trolley clamp.

Still another advantage is the fact that it is possible to place the feeder wire in position in the supporting lug through its open top. This makes it unnecessary to disturb the clamping arrangement of the original trolley support and also removes the necessity of "threading" the wire through the supporting member.

The design of this clamp is such that the jaws gripping the trolley wire will accommodate all sizes of either figure-eight or grooved trolley wire from 0 to 4/0. The feeder lug will accommodate all capacities of either stranded or solid wire up to the 4/0 size. The complete clamp is only slightly higher in price than the standard type without the feeder support and the compression ring. The feeder lug may be supplied in either malleable iron or bronze.

Installation of this type of clamp will in any mine go far toward reducing the cost of coal haulage. The fact that the line loss is reduced exactly one half, insures much better performance for the haulage locomotive with a consequent saving in armature and controller repairs.

New Companies

The Liddle & Jones Coal Co. has been incorporated in Grand Junction Colo., with a capital stock of $50,000, by William Liddle, R. N. Jones and S. G. McMullin.

The Monroe Coal Co., Greenville, Ky., capital $25,000, has been chartered by Henry B. Lee, George T. Collamore and O. S. Roberts.

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MAY 7 1926

How Warden Mine Takes Care of Its Rock, Page 629

652

COAL AGE

The World's Accepted Authority on Coal Mining

McGraw-Hill Publishing Company, Inc. May 6, 1926 Price Twenty Cents per Copy

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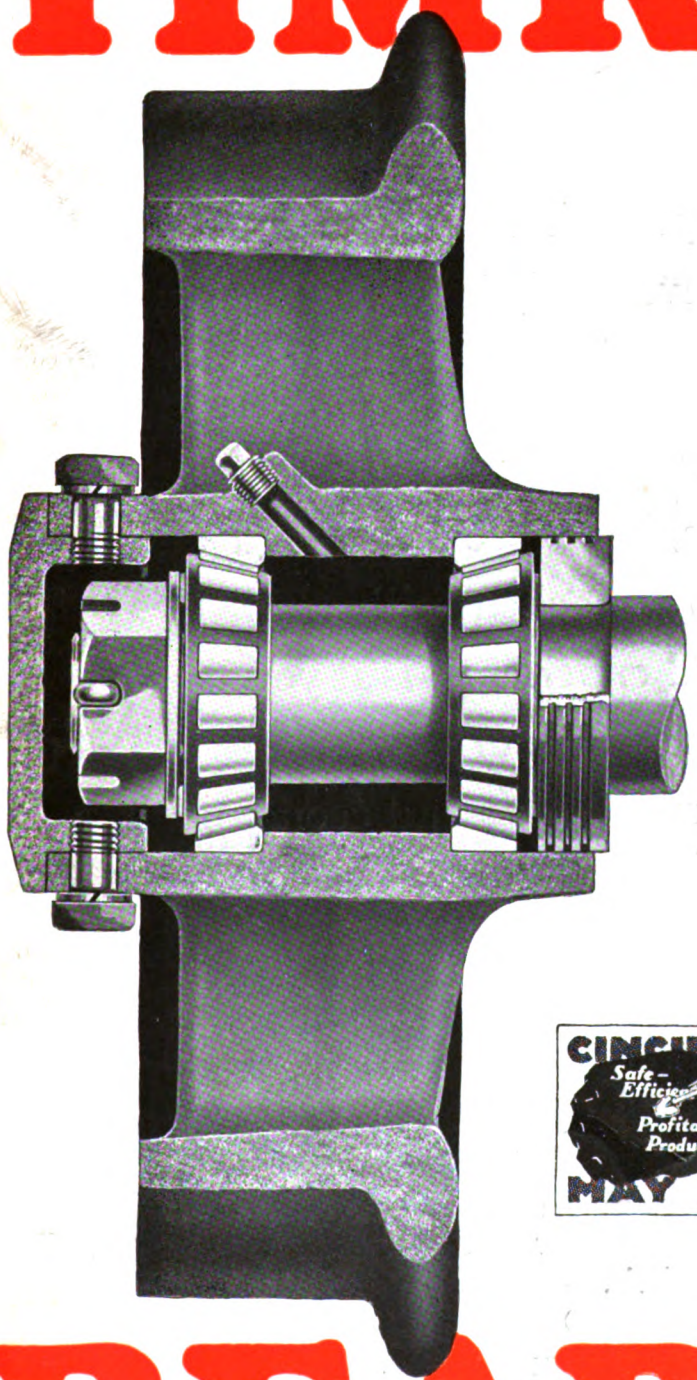

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 29 — New York, May 6, 1926 — *Number* 18

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COAL AGE

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With which is consolidated "The Colliery Engineer" and "Mines and Minerals"
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Warden Mine Installs Aerial Tramway to Dump Four Hundred Tons of Refuse Daily 629

Keeps Dirt in the Mine and Only Coal in the Payroll 631
BY J. H. EDWARDS.

Smokeless Coals of West Virginia 633
BY DAVID B. REGER.

General Strike On in Great Britain When Coal Negotiations Break Down 642

Relief from Legislative Shackles Chief Need of Coal, Say Spokesmen 643

Missouri Has Seventy-Nine Billions of Tons of Coal 632
Large Quantities of Water Enter Mines 637
Tar Is Being Coked in Beehive Ovens 637
Pittsburgh Institute Seeks Light on Two Questions of Safety 638
Pittsburgh Open-Shop Output Tops Union for First Time 642
Many Illinois Operators Now Handling Non-Union Coal 645
Paisley's Boyd Mine Resumes on Non-Union Basis 645
House Committee Hopes to Report Constitutional Fact-Finding Bill 646
38 Indiana Miners Jailed or Fined for Rioting 646
Mining Engineer Hammond Banqueted 646
Cassidy Mine Ordered Closed 647
Gay Mine Gas First Fatality in History 647
Miners Strike Over Wage Cut 648
Germany Resuming Old Place in Export Market 649

Editorials 627
Practical Pointers 640
Traffic 549
News Items from Field and Trade 650
Weekly Review and the Market 653
Foreign Market and Export News 658
New Equipment 659

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New McGraw-Hill Publication

To complete the service now rendered to the engineering-construction field by *Engineering News-Record*, the McGraw-Hill Publishing Co., Inc., has acquired the magazine *Successful Methods*, which will be published monthly to serve the men who are concerned from the practical operating point of view with construction methods and plant and with certain industrial activities that involve the same methods and equipment. Profuse pictorial treatment of general construction and material-handling plant will be a feature of the publication. The first issue of *Successful Methods* under the new management will appear in June.

Scans Field for Your Advantage

The attention of *Coal Age* readers is directed to a notice appearing on pages 36 and 37 of this issue's advertising section. *Coal Age* is one of a large family of technical and industrial publications from which inspiration and counsel are taken in preparing a paper that meets your needs. Editors are continually coming and going and so getting in touch with developments that concern the progress of our industry. As there are 125 of them with 542 special news correspondents, and as the editors travel some 700,000 miles yearly, prepare 23,000 editorial pages and keep in touch with their 220,000 subscribers, the office of the McGraw-Hill Publishing Co. is a center of advance information, hardly to be excelled anywhere. It is in touch with national and world events. It is responsive to scientific and business progress. It cannot fail to be cognizant of the latest in the immediate present and sense the tracks that lead like high roads to the future.

Vision that is worthy the name is not all inward. It is based on knowledge of the past and the present. Having such contacts with all that passes north, south, east and west, *Coal Age* and its sister publications cannot fail to have the vision that is demanded of leading publications.

Advertising Index—Alphabetical, 62; Classified, 59; Consulting Engineers, 57; Searchlight Section, 54 and 56

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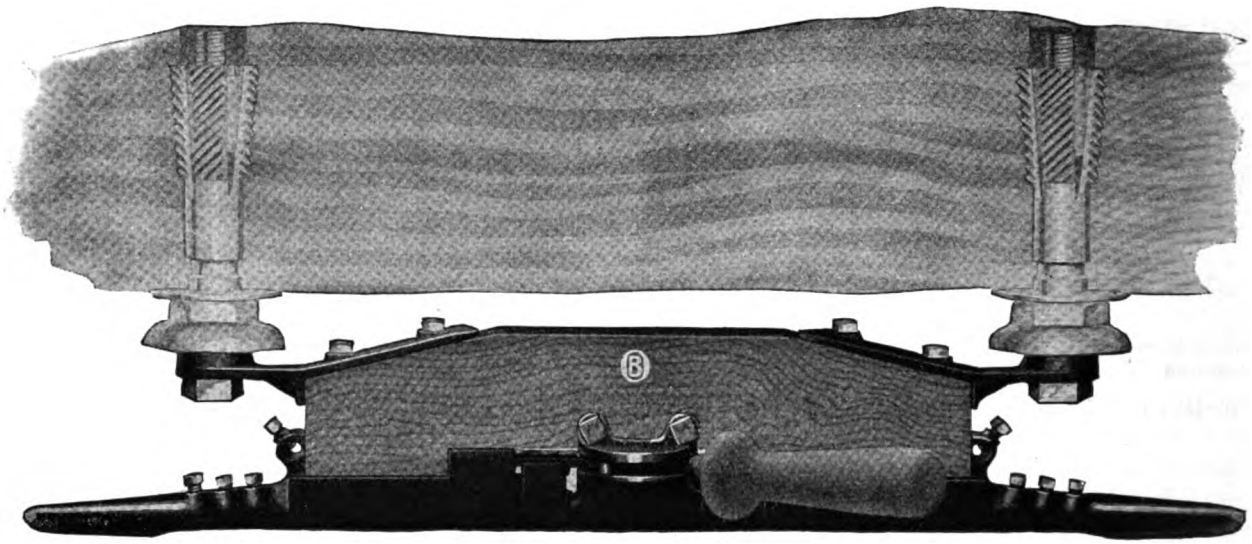

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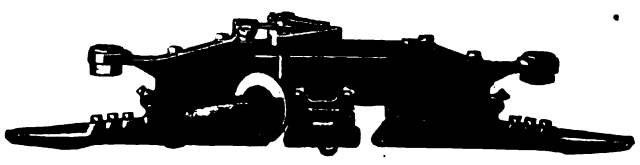

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Underground the result of good lighting is just the same. Put on O-B Type MS Incandescent Headlight, 94 watt lamp, on your mine locomotive if you want to insure safer operation and also speed up the production. It's a good investment from the maintenance standpoint, too, because steel construction makes this lamp indestructible.

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COAL AGE

McGRAW-HILL PUBLISHING COMPANY, INC.
JAMES H. McGRAW, *President*
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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 29 NEW YORK, MAY 6, 1926 Number 18

Strike in Great Britain

AT LAST THE PEOPLE of Great Britain face the general strike so long threatened and so much discussed. Sympathy with the miners will doubtless be quite general in the United States. They are not paid any wonderful wages though they are well in line with those paid other wage earners in Great Britain. Compared with our own workmen, they are underpaid, and their wages would be still lower if the owners of the mines had reduced them in a degree necessary to meet competition.

But it is easy to discuss wages in a vacuum. It must be remembered that Great Britain is in Europe and must compete with Europe, that her beds of coal are in many places quite thin and in most places, as she would say, quite "fiery." The roof is bad and the danger of spontaneous combustion, especially in one thick seam, is such that the need for close stowing of rubbish adds greatly to cost. The objection to the use of trolley locomotives has also hampered production.

When men produce less than one ton per man per day, when they have to compete with others having low wages and have to supply coal to industries which, in turn, have to meet the competition of those in other countries which buy their coal from operators paying low wages, what can be done to keep the wage scale up to American levels?

The large mass of workmen who are taking part in the general strike doubtless feel they have a right to combine. The public of Great Britain believes also that it has the right to enter into a combination as against the first group. No one knows what such an action as this might effect. The first group declines to serve the second group, and the second group may refuse to serve the first, and without going into details, it may be surmised that the first group may find the reaction to its attack on the second group extremely disastrous. There is something ominous in the words "Organization for the Maintenance of Supplies." The idea was not intended doubtless to be menacing, but what may not happen if the second group, which has the road transport facilities in its hands, decides to maintain supplies for its own advantage solely.

Growing Old

TOO MUCH HAS BEEN SAID by the critics of the coal industry as to its archaic methods. It is indeed not up to date. No industries are. If they could be, they would be obsolete tomorrow. Progress is a matter of tearing down and building up, rejecting old equipment and buying new. Most industries are none too active in thus cleaning house and wiping out equipment that has ceased to have value. A big mine takes about five years to construct and about twenty, thirty or forty to exhaust.

It would be a slow industry that would not develop in the quinquennium some new method of operation, and in the longer periods many developments may take place. Perhaps the appropriate change in methods can and will be effected, but if the revision is large and requires ruthless scrapping of recently purchased equipment or of recently constructed development the change may not be made.

In all industries the trouble is that we do not recognize "obsolescence." It is not carried on the books like depletion and depreciation. The United States Steel Corporation is quite aggressive in keeping its plants up to the minute. The authorities term this "plowing in profits." Recently it has been questioned whether that is a correct term. Is it not rather correcting obsolescence? Certain it is, that unless the mining man is to spend money steadily to bring equipment to date he is going to fall behind in competing with new plants which have newness and nearness to the shaft to give them the jump on the older developments. At one plant eight-mile hauls are necessary to get coal to the surface. To cope with such a handicap there is no solution other than that afforded by an extreme in efficiency; yet the old mine, built as a leader some decades back, cannot be abandoned. Can it renew its youth after so many years? Unless it does, it cannot hope to be in the running.

Let us be in all things fair. Are there not in Washington inefficiencies and buildings out of date? Is the ancient Patent Office and the furbelowed Treasury Building up to the minute? Is the firetrap Printing Office even permissibly suitable to its purpose? Washington dreams not only for a better coal industry but for itself better departmental conveniences and better organization of its own many establishments. The practice of all of us falls ever measurably below our standards of practice and our dreams of possible performance.

A Word to the Farmers

SUCH DISTRESS has come to the farmers that the National Industrial Conference is appealing to the public to do something wise and constructive to put this large population on its feet. The case the Conference makes is excellent. If the farmers were making more money they would be better buyers and so help industry in general. In particular they might well consume more coal. Many farmers heat their houses only in spots by the use of stoves rather than throughout by the aid of furnaces and as they use little fuel can afford in their idle moments to split wood for their needs and so do without coal altogether. Give them somewhat larger profits, and the stove would give way to the furnace as it has already done in many places.

The farmer has suffered from a shrinkage in land values that has jeopardized all his investments and in some cases broken the banks from which he has borrowed, in which he has invested or by which his loans

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have been carried. But coal lands have also shrunk in value. In some cases the prices quoted may be little lower than they have been, but the lands have no sale, and if they were sold they would have to be sacrificed. An owner advertised recently a piece of land in the Elkhorn district with virgin timber, four seams of good coking coal with oil and gas. He will sell it for $35 an acre.

Farmers in Iowa, with land at $150 to $275 which used to range about $400 an acre, sell your corn lands and buy for $35 an acre lands underlaid with four far-famed seams of coal! You have heard that the coal barons have fleeced you for generations. Now is your chance to free yourselves from dependence upon them and make an easy fortune. Why hesitate? You have assurances from all quarters that farming is ill-paid and coal mining highly profitable. As coal lands can be bought cheaply why not retrieve your fortunes by a shift in business? Or does the price itself make you wonder if what you have heard has been a tale without substance.

Friendly Counsel

NOBODY CAN ACCUSE the New England retail coal merchants of unfriendliness toward the anthracite industry. When those dealers in convention assembled express regret that the producers made no reduction in prices on April 1 and couple that expression with a plea to the operators to maintain standards of preparation, the opinions thus mildly voiced carry more weight than stern censure from sources less closely allied with the hard-coal industry. The retail distributor is the real contact man between the producers and the public. When he speaks, as in this case, he reflects not only his own feelings, but the reactions of the man who burns the coal.

Certain groups outside the trade have capitalized the failure of the operators to cut prices this spring in a way probably not contemplated or anticipated by the producers. It was a point strongly pressed by Congressional advocates of coal regulation, some of whom endeavored to read into this action a betrayal of the public trust reposed in the industry during the recent strike. That householders, too, resent the denial of their expectations was evident in the discussion which preceded the adoption of the resolution of regret by the New England retail association.

Possibly if the industry could have foreseen how its policy was to be interpreted, a different action, or at least a full explanation of the reasons for the departure from tradition, might have resulted. To retreat now, however, would accomplish nothing but to make a bad situation much worse. Even belated explanation of the reasons back of the change in policy probably would increase instead of diminish criticism and antagonism.

The question of prices is debatable. The same thing cannot be said of preparation. Good faith and sound merchandising alike obligate the producers to maintain as a minimum the standards which they themselves fixed. Any change made should be in the direction of more exacting standards, and a change in that direction should not be postponed too long. Preparation which falls below the existing standards ought not to be countenanced. Nevertheless, since the strike ended some coal which did not measure up to grade and size has entered the channels of interstate commerce. Complaint against quality and sizing is still too common for the good of the industry. The discreet hint in the resolution of the New England Coal Dealers' Association will not be lost upon aggressive producers.

Visualizing the Problem

TO ANALYZE A PROBLEM correctly is a big step toward its solution. To visualize that analysis and to make the major points stand out so that remedies or corrective measures suggest themselves is a short cut to a prompt and effective solution.

A better aid to effective management than graphic charts would be hard to find. They are easy to construct once the required data are at hand. We are all interested in peak loads and demand charges. If we knew the nature and character of the load, which the demand meter does not show, and the time of the occurrence of peaks we can switch the units around until we approach as near as possible to a straight line which would be 100-per-cent load factor.

Tabulated data are hard to analyze. Take the same data and chart it, and we have a picture of the entire structure, whether it be mining, organization or the power system.

Graphic load-distribution charts are not difficult to construct and they analyze the load and its character which a graphic recording demand meter does not do, the graphic recording meter merely showing the peak demand and the time of its occurrence. One of these completed charts would suggest many switches in loads from the day to the night.

Interest in lowering peaks increases as the changes are effective. Much can be done if further studies are made. For instance, sumpage arrangements may be made to handle sixteen hours' storage and pump only at night. Thus it may be possible to take many horsepower off the day load and switch it to the night load. Using purchased power this would be a large saving, and even under company-generated power it would be well worth while.

Cheaper to Wash Out Refuse Than to Gob It

IT HAS LONG been the practice at coal mines to separate the gob from the coal within the mines and not allow it to reach the light of day. This separation is necessarily made by hand and consumes much time. As a result it was correspondingly expensive.

Where sufficient room is available on the surface for the disposal of gob or where this refuse is flushed back into the mine for roof support, improved methods of washing render it profitable for the coal companies to bring out and treat a far larger percentage of rock than was formerly possible from a commercial standpoint. Thus where binders of such consistency that they may be passed through the rolls are encountered, these impurities may be loaded, brought to the surface, crushed and then washed or floated out of the mine product at less expense than this refuse can be picked from the coal and gobbed within the mine.

Conditions in this regard, however, differ widely. An article this week shows the practice of the Woodward Iron Co., that finds it more profitable to leave the dirt in the mine than to haul it a long way underground, to hoist it, to dump it, to haul it to the washer, to wash it and then to haul the washer reject to the dump for disposal.

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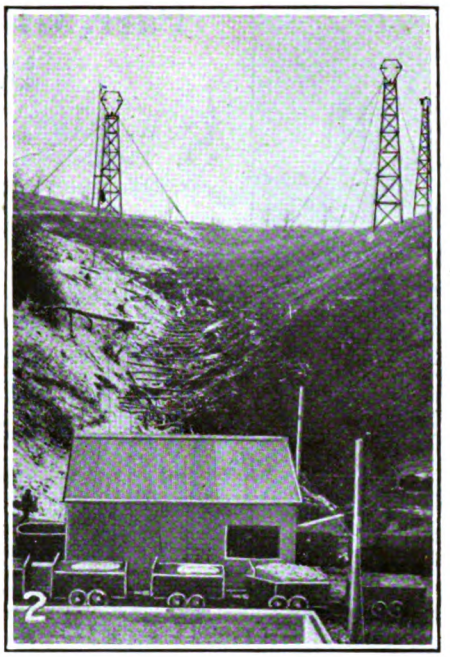

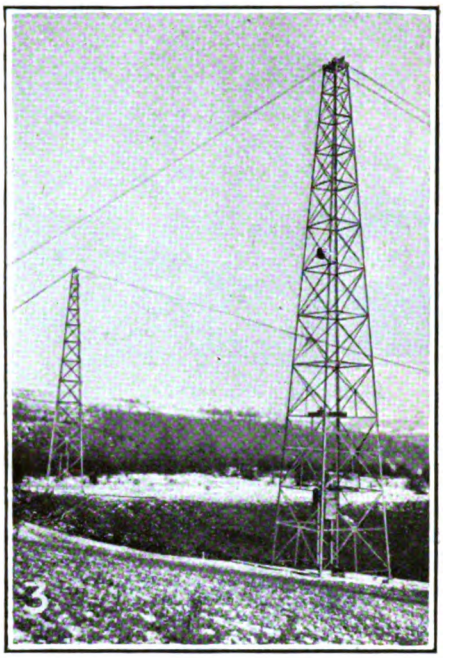

Warden Mine Installs Aerial Tramway to Dump Four Hundred Tons of Refuse Daily

Rock and Picking Table Reject Fall Into Steel Bin and Is Loaded Alternately Into One of Two 2-ton Cars Which Carry It Out on a Leg of the Triangular Tramway System

A STRIKING example of the awakening of coal operators to the necessity of modernizing their equipment is afforded by the new Warden mine, of the Pittsburgh Coal Co. located at McAdams, Pa. From first to last, the thought behind this plant has been to obtain a layout that will provide a maximum output at lowest unit cost.

One of the most difficult problems facing the designing engineers was that of handling and disposing of the slate and refuse. The site chosen for the tipple was in a long and comparatively narrow valley with high hills on both sides. The railroad tracks, storage tracks and public highway practically fill the floor of the valley, the tipple structure itself extending from the base of the hill behind it, half way across the flat land adjacent to the stream. To find dumping room for refuse anywhere in the valley would be impractical, yet the coal company's engineers estimated there would be at least 400 tons of refuse produced daily when the mine reached its maximum production. With such a large quantity of material to be disposed of, it was necessary to find dumping area not only sufficient in size to take care of several years' refuse, but also near enough to the tipple to keep down handling costs. Behind the tipple, and at right angles with the valley is a break in the hillside forming a triangular shaped "draw" some 10 acres in extent. This was the only dumping area available. The sides of the "draw" widened as the distance from the tipple increased forming an area shaped like a half funnel with its mouth at the tipple, where it is not more than 50 ft. wide. The length of the funnel is about 800 ft. and the width across the far end about 600 ft.

In the headpiece Fig. 1 shows the tramway with the loading terminal in the foreground. Fig. 2 is a view looking up the "draw" from the tipple. This shows the spread of the tramway legs which is sufficient to enable the dump to cover the entire available spoiling area. Fig. 3 shows the tail towers with the counterweighted guide sheave for the haul rope. The height of the track cables above the ground indicates the possible height of the dump piles.

SLATE HAD TO BE LIFTED OUT OF VALLEY

As all slate brought from the mine as well as all refuse from the picking tables at the tipple were to be dumped into a bin below the level of the mine-car track, the task of raising the refuse to piles of any considerable height so as to obtain maximum advantage of the dumping area available, presented a difficult problem.

The slate-handling equipment was designed and constructed by the Interstate Equipment Corporation of New York. In general it consists of a two-car type of aerial tramway, an unusual feature however, being the placing of the outer terminals, or tail towers, approximately 360 ft. apart measured horizontally, giving, in effect, tramways with a common loading point located below the slate bin at the tipple. This arrangement utilized practically the entire available area for dumping purposes.

In plan, the tramway layout forms a triangle, each leg being approximately 800 ft. long with the base, or distance between tail towers, 360 ft. in length. The angle between the two legs of the tramway at the loading terminal is approximately 24 deg. A single four-wheeled car of 2-ton capacity rides on fixed track cables between the loading terminal and tail tower on each leg of the tramway.

The cars are attached to an endless haul rope which passes over a drive wheel at the loading terminal, then

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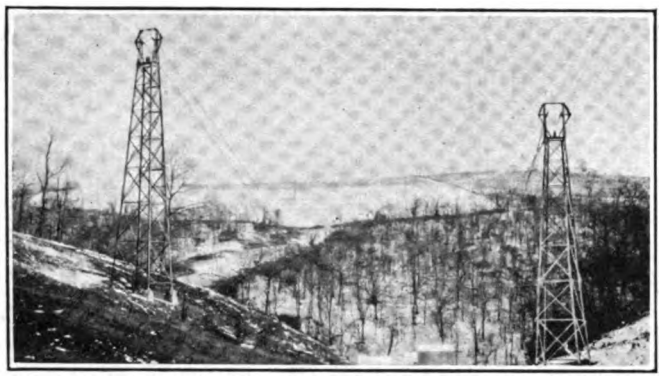

Fig. 4—Looking Down "Draw" from Tail Towers Toward the Warden Tipple

Shows how draw dips toward center line. Refuse piles will probably overlap at the bottom when the piles reach the full contemplated height.

along one leg of the tramway to the tail tower, down the tail tower to a counterweighted sheave, across to the second tail tower and back to the loading terminal. The cars are permanently fastened to the haul rope in such position that when a car is at the loading terminal of one leg, the other car is at the extreme length of travel of the opposing leg.

PILES TO BE ONE HUNDRED FEET HIGH

The ground level at the outer end of the tramway is about 100 ft. higher than at the loading terminal and to provide additional height for dumping the refuse, the tail towers were made 125 ft. high. Each leg of the tramway has one intermediate supporting tower located 300 ft. distant from the loading terminal. These towers are 75 ft. high thus giving a clear dumping space under each leg of the tramway approximately 500 ft. long where slate may be dumped in piles 100 ft. high.

The heights of the two intermediate supporting towers above the loading terminal cause each car to climb a grade of 35 deg. before reaching the dumping span, the incoming car on one leg of the tramway helping to offset the power pull necessary to raise the loaded car on the other. A 40-hp. electric motor located at the loading terminal furnishes the power. It is belt-connected to a countershaft which in turn is geared to the drive-wheel shaft.

ONE MAN HANDLES ENTIRE OPERATION

The tramway cars are loaded from a steel bin under the tipple through two undercut gates, each located over one leg of the tramway. The gate-opening mechanism and motor control is brought to a platform control station, so that one man easily controls the whole operation. No tripping device is required in the dumping span as each car has an integral opening mechanism which may be adjusted by the operator in a few seconds so as to cause either car to discharge its load at any desired point along the dumping spans. This solves a difficult problem as the slate dumps will probably catch fire and make it inconvenient or even dangerous for men to work on them.

This tramway was placed in operation early in January and, although the mine is not as yet producing much coal, the operating cost of the tramway evidently will not exceed 2c. per ton of slate handled, including power and labor. A similar installation to handle 1,100 tons of refuse daily is now being installed at the Montour No. 9 mine of the same company.

Parr, Given Chandler Medal, Discusses Coal

S. W. PARR, head of the division of industrial chemistry at the University of Illinois, inventor of a corrosion-resisting alloy known as illium, which serves as a substitute for platinum in the laboratory, and deviser of the Parr calorimeter, delivered on April 23, the Chandler address at Columbia University and was awarded the Chandler medal given by that body in recognition of outstanding achievement in chemical science. The address was entitled "The Constitution of Coal with Special Reference to Problems of Carbonization," the eighth of a series of lectures for which provision was made in 1910 by the establishment of the Charles Frederick Chandler Foundation in honor of that pioneer in the American Chemical industry.

Referring to his own researches Professor Parr declared that when coal was submitted to the extraction process using phenol as the solvent the resinic material was dissolved from the mass leaving the lignite material behind. This lignite residue would not coke but the resinic had the coking quality in high degree.

As a result of studies along this line it is revealed that coals, especially of the mid-continental area, are much more sensitive in their chemical characteristics to alteration than the coking coals of the eastern part of the United States, but by utilizing the information thus attained, it is possible to follow methods of procedure which will conserve these coking constituents, thus forming a coke of excellent density and strength. Studies of this type on the constitution of coal reveal the conditions which must be followed.

EXOTHERMIC HELP IN CARBONIZING

It may be said further that these conditions suggest what is known as the low-temperature type of procedure in preference to the higher temperatures of the standard coking process. It is further of interest to note that by observance of the conditions revealed by these studies it is possible to accomplish a low-temperature carbonization in a cross-sectional area of from 12 to 14 in. instead of the narrower section of 5 or 6 in. ordinarily assumed to be necessary. In this connection Professor Parr described the features of the retort and of the process for the carbonization of Illinois coals which have been developed over a considerable period of years by himself and his associates at the University of Illinois. The coke produced is smokeless and especially adapted to household appliances, and the byproducts are of special interest because of the fact that under the conditions prescribed a large yield of gas is obtained—from 4 to 4½ ft. per pound of coal. The other main by-product, the tar, is of interest because of its type, which has an established commercial value.

Two steps are involved in the process that Professor Parr described; in (1) the coal is given a preliminary heating to a point short of fusion and in (2) it is coked in a vertical shaft retort of narrow cross section heated externally to 1,100 to 1,300 deg. F. Professor Parr said that the exothermic reaction which took place after the preliminary heating would do little to coke the coal if the heat it supplied were available when the moisture was still present but coming as it did when the coal was unable to absorb heat without a rise of temperature it had an immense effect and aided the process of carbonization materially.

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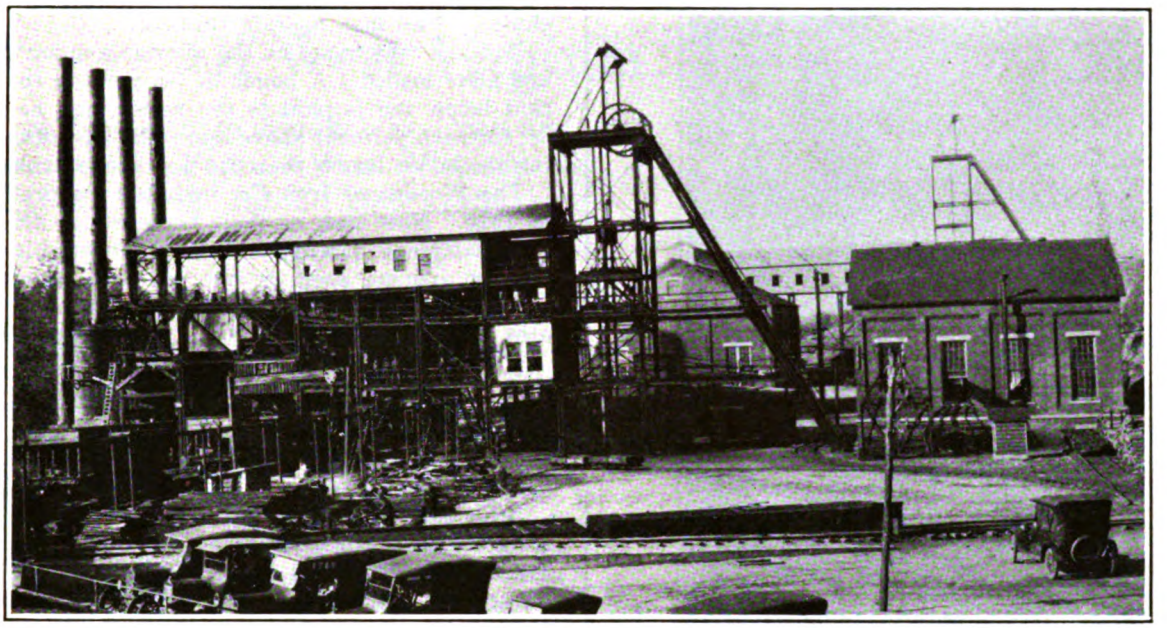

Keeps Dirt in the Mine And Only Coal on the Payroll

Woodward Iron Co. Samples Each Mine Car, Saving by Not Paying Coal Price for Rock and by Not Hauling Rock Underground or on Railroad

By J. H. Edwards
Associate Editor
Huntington, W. Va.

IN THESE DAYS of a continuous drive for lower production costs, most mine managements think it a cause for congratulation if they can reduce the number of men above ground or point to the installation of equipment which has separated one or more names from the semi-monthly payrolls. At the Mulga mine of the Woodward Iron Co., in Alabama, however, not only is the regular tipple crew employed but there are eight additional workers who are kept busy sampling the coal to determine the percentage of slate in each car dumped. And the extra service actually saves money.

The Mulga mine is operating in the Pratt seam, which averages 4½ ft. in thickness. Fourteen inches from the bottom is a 6- to 8-in. streak of shaly rock; near the top is another parting 2½ in. thick. The coal is shipped as mine-run to the washery, which is operated in connection with the byproduct ovens.

Before the introduction of the present sampling system the refuse hauled away from the washery averaged 19 per cent of the coal mined. Now the average is 12 per cent. This 7-per cent reduction represents a large saving. The miners are not paid for loading it. Fewer mine cars and other equipment are required to handle the same quantity of usable coal. In consequence, the costs of mine haulage are reduced. Freight charges



Fig. 2—Showing Sampling Car Below Rotary Dump

The samples are taken from holes in the baffle plate below the dump. Because of the restricted headroom gravity chutes from the receiving gates to the samplers could not be installed. This condition necessitates the use of the small drop-bottom car for conveying the samples to the chutes above the respective samplers. Because practically every car is sampled, it requires two men to operate the small car fast enough to keep up with the dumping.

The headpiece shows the top-works of the Mulga mine. On the end next to the shaft the tipple has three decks. The sampling machines are located on the lower deck. Hoisting at this mine is by means of double-deck cages. When the photograph was taken from which the illustration has been prepared, the work of tearing down a large wooden storage bin, which stood at the left, had just been completed, but the old lumber had not been cleared away. Getting rid of this bin eliminated a worrisome fire hazard.

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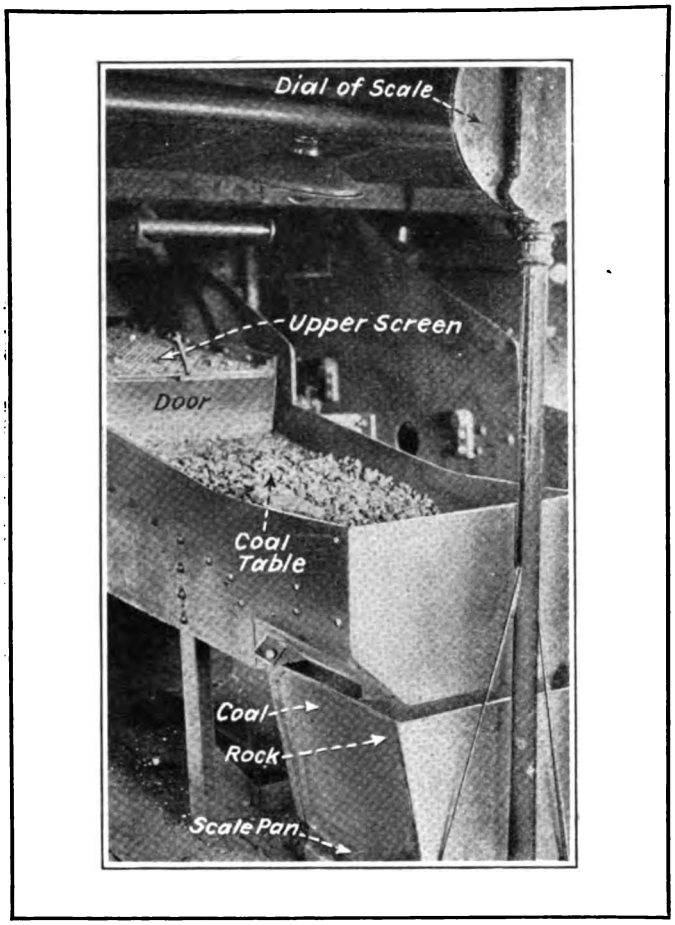

Fig. 1—One of Four Samplers

The samplers are arranged in two pairs back to back. The screens and picking tables are 24 in. wide. Three men do the picking on each pair of samplers. This means that one man must divide his time between two of the machines. The weigh hopper, which is mounted on the scale at the lower right, has two compartments, one for rock and one for coal.

on the transport of coal to the washery and on the refuse from the washery to the dump are also lowered.

Fig. 1 is a close-up of one of the four samplers used. Each consists of a double-deck shaking screen, a picking table and a two-compartment weigh hopper mounted on a dial-equipped platform scale. The screens and picking table are 24 in. wide and only a few feet in length. The upper screen plate has 1-in. diameter perforations and the lower has holes of ⅞-in. diameter. After the lump material which passes over the upper screen has been picked, the gate at the end of the lower deck is opened allowing the second size to pass over the table. The fine material which passes through the lower screen goes directly to the fine-coal chute of the tipple and thence to the railroad car.

The refuse from the picking table is dropped into the smaller compartment of the scale hopper, and the coal drops or is pushed by hand into the larger compartment. The whole weight is recorded opposite a key number which identifies the check number. A second gate is then opened to empty the hopper and the weight of rock is then recorded. From these two figures the percentage of refuse is calculated.

The total weight of sample taken from each mine car is roughly 60 lb. Six men do the picking from the four samplers. The samples are taken from holes in the baffle plate below the rotary dump. Because of the limited headroom in this tipple, a small drop-bottom car or buggy, operating on a 10-in. gage track, is used to convey the coal from the receiving point to the sampler chutes. Two men operate this car.

Ten per cent is set as the allowable quantity of rock and slate loaded. A bonus of 3c. per ton for each per cent below ten is paid to the miner, and he is docked 2c. for each per cent above ten. The advantage of making the bonus larger than the dockage is evident.

The Woodward Iron Co. installed the first samplers in 1920. Now each of their three mines are equipped with samplers, making a total of ten machines in use. The equipment used is the Ramsay patented mine sampler. The principle upon which this sampler operates was described in *Coal Age*, Vol. 11, p. 506.

Missouri Has Seventy-Nine Billions Of Tons of Coal

Information in regard to the analyses, heating values, and general characteristics of numerous Missouri coals are given in Technical Paper 366, entitled "Analyses of Missouri Coals," just issued by the U. S. Bureau of Mines. The coal reserves of the State of Missouri before mining began are estimated at approximately 79,000,000,000 tons. Of this quantity, about one-half of one per cent has been exhausted.

The annual output of the state ranges from three to five million tons, and though perhaps five or six times this quantity of coal annually is used in the State, yet, largely because the coal beds are thin and mining costs high, the mines are restricted to local markets where low freight rates offset the disadvantages of high mining costs.

Missouri has four continuous workable beds, which in downward order are as follows: Lexington, Mulky, Bevier, and Tebo. In addition, there are several beds of small extent. The Tebo bed, though locally thin, is almost everywhere present northwest of its line of outcrop and is at present mined chiefly in Linn, Grundy, Chariton, and Henry Counties. The Bevier, Lower Rich Hill, or Weir-Pittsburg Lower coal, as it is variously called, is extensive and is mined at many places, yielding more than half of the coal produced in Missouri. The Mulky, Summit, and Lexington beds are relatively thin, but are persistent. The Mulky bed is of most importance in Montgomery, Ralls, Audrain, Macon, Randolph, Chariton, Carroll, Lafayette, and Johnson Counties, the Summit in Howard and Boone, and the Lexington in Lafayette, Ray, Putnam and Adair Counties.

Mine Thickest and Shallowest Beds

At present the larger mining operations in Missouri are concentrated in such areas as are underlain by coals that are thicker or more easily mined than those found elsewhere in the area of coal-bearing rocks. In addition to the counties already mentioned, Caldwell, Callaway, Clay, Platte, Schuyler and Vernon Counties contain some thicker coal beds.

"Pocket" coals are worked in a small way in Moniteau and Cole Counties and are at present at a number of points in areas farther south and east. Some lignite is known to be present in the Cretaceous and Tertiary rocks of the southeastern corner of the State, but the beds have not been examined in detail and they can be only of minor importance for a number of years to come.

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Smokeless Coals Of West Virginia

What Constitutes Smokeless Coal and Where It Is Found—West Virginia in All Has Thirteen Billion Tons in Reserve

By David B. Reger
Assistant Geologist, West Virginia Geological Survey, Morgantown, W. Va.



David B. Reger

IN 1858 H. D. Rogers,* state geologist, of Pennsylvania, proposed a classification of the coals of high rank. Briefly stated this was based on the diminishing carbon content, there being four ranks known as anthracite, semi-anthracite, semi-bituminous coals, and bituminous coals. Lignites and peats, because of their low rank, appear to have been omitted in his classification.

In 1879 Persifor Frazer,† of the Second Geological Survey of Pennsylvania, elaborated this classification and made it more definite by assigning fuel ratios to the various ranks, the term fuel ratio being defined as the quotient of the fixed carbon divided by the volatile matter. This classification is as in Table I.

Table I—Frazer's Classification of Coals

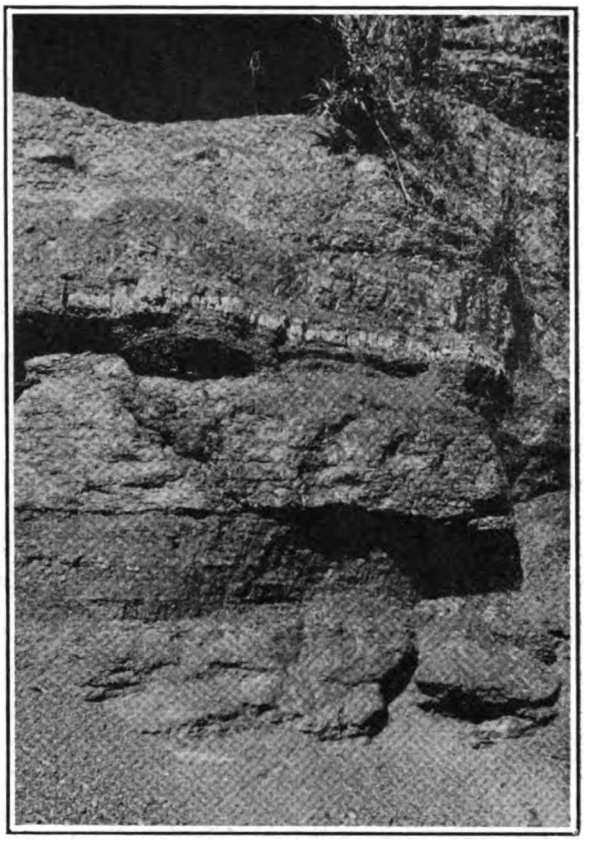
	Limiting Fuel Ratios
Hard, dry anthracite	99 to 12
Semi-anthracite	12 to 8
Semi-bituminous	8 to 5
Bituminous	5 to 0

In 1925 M. R. Campbell,‡ of the United States Geological Survey, discussed these early classifications at some length and concluded that the limiting fuel ratios should be revised in harmony with modern accepted usage. His classification, which I have reduced to tabular form is as in Table II. Where I have ventured to add to it my initials are appended.

Table II—Campbell's Classification of Coals

	Limiting Fuel Ratios
Anthracite, hard, igniting with difficulty and burning with blue flame	99 to 10
Semi-anthracite, hard, burning with a short yellow flame	10 to 5
Semi-bituminous, hard or soft, burning with thin, yellow smoke when first fired and then with short, yellow flame (the so called "smokeless" coals—D.B.R.)	5 to 2.5
Bituminous, burning with white flame and smoke (definition and lower limit by D.B.R.)	2.5 to 1

In the above classification I have made certain additions to complete the definitions, as Campbell left much to be inferred regarding bituminous coal and assigned no lower limit to its fuel ratio. As a practical matter this limit will seldom fall below one, although some cannels are lower.



In West Virginia, as elaborately described in many detailed reports of the West Virginia Geological Survey, the coals range in rank from semi-anthracite to butuminous there being a progressive increase in volatile matter from southeast to northwest across the state. For purposes of discussion they may be divided as follows:

Berkeley County Field, a deposit of semi-anthracite, not operated and probably of small value.

Potomac Field, semi-bituminous (smokeless) coal.

New River-Pocahontas Field, semi-bituminous (smokeless) coal.

Coals not yet studied, in parts of Randolph, Pocahontas and Greenbrier Counties, partly semi-bituminous and partly bituminous.

All other Coal Fields, entirely bituminous and not herein further discussed.

BERKELEY COUNTY FIELD—In Berkeley County and the edge of Morgan, as indicated in map, is a basin, approximately 13 miles long by one or two miles wide, containing semi-anthracite coal in the Pocono Series of rocks. This is highly folded and partly overturned. This coal has been described by various writers and has been discussed in detail by Grimsley.* The average of four samples of coal collected by him from old dumps is as Table III.

From the above average analysis it is evident that the coal is semi-anthracite. The samples appear to be low in impurities, but in point of fact Dr. Grimsley states that they are only fragments from old dumps and that in all prospects and attempts at mining the good coal was found to be so mixed with slate and so crushed

Article read before West Virginia Coal Mining Institute at its winter meeting in Morgantown, W. Va.

The headpiece shows the No. 3 Pocahontas bed uncovered by Chesapeake & Ohio R.R. just north of Rodes on Piney Creek in Raleigh County.

*The Geology of Pennsylvania, Vol. 2, p. 988; 1858.

†Second Report of Progress of the Laboratory of the Survey, Second Geological Survey of Pennsylvania, Report MM, p. 144; 1879.

‡Valley Coal Fields of Virginia, Virginia Geological Survey, pp. 116-130; 1925.

*G. P. Grimsley, Jefferson, Berkeley and Morgan Report, W. Va. Geological Survey, pp. 345-360 and separate map; 1916.

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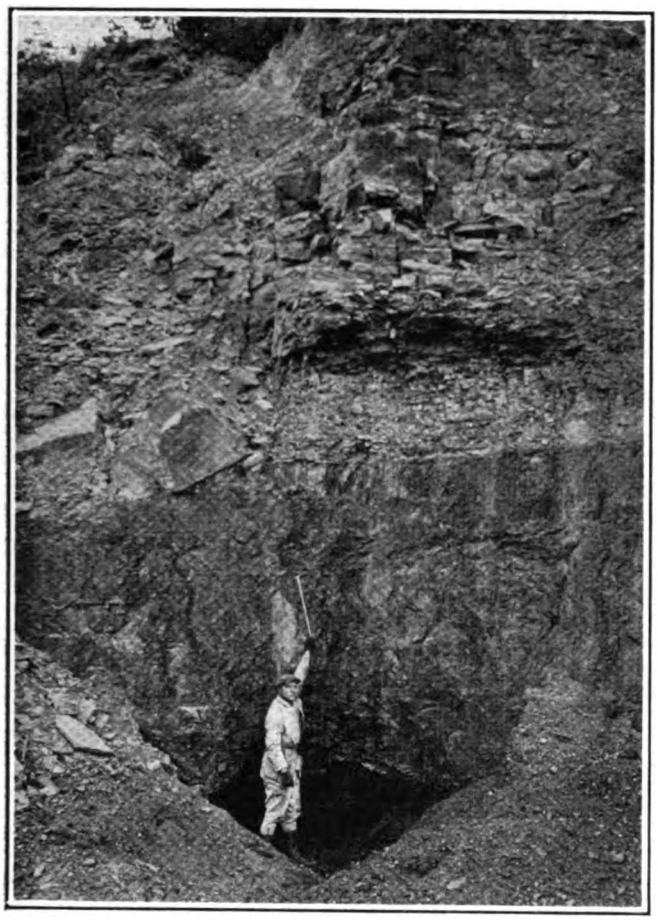


Where Pittsburgh Bed Is Being Stripped

Coal at the stripping pit of H. P. Brydon & Brother, Inc., Shores Knob, Mineral County. The top of the coal is plainly visible about 4 ft. above the top of the two-foot rule held in the hand of the geologist, who will be recognized as the author of the article. The rock above the coal is known as the Pittsburgh sandstone.

and irregular that failure has resulted from all operations. Others who have examined the territory, including myself, agree as to these facts. In consequence, the

Table III—Pocono Series Coals of Berkeley County Field

	Per Cent
Fixed carbon	81.72
Volatile matter	11.33
Moisture	0.48
Ash	6.47
	100.00
Sulphur	0.83
Phosphorus	0.033
Fuel ratio (Fixed Carbon divided by Volatile Matter)	7.2

field must be dismissed as a present source of smokeless coal.

POTOMAC FIELD—This field, shown in (see state map) embracing parts of Mineral, Grant and Tucker Counties along the Western Maryland Ry. and the Baltimore and Ohio R.R. in northeastern West Virginia, is an area forty miles long and seven or eight miles wide in which there are fourteen minable coals of smokeless or semi-bituminous rank varying in fuel ratio from 2.7 to 4.6. These coals I have fully described in detailed reports of the West Virginia Geological Survey,† and there are additional descriptions of earlier dates by Stevenson, White and others.

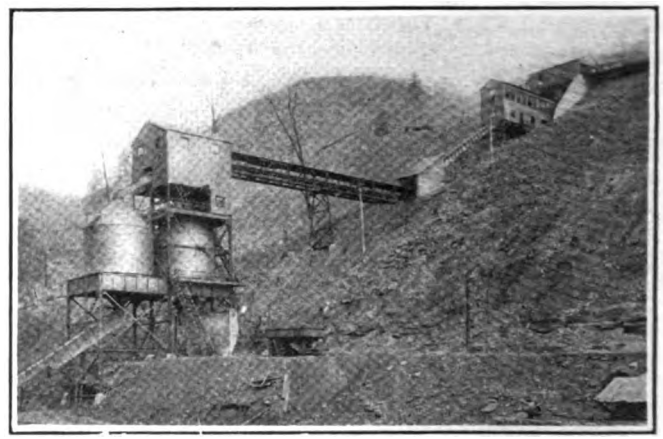
These coals have been mined for many years, the product being shipped mainly to eastern markets for smithing, steam, and domestic fuel. The Sewickley ("Tyson") and Pittsburgh ("Big vein") seams are nearing exhaustion but there is still a large tonnage in the Elk Lick ("Four-foot," or "Barton") Bakerstown ("Freeport," or "Thomas") Mahoning ("Six-foot") and Upper Freeport ("Split-six" or "Davis") beds. For several years the field has been much hampered by unfortunate labor troubles and low prices so that the output has been low, but many mines are in operation, the capacities of which could be greatly expanded under favorable conditions.

Table IV shows the average analyses of these coals, and their fuel ratios with estimates of original and present available tonnage. If 80 per cent of the present available 2,150,041,198 tons be recovered it is evident that the field will produce 1,720,032,958 short tons.

SIXTEEN SEAMS IN SOUTHERN FIELD

NEW RIVER-POCAHONTAS FIELD—This is located in southern West Virginia and includes part of Fayette, Raleigh, Wyoming, McDowell, Mercer and Summers Counties. It covers a territory 80 miles long and 25 to 30 miles wide. There are sixteen seams of semi-bituminous or smokeless coal, all of which are in the Pottsville series, two being in the Kanawha group, six in the New River group and the remaining eight in the Pocahontas group. At many localities several of these beds are operated in the same mountain but on account of the regional northwestern dip there is probably no single place where all may be found. These coals have been fully described by Hennen and Krebs* in detailed reports of the West Virginia Geological Survey, and there are earlier reports of a more general nature by Stevenson, White, Campbell and others. Certain additional matter on Mercer and Summers Counties prepared by myself is now on the press.

These coals are low in ash, sulphur and phosphorus, but high in thermal content and fixed carbon, with fuel



Tipple of United States Coal & Coke Co.

No. 4 mine in the No. 3 Pocahontas bed near Thorpe, McDowell County. This property is a short distance from the village of Gary.

ratios that vary from 2.8 to 4.9. They are shipped both east and west for steam and domestic fuel, and are also the principal coals used by the United States Navy and by the merchant marine vessels coaling at Atlantic ports. As metallurgical fuel they are used extensively, but in the manufacture of coke it is often necessary to mix them with coals having a higher ash in order to get the required strength for the blast furnace. In

†David B. Reger, Tucker Report (1923), and Mineral and Grant Report (1924); West Virginia Geological Survey.

*Ray V. Hennen, Wyoming and McDowell Report (1915), and Fayette Report (1919); C. E. Krebs, Raleigh County and Western Portions of Mercer and Summers Counties Report (1916); West Virginia Geological Survey.

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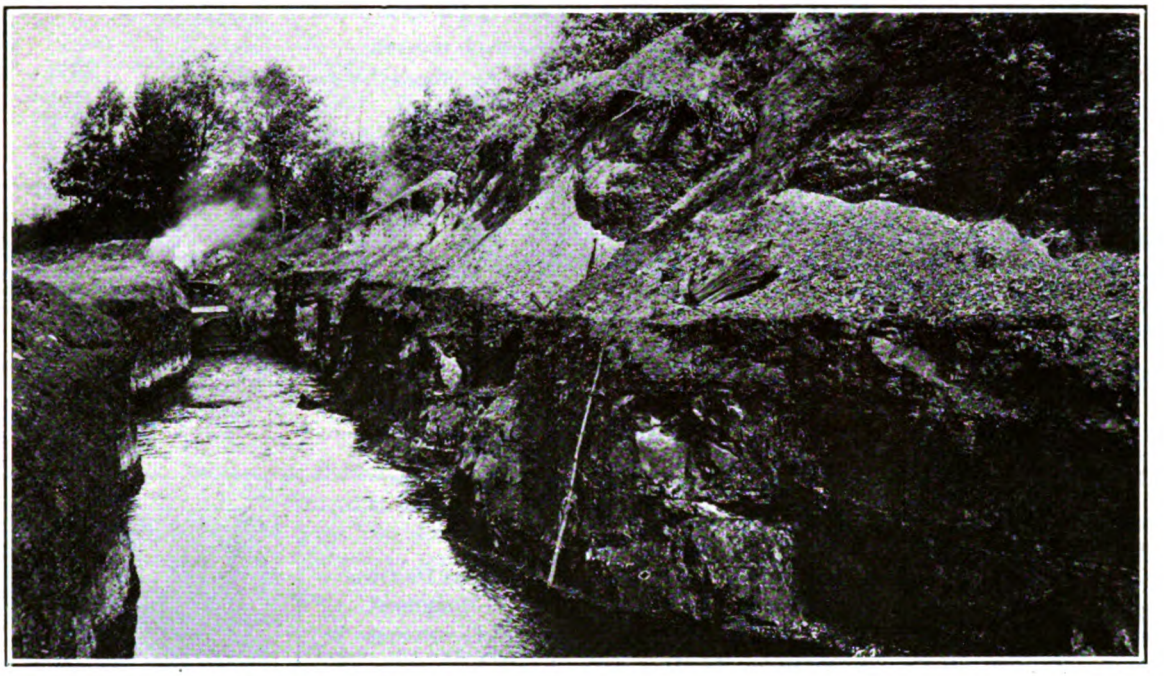

In Mineral County the Monongahela Series Has a Few Strippable Areas

Pittsburgh coal at stripping plant of Smith Big Vein Coal Co. This pit is northwest of Sulphur City in the Elk Garden field, an extension of the Georges Creek region of Maryland. Several feet of coal are concealed by the water by which the strip pit has been flooded. Note the brightness of the coal despite light cover.

quality they are the equal of any other smokeless coals in the world, and the mining conditions are so good that no other region can compete with them in the cost of delivered heat units.

The New River-Pocahontas Field is served by the Chesapeake and Ohio, Norfolk and Western, Virginian, and Kanawha and Michigan railways, and it is equipped by hundreds of large and efficient mines so that many millions of tons per year are placed on the market. At the same time the field is capable of carrying a large overload in fuel emergencies and of indefinite expansion in response to a prolonged demand.

Table V shows the average analyes of these coals, together with their fuel ratios and estimates of original and present available tonnage. If 80 per cent of the present available 11,082,856,023 tons be recovered the future output will be 8,866,284,818 short tons. All the analyses in this and other tables were of coal samples taken by members of the West Virginia Geological Survey and analyzed in the laboratory of that organization.

COALS NOT YET STUDIED—In the western edges of Greenbrier and Pocahontas and in the Cheat River valley of central Randolph County are large areas of Kanawha and New River coals, much of which will probably be of semi-bituminous or smokeless rank. These coals have not been studied in sufficient detail, however, to permit an authoritative classification to be made, and for this reason they have been separately designated in the map. A few mines are now in operation in central Randolph and in Greenbrier County.

In the southern halves of Nicholas and Webster and the southwestern corner of Randolph there are further large areas of pure New River coal which do not quite reach the average fuel ratio of 2.5 named by Campbell

Welch

Second largest town in smokeless fields of West Virginia. Once it stood outside the activity it served because the Pocahontas seams under the town laid below water level. Now a number of shafts have been sunk correcting that condition, and all Welch suffers from is a foothold on the hills. The valleys are narrow, the hills are high and not level on top.



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Table IV—Semi-Bituminous (Smokeless) Coals in Potomac Field of West Virginia

Counties	Coal Steam	Average Analysis (As Received) Moisture	Volatile Matter	Fixed Carbon	Ash	Sulphur	Phosphorous	B.t.u.	Fuel Ratio	Original Tonnage (2,000 Lb.)	Present Available Tonnage (2,000 Lb.)
Mineral & Grant	Sewickley (Tyson)	10.22	20.98	57.82	10.98	1.10	0.0187	10,053	2.7	1,867,853	93,218
Mineral & Grant	Redstone									5,085,020	2,542,514
Mineral & Grant	Pittsburgh	2.11	19.82	71.86	6.21	0.92	0.0246	13,869	3.6	41,828,751	418,287
Mineral & Grant	Little Pittsburgh	0.86	25.94	67.85	5.35	0.95	0.099	14,890	2.6	334,541	334,541
Mineral & Grant	Little Clarksburg (Franklin)	2.66	21.39	64.97	10.98	1.43	0.0119	12,424	3.0	28,658,995	28,658,995
Mineral & Grant	Elk Lick (Four-foot)	1.72	15.63	71.54	11.11	3.06	0.0211	13,617	4.6	123,880,742	108,792,668
Mineral & Grant	Harlem	0.25	17.10	72.10	10.55	2.31	0.0100	13,985	4.2	90,242,381	90,242,381
Mineral & Grant	Upper Bakerstown									91,496,909	91,496,909
Mineral & Grant	Bakerstown (Thomas)	1.48	15.94	72.72	9.86	1.67	0.0216	14,010	4.6	416,698,445	416,698,445
Mineral & Grant	Mahoning (Six-foot)	1.92	15.60	72.43	10.05	0.97	0.0428	13,744	4.6	104,460,365	104,460,365
Mineral & Grant	Upper Freeport (Split-six)	4.29	18.50	66.61	10.60	1.62	0.0375	12,866	3.6	815,766,590	815,766,590
Mineral & Grant	Upper Kittanning	0.36	16.00	71.60	12.04	2.17	0.0101	13,887	4.5	8,475,034	8,475,034
Mineral & Grant	Lower Kittanning	0.65	18.35	69.42	11.58	2.07	0.0084	13,759	3.8	53,052,595	53,052,595
Totals, Mineral & Grant										1,778,848,221	1,721,032,538
Tucker	Little Pittsburgh	0.86	25.94	67.85	5.35	0.95	0.099	14,890	2.6	235,224	235,224
Tucker	Bakerstown (Thomas)	3.19	24.10	64.66	8.05	0.92	0.029	14,118	2.7	111,151,181	78,750,000
Tucker	Upper Freeport (Davis)	3.37	22.52	66.11	8.00	1.04	0.030	14,067	2.9	230,554,368	205,000,000
Tucker	Sewell (Sharon)	2.18	23.73	62.69	11.40	0.93	0.014	13,427	2.7	145,023,436	145,023,436
Totals, Tucker County										486,964,209	429,008,660
Totals, Potomac Field										2,265,812,430	2,150,041,198

as the lower limit of semi-bituminous coal. I have described these areas in detail in county reports of the West Virginia Geological Survey. Owing to the lack of trunk-line transportation they have been but slightly exploited, but the reserve tonnage is large.

SMOKELESS FIELDS OF OTHER STATES—In the Appalachian region the smokeless coals of West Virginia compete first of all with the anthracite of eastern Pennsylvania, which is more favored as a domestic fuel and which because of its situation is more easily delivered to eastern markets, but which is mined at incomparably higher cost and may therefore be styled a luxury fuel.

Semi-anthracite coal is mined in Sullivan County, Pennsylvania. According to a general analysis published in the *Coal Catalog* the fuel-ratio is 8.2, there being two mines listed from the county in that publication.

In Virginia there are semi-anthracite coals in the Pocono (Price) series in Augusta, Bland, Botetourt, Montgomery, Pulaski, Roanoke, Smyth and Wythe Counties, as described by Campbell in the "Valley Coal Fields of Virginia," previously cited. These coals vary

Seam Its Own Monument

The Norfolk & Western R.R. uses the coal as its level for passing through the hill near Coaldale, Mercer County. As the coal, No. 3 Pocahontas, was 9 ft. 6 in. thick, the contractors made rapid progress and shipped a lot of the "spoil" to market. No more striking advertisement of the excellence of Pocahontas coal, its resistance to weathering, its thickness and its cleanness could be devised.



Table V—Semi-Bituminous (Smokeless) Coals in New River-Pocahontas Field of West Virginia

Counties	Coal Steam	Average Analysis (As Received) Moisture	Volatile Matter	Fixed Carbon	Ash	Sulphur	Phosphorous	B.t.u.	Fuel Ratio	Original Tonnage (2,000 Lb.)	Present Available Tonnage (2,000 Lb.)
Fayette	Douglas	1.42	20.72	70.05	7.81	0.97	0.103	14,685	3.4	33,593,472	
Fayette	Sewell	0.88	24.05	71.39	3.68	0.82	0.038	15,065	3.0	967,193,917	
Fayette	Fire Creek	0.83	19.99	75.02	4.16	0.68	0.031	15,191	3.8	442,848,384	
Fayette	No. 6 Pocahontas	0.58	20.89	75.78	2.75	0.54	0.007	14,853	3.6	124,694,508	
Fayette	No. 3 Pocahontas	0.32	22.70	73.07	3.91	1.92	0.035	15,033	3.2	77,914,552	
Totals, Fayette Co										1,646,241,823	1,446,241,823
Raleigh, Mercer and Summers	Gilbert	1.02	24.46	70.64	3.88	0.88	0.014		2.9	30,108,672	
Raleigh, Mercer and Summers	Sewell	1.15	18.87	77.00	2.98	0.63	0.0045	15,159	4.1	558,683,136	
Raleigh, Mercer and Summers	Beckley	1.17	17.81	77.10	3.92	0.72	0.016	15,041	4.3	880,957,440	
Raleigh, Mercer and Summers	Fire Creek	1.21	19.59	75.89	3.31	0.67	0.019	15,285	3.9	334,540,800	
Raleigh, Mercer and Summers	No. 8 Pocahontas	0.74	19.43	77.25	2.58	0.77	0.001		4.0	52,968,969	
Raleigh, Mercer and Summers	No. 6 Pocahontas	1.60	20.38	73.61	4.41	0.74	0.0085	14,419	3.6	185,948,928	
Raleigh, Mercer and Summers	No. 3 Pocahontas	1.31	16.30	77.06	5.33	0.67	0.0042	14,746	4.7	987,452,928	
Raleigh, Mercer and Summers	No. 2 Pocahontas	0.78	18.09	76.53	4.60	0.93	0.034			283,244,549	
Totals, Raleigh, Mercer and Summers										3,313,905,413	3,213,905,413
Wyoming and McDowell	Iaeger	0.61	24.75	68.46	6.18	1.38	0.016		2.8	355,541,580	
Wyoming and McDowell	Sewell "B"									119,877,120	
Wyoming and McDowell	Sewell	1.47	20.29	74.78	3.46	0.75	0.0087	15,126	3.7	866,795,111	
Wyoming and McDowell	Welch	1.38	19.39	72.01	7.22	0.74	0.017	14,532	3.7	360,188,928	
Wyoming and McDowell	Beckley	1.07	17.90	73.28	7.75	0.81	0.016	14,145	4.1	1,039,306,752	
Wyoming and McDowell	Fire Creek	0.79	21.05	75.05	2.60	0.71	0.010		3.6	864,233,430	
Wyoming and McDowell	No. 9 Pocahontas	0.70	19.03	76.67	3.60	0.74	0.021		4.0	175,633,923	
Wyoming and McDowell	No. 7 Pocahontas	0.76	20.77	64.16	14.31	0.73	0.011		3.1	77,501,952	
Wyoming and McDowell	No. 6 Pocahontas	0.44	20.33	75.13	4.05	0.80	0.041		3.7	223,796,928	
Wyoming and McDowell	No. 5 Pocahontas									73,598,976	
Wyoming and McDowell	No. 4 Pocahontas	1.91	15.93	77.40	4.76	0.65	0.006	14,953	4.9	808,473,600	
Wyoming and McDowell	No. 3 Pocahontas	1.16	17.90	76.13	4.81	0.76	0.008	14,957	4.3	1,750,763,520	
Total, Wyoming and McDowell										6,722,708,787	6,422,708,787
Total, New River-Pocahontas Field										11,682,856,023	11,082,856,023

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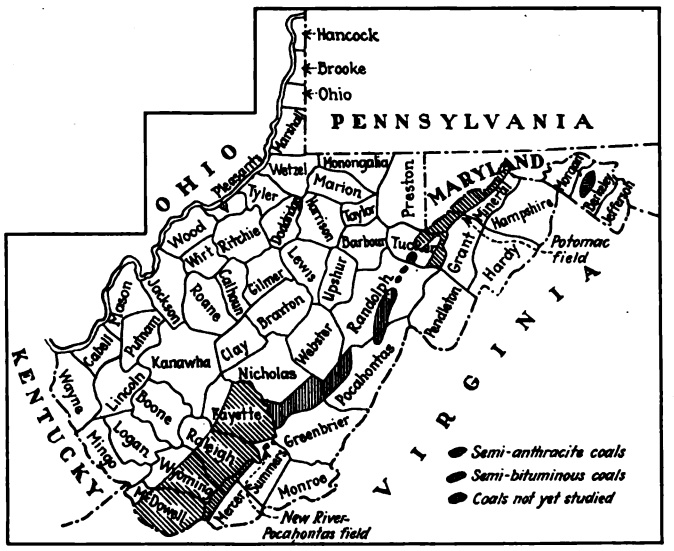


Smokeless Coal Fields of West Virginia

The smokeless coal lies in almost a continuous belt near, but not at, the eastern borders of the state with Mineral County at one end and McDowell County at the other. The continuity, however, is only geographical. Geologically all measures are represented from the Monongahela series beds to the Pottsville series, showing that fuel ratio is a function rather of the location than of the coal horizon.

generally from 5 to 8 in fuel-ratio and are therefore truly smokeless but the general range of ash is from 14 to 25 per cent, so that there is objection on that account. There are perhaps a dozen commercial mines in Montgomery and Pulaski Counties, some of the product being used as steam fuel and some being sold to the eastern domestic trade as "Virginia anthracite."

In Maryland the semi-bituminous area includes parts of Allegany and Garrett Counties, embracing the Georges Creek Basin and others further west, and being a connecting link between the Potomac Field of West Virginia and the Central Field of Pennsylvania.

In Pennsylvania semi-bituminous coal occurs principally in Clinton, Clearfield, Indiana, Cambria, and Somerset Counties, with scattered deposits in several others. These coals are similar in character to those of the Potomac Field of West Virginia.

In Virginia semi-bituminous coals are largely confined to the northwestern part of Tazewell County, this area being the type locality of Pocahontas coal.

It is evident from the above statements that the State of West Virginia has in reserve approximately 13,233,000,000 short tons of semi-bituminous or smokeless coal of which approximately 10,586,000,000 short tons can be recovered in mining.

Large Quantities of Water Enter Mines

On the authority of the secretary of the Pennsylvania State Department of Mines, R. D. Leitch, associate chemical engineer of the U. S. Bureau of Mines, Pittsburgh, Pa., says that fifty-four representative mines in the anthracite region average 16 tons of water removed as drainage per ton of coal mined and seventy-five bituminous mines average 36 tons of water per ton of coal. "The figure for bituminous mines," says Mr. Leitch "seems abnormally high; 5 or 6 tons of water per ton of coal would probably be nearer the average for the bituminous mines of this state. Examination of a great number of analyses of mine waters in Pennsylvania indicates that an estimate of 200 grains of sulphuric acid may be assumed. Therefore it would appear that upwards of 9,000,000 tons of sulphuric acid is being dumped annually into the streams of Pennsylvania alone." Drainage from other states on the Ohio River watershed would double this figure. Of more than 300 mines in Pennsylvania, only four showed water which was not acid. C. M. Young states that "there are no fish in the Monongahela River, few in the Allegheny and none in the Ohio until after the Little Kanawha enters at Parkersburg, W. Va., 183 miles below Pittsburgh, Pa."



In Shallow Beds, Effect of Rain Is Devastating

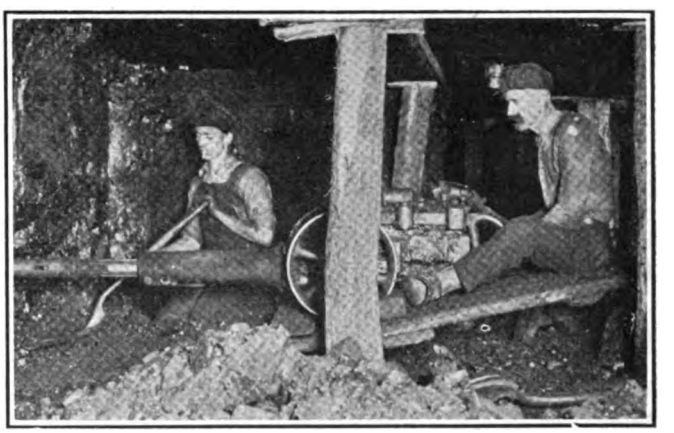
If the water falls into a low area of the coal bed, which is not self draining the water rises till it can flow over the natural dams in the mines. A lake, like that in the Mammoth Cave of Kentucky, is formed and it remains till pumps or underground channels drain off the water.

Tar Is Being Coked in Beehive Ovens

An interesting use is being made of several of the old beehive ovens at the Virginia mine of the Gulf States Steel Co., near Bessemer, Ala. Coal from this mine is shipped to the byproduct plant and the tar shipped back to the mine to be coked in the beehive ovens, thus facing the coking process a second time and this time actually becoming coke.

The difficulty of marketing the tar led to the experiment of attempting to coke the material. A trial in a beehive oven showed that a good grade of coke could be made from this tar which, until that time, had bid fair to find no market large enough to absorb it.

Electric Undercutter's Progenitor



Useful but Rapidly Vanishing

It is quite probable that many coal miners of the younger generation have never seen a pneumatic coal puncher in operation, as this forerunner of the present undercutter is now almost extinct in American coal mines. The accompanying illustration shows a machine of this kind at work in the No. 1 mine of the Gatliff Coal Co., Gatliff, Ky. If the movements of this machine when in operation were not restrained it would go through all the antics of a small rapid-fire cannon. Accordingly the operator sits on an inclined platform, called the puncher board, with his heavily-shod feet, sometimes assisted by wooden blocks, acting as chocks behind the puncher wheels, while he guides the pick point by means of two heavy hand holds on the rear of the cylinder.

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Pittsburgh Institute Seeks Light On Two Questions of Safety

How Near Should Trolley Line Approach Face? And What Firefighting Equipment Should Be Provided—A. W. Hesse Reads Paper

THE PITTSBURGH COAL MINING INSTITUTE held its second meeting of the year in the Chamber of Commerce Building auditorium, at which the principal speaker of the evening was A. W. Hesse, chief engineer of the Buckeye Coal Co., Nemacolin, Pa., who read a paper on "Principal Factors in the Development of a Bituminous Coal Mine with Regard to Efficiency and Safety." The meeting, which was held April 17, was well attended and marked by several lively discussions on safety in mines with reference to secondary haulage locomotives, the supplementing of sprinkling at the face with rock dusting in gaseous mines, steps which must be taken to prevent the ignition of gas and the equipment necessary for fighting fires. W. L. McCoy acted as chairman. Secretary Maize announced that the paid membership numbered 1,600.

FAN, LIKE BOY'S SUIT, SOON OUTGROWN

Mr. Hesse's paper dealt with the features which must be incorporated in the design and construction of a new mine plant to obtain the greatest efficiency and safety in mining. He emphasized the need for reserve fan capacity so as to provide sufficient air at all times with ever-changing conditions. He sees no wisdom in striving for peak mechanical efficiency from a mine fan because its attainment requires fixed operating conditions which cannot be maintained. Sprinkling at the face is a necessary adjunct to the practice of rock dusting at least in gaseous mines. A mine, like a factory, is not complete without telephones for direct communication.

In his paper Mr. Hesse mentioned the flameproof cable-reel locomotive used in the Nemacolin mine of his company. Richard Maize, state mine inspector, said this locomotive, as handled at Nemacolin, is safer than flameproof cutting machines. He declared himself confident that it is safer than any type of locomotive not operated by storage batteries. The locomotive is totally inclosed and provided with an interlocking switch, by means of which the electrical circuit to the cable is closed when the trolley harp is lowered to an inoperative position. It is safer than any of the cutting machines because it moves into a place only after the face has been cut and shot and does not go any closer to the face than the length of a mine car.

SEVERED CABLE AS CAUSE OF IGNITION

C. P. Byrne, state mine inspector, asked what would happen if the wheels of this locomotive severed the cable. In reply it was said that a safety fuse would blow, breaking the circuit immediately. Three fuses are provided which are rotated into place as needed, and are protected so that, when they blow out, the flame cannot ignite gas outside the housing. The latter is effectively padlocked. The danger of damage to the cable by the locomotive wheels is minimized by the attention which the motorman gives to the reeling in of the cable from his seat which is located on the outby end of the locomotive. Asked if arcs ever formed between the wheels of this locomotive and the track rails, Mr. Hesse replied that the foreman of the Nemacolin mine reported that he never seen such arcs.

Mr. Hesse added that this locomotive, like other explosion-proof equipment, is safe only so long as it is kept in proper condition. He had heard of instances where explosion-proof equipment had been repaired with parts which were not standard, in which case the repaired machine was no longer explosion-proof.

Several members sought a definition of the term "return air" in the state mine laws, but everyone asked evaded the issue. All as much as admitted that no definite line could be drawn to divide intake from return air within a split. Harvey Nelms laughingly repeated a definition heard in Harrisburg, that air was to be regarded as on the return after it had passed the last working man on the split.

SAFETY AS CONSTRUCTOR'S CONSIDERATION

"About nine out of every ten mines," said Mr. Byrne, "are not laid out with safety in view." Locomotive operation in working places is exceedingly dangerous because there is no requirement that the face be examined before a locomotive is allowed to enter a place. State mining laws are more or less specific in the regulation of all equipment other than locomotives.

The question was raised, how far a trolley wire or power line should be carried with respect to the face. Inspector Byrne thinks such conductors should not extend beyond permanent ventilation at any time, by which he meant that they should not be extended as far as any temporary stopping or brattice. Inspector Pratt said he believed that these lines should end at a point a certain distance outby of the last crosscut. What that distance should be he was not ready to say. A committee of five appointed to investigate this problem will report its findings and recommendations at the next meeting.

MORE THAN WATER LINES NEEDED

Francis Feehan of the U. S. Bureau of Mines, asked Mr. Hesse if water lines are adequate for the fighting of mine fires. Mr. Hesse replied that water lines ought to be supplemented with other equipment. A committee of three was appointed by the institute to determine what firefighting equipment should be installed. This committee also will report its findings at the next meeting.

J. J. Forbes, of the U. S. Bureau of Mines, said that after three years' study the Bureau has determined that about 98 per cent of fine coal dust is formed during cutting and loading operations. By laying the fine coal dust at the face, sprinkling increases considerably the effective life of an application of rock dust. In mines not equipped with pipe lines water might well be applied to cutting machine in sprays from a water-tank trailer equipped with pump or compressor.

USING COKE BREEZE—At a conference at Sheffield University, Sheffield, England, on "Solid Smokeless Fuels," it was suggested that a coal with an excess of binding material could be mixed with coke breeze to reduce swelling, to destroy the plastic layer and in general to speed up carbonization.

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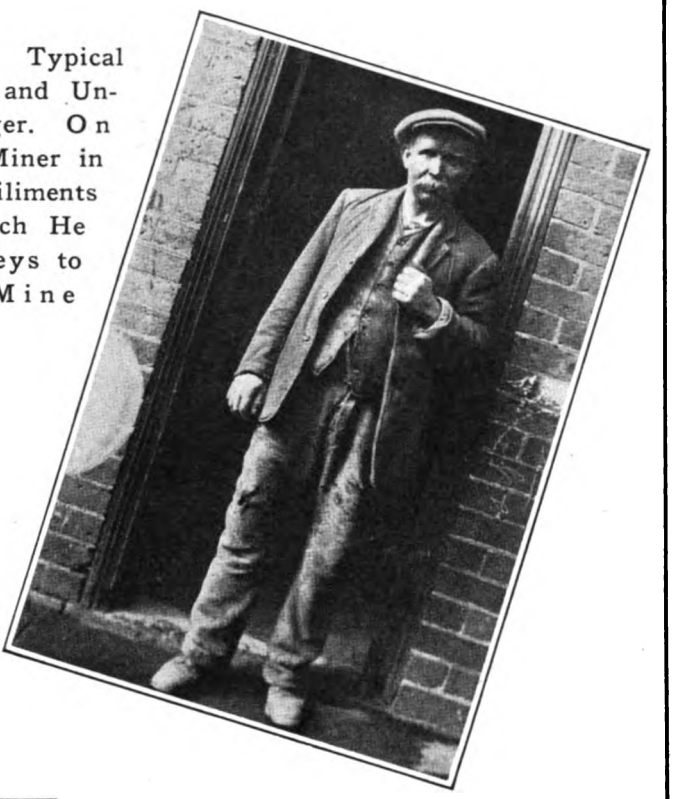
Participants in Great Britain's Oft-Repeated Coal Crises



On Left, Typical Manager and Undermanager. On Right, Miner in the Habiliments in Which He Journeys to the Mine





Stripped to the Waist in a Warm Mine, Undercutting Coal in a Place Where the Fractured Face Is Working Freely Under the Weight of a Heavy Roof.

A Deputy on His Rounds. If the Tracklaying Is Typical No Wonder Small Cars Are General and Derailments Frequent. Note How Switch Rail Is Pivoted at Frog.



Wide World Photos.

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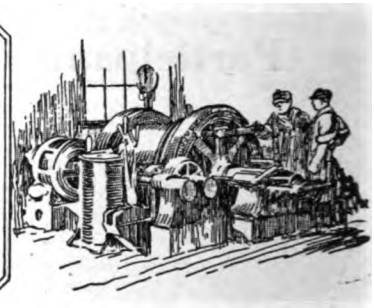
Practical Pointers For Electrical And Mechanical Men



Straight Socketing with Zinc Proves Efficient but Not Popular

Turn-Back Method Brings Unequal Strain on Wires —How One Mechanic Satisfied His General Superintendent That the Socket Would Outpull the Rope

Despite the recommendations ot wire-rope manufacturers, that socketing be done by leaving the wires straight and filling the space with spelter (pure zinc) after the wires have been thoroughly cleaned with a dilute solution of muriatic acid, many coal companies still persist in the practice of turning the wire ends back into the socket and using babbitt as a filler.

Manufacturers report that repeated tests have proven the straight wire-brush and pure-zinc method of socketing to be the most efficient. When done in this way all wires of the rope are held so as to be under equal tension.

ZINC-FILLED STANDS TEST

Psychology apparently enters into the reason for continued preference of many individuals for the turn-back method. There is a certain comforting security in the thought that the wires are turned back into the the socket and that all break before failure of the rope. The fact is, that as usually applied without careful cleaning of the wires and with a filler of babbitt, the turn-back method will not allow the rope to withstand the ultimate tension for which the rope is rated.

Before the turned-back ends of the wires could resist tension, the wires would have to slip slightly, and as soon as this happens those wires which do not slip must bear an undue proportion of the load. This may cause these wires to break, thus weakening the whole rope and causing it to fail.

Two actual instances where the master mechanics of mines tried to introduce the manufacturers' method of socketing throw an interesting light on the situation. The first case was on a man-and-material incline 1,600 ft. long rising at an angle of 30 to 45 deg. Here the general superintendent learned by chance that the master mechanic had deviated from the "turn-back and babbitt" method of socketing the ¾-in. rope. This superintendent immediately began an investigation and asked the master mechanic to prove that the new socket will have as much strength as the rope.

Accordingly several pieces of new ½-in. rope were socketed by the straight wire brush and zinc method. The wires were carefully cleaned with a weak solution of muriatic acid, rinsed, and dried before the zinc was poured. The 200-ton wheel press in the mine shop was utilized as a pulling machine to test the socketed cables to destruction.

The superintendent predicted that the wires would pull out of the zinc filling, but no such thing happened. He was satisfied after he had seen two ropes break near the center, and the eye of the socket break on another rope. There was no sign of the wires slipping in the zinc.

MASTER MECHANIC CONVINCED

At another mine the master mechanic decided to deviate from the past practice in socketing the 1⅛-in. rope of a skip hoist. He ordered some spelter and muriatic acid for the occasion and applied the rope in the socket by the straight wire brush method. He was, however, not satisfied with the appearance of the job so decided to "play safe" by going back to the old method.

He cut into the cone of zinc and imbedded wires to find out if the metal was properly adhering to the wires. He was disappointed to find that the zinc did not appear to have "tinned" the wires to any extent, and concluded that perhaps the filling material sent on his order for spelter was not the "correct mixture." He later learned that by "spelter" the rope manufacturers meant pure zinc and that it was not to be expected that the zinc would "tin" the wires.

These two cases are probably typical of the hesitation with which the old method of rope socketing is abandoned for the new. Another factor which limits the adoption of the recommended method is that zinc and muriatic acid are two materials which few mines keep in stock.

Paddle Wheel Gives Evidence If Pump Is Operating

Pumpers usually have much spare time, and those of an ingenious turn of mind usually utilize their idle moments to contrive ways and means of making the work still easier. This anxiety, however, to lighten toil which is never onerous may result in an improvement to the pumping system. An example is the paddle-wheel flow indicator in use at the main sump of the Exeter mine of the Kingston Pocahontas Coal Co., near Welch, W. Va.

The sump is adjacent to the main pumping station near the shaft bottom. About 1,500 ft. away are located two gathering pumps which discharge through a common line to the main sump. The attendant of the main station looks after these gathering pumps. In case one or both should stop the pumper must immediately investigate the trouble.

PUMPER NOW MORE EFFICIENT

Before he had an indicator of the performance of the pumps he was required to make frequent trips of inspection, which system sometimes resulted in a pump being stopped for a long time before its inactivity became known. The time of the pumper taken up in making these trips to the gathering pumps could

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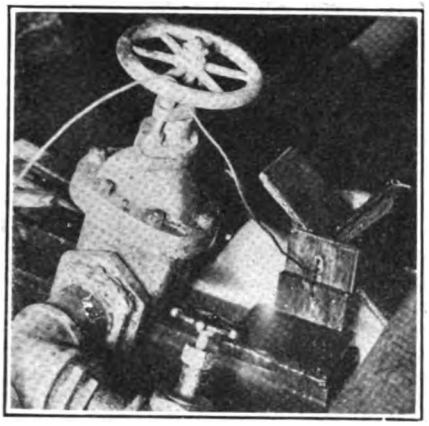


Showing Wheel at Time of Contact

The four paddles are made of wood and each has a copper strip on the outer edge, which strip is connected to the signal lamp through the shaft. The distance of the wheel from the discharge opening is adjusted so that the wheel turns slowly.

be better spent in the main pump-room where several large and important pumps are in use.

The discharge from the gathering pumps is within a few steps of the main pump room, but the pumper claims that by looking at the discharge it was difficult to determine if both pumps were operating properly. Accordingly he built and installed the paddle-wheel contactor shown in the illustration.

As the wheel is turned by the water, a 50-watt lamp, mounted in a prominent location in the main pump room, is blinked at a frequency corresponding to the quantity of water discharged. This lamp is on a grounded circuit, and the connection is made through the shaft and metal edges of the paddles to a contact wire fastened to a water pipe. A limited quantity of current flows through the lamp at all times due to the contact with the water, but the lamp brightens each time that a blade of the wheel touches the wire brush.

No doubt this type of flow indicator has been used many times, and therefore cannot be classed as a new idea. It, nevertheless, is an interesting application of the toy paddle wheel, and there may be other mines which would profit by installing a similar device.

Grease Wire, Not Wheels

In an article entitled "Shoes Outlast Wheels in Alabama Mine" appearing in the "Practical Pointer" section of the issue of April 1 it is said the "trolley wheels" are greased once a week at the mine of the New Castle Coal Co., New Castle, Ala. This should read, of course, not "trolley wheels" but "trolley wires!"

Hollow-Axle Lubrication On Locomotives

Journal bearings of inside-frame mine locomotives sometimes suffer for the want of lubrication because it is not always easy and convenient to apply the lubricant where needed. With this in mind a hollow-axle system was specified by engineers of the Fordson Coal Co. on certain of their new locomotives.

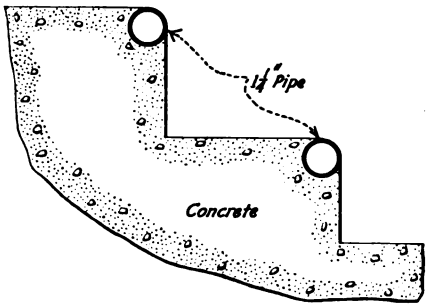
Longitudinal holes have been drilled in the center and end of each axle. These extend to the adjacent bearings where they connect with radial outlet holes. An automatic ball-type grease plug is screwed into a recess in the end of the axle. The lubricant is easily and conveniently forced to the right spot by means of a pump-type grease gun.

Pipe Saves Step Noses From Abrasion and Chipping

The edges of the steps of concrete stairways should be provided with nose pieces, especially if material of any kind is to be moved either up or down over them. Although pieces of this kind are regularly made and sold they are somewhat expensive as compared with some of the scrap material available about most mines.

The accompanying illustration shows how the Kingston Coal Co., of Kingston, Pa., has protected the corners of the treads on a stairway leading into the basement of its office, over which cans of ashes and other material are daily handled. The nose of each step in this instance is protected by a piece 1¼-in. pipe cast into the concrete and extending into the retaining or wing wall upon either side. This takes the excessive wear normally coming on this sharp edge and prevents the concrete from being chipped.

Almost any size of pipe from 1- to 2-in. will serve this purpose. Less, than 1-in. would not be stiff enough



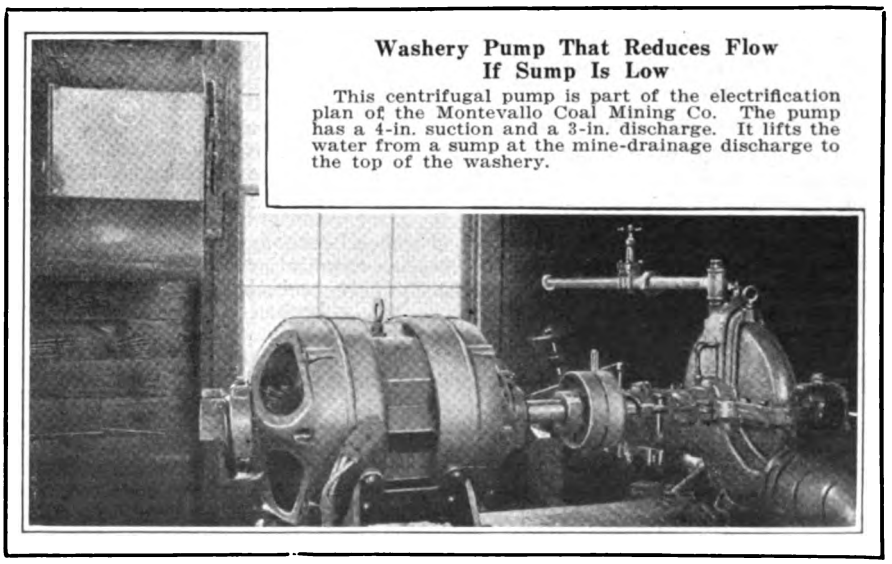
Cross-Section of Stairway

Into the nose of each step is built a piece of pipe. This is set tangentially to both tread and riser and effectively protects the nose of the step from chipping and abrasion.

and more than 2-in. would have too great a radius of curvature and might prove unsafe as the foot would tend to slip off such an easily rounding edge. Smaller pipe might be rendered of sufficient stiffness by welding short pieces onto it at right angles at intervals of a foot or more and building these into the concrete of the step. This would render the edge far less rounding and at the same time afford ample protection.

Float Valve Restricts Flow When Sump Gets Low

At the Aldrich Mine, of the Montevallo Coal Mining Co., in Alabama, a 250-gal. centrifugal pumping station has been installed as part of an extensive electrification program. The squirrel-cage motor, by which the pump is driven is rated at 30 hp., 2,300 volts and 1,750 r.p.m. A balance float valve installed in the discharge line of the pump reduces the flow of water in case the supply of the sump begins to get low.



Washery Pump That Reduces Flow If Sump Is Low

This centrifugal pump is part of the electrification plan of the Montevallo Coal Mining Co. The pump has a 4-in. suction and a 3-in. discharge. It lifts the water from a sump at the mine-drainage discharge to the top of the washery.

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News Of the Industry



General Strike On in Great Britain When Coal Negotiations Break Down; Civil Liberties End; Troops Called

A general strike of British industrial workers began at midnight, May 3. All attempts at negotiation of a new agreement between the coal operators and miners having failed, the General Council of the Trades Union Congress ordered a general walkout. Estimates of the number of men affected vary all the way from 2,525,000 to 5,000,000. Of these, 1,120,000 are coal miners.

"The government has found itself challenged by an alternative government," Prime Minister Baldwin told the House of Commons Monday night. "This is a threat to the freedom of our Constitution."

He warned the leaders that their actions would bring the country "nearer to civil war than for centuries." But even as he spoke, orders were being wired to workers throughout Britain to get ready to strike.

Long before midnight thousands of workers had already received their instructions to quit work. These included those employed in transport, the printing trades, the metal and heavy chemicals group of the iron and steel industry, and, to a limited extent, the building, electrical and gas workers.

On Tuesday no newspapers appeared, all race meets were declared off, there was a likelihood that the theaters would close and practically no trains, street cars or busses were running. The government, however, had enrolled thousands of volunteers; had gathered a huge fleet of motor cars; had commandeered tons of foodstuffs and coal and other necessaries and had made far-reaching plans for meeting the defi of the strikers.

Emergency Act Issued

The government propmtly promulgated an "Emergency Powers Regulation, 1926," signed by the King in Council, and the suspension of all civil liberties. In effect, the country is placed under martial law. Last Saturday, four hours after the declaration of the miners' strike, a proclamation calling for citizen volunteers for the O. M. S. (Organization for the Maintenance of Supplies) was posted throughout the country. It is believed that the government can muster 75,000 volunteers, in addition to about 500,000 men in the army, navy, air force and militia.

The breakdown in negotiations between the coal operators and miners came on Friday night, when the miners refused to accept the final offer of the mine owners. The men were asked to agree to an eight-hour working day. In return they would be paid a national minimum wage of 20 per cent above the 1914 standard wage, instead of 33⅓ per cent. The eight-hour day was to be worked until 1929, when a commission of inquiry would ascertain whether the economic position of the industry would justify a return to a seven-hour day or, alternatively, fix the date on which the hours should be shortened.

Mr. Baldwin asked if this plan was the fullest concession the operators were ready to make. They assured him that it was. Thereupon the Premier referred the offer to the miners' delegates in a memorandum.

Miners Reject Offer

The answer of the miners follows:

"In reply to the government memorandum the miners state they are not prepared to accept a reduction in wages as a preliminary to the reorganization of the industry, but they reiterate that they will be prepared to give full consideration to all the difficulties connected with the industry when a scheme for such reorganization shall have been initiated by the government."

The reply also expressed the opinion that the present working hours are long enough to supply all the coal for which a market can be found; that they are as long as any man should be expected to pursue in such a dangerous and arduous calling; that to extend the hours in the present circumstances is simply to swell the ranks of the unemployed and to invite similar measures on the part of Britain's foreign competitors.

Briefly to review the events of the last few days: Friday, April 30, was the last day of the subsidy. Shortly after midnight following that day an official announcement was made that the negotiations between the operators, miners and the government had definitely broken down. On May 1 the representatives of the most powerful British labor unions decided to declare a strike at midnight on Monday, May 2. The text of a royal proclamation bearing the date April 30 was issued May 1. It declared that a state of emergency existed and thus gave the government the special powers conferred on it under the Emergency Power act of 1920. About this time troops were quietly moved into the mining areas of South Wales, Lancashire and Scotland. They have been kept under cover so as not to excite any undue animosity.

The Central League of Transport Workers in Holland on May 3 issued a manifesto declaring that not "one ton of coal may be exported to England." The German Miners' Federation in a manifesto declared May 3 that it would act strictly in accord with the international miners' agreement at Brussels and prevent the transportation of coal from Germany to England during the British coal strike. On the other hand Rinaldo Cappellini stated on the same date at Wilkes-Barre, Pa., that the miners of the anthracite region cannot abrogate their contract with the anthracite operators to direct where the operators shall place their coal.

The railroad men, dock workers and miners of France have called a meeting to decide on the measures to be taken in view of the British strike. Sir Samuel Kelly's mines in the north of Ireland are still working and it seems likely that coal will continue to be produced from this property.

Pittsburgh Open-Shop Output Tops Union for First Time

For the first time in 30 years, or since the organization of the United Mine Workers, the total output of the open-shop coal mines of the former Pittsburgh union district for one week has exceeded that of the union mines of the district for that week. This conclusion was reached after a survey made by the Pittsburgh Coal Co. showed that the total tonnage of open-shop mines of three companies which are operating independent of the United Mine Workers was 77,700 tons for the week ended April 24.

Eleven mines of the Pittsburgh Coal Co. in the Pittsburgh district, working on the November, 1917, wage scale dumped 46,667 tons of coal through their tipples during the week; three mines of the Ellsworth Collieries Co., subsidiary of the Bethlehem Steel Corporation, loaded 25,000 tons, and the mines of the Pittsburgh & Erie Coal Co., at Braznell, in Fayette County, loaded 6,033 tons.

Exact figures as to the union tonnage in the district are not available, since the Pittsburgh Coal Producers Association was dissolved last December. Those who made the survey, however, learned that slack work prevailed at the union mines of the district during that week.

The Ellsworth Collieries Co. is operating one mine each at Marianna, Ellsworth and Bentleyville, in the Pigeon Creek valley of Washington County.

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Relief from Legislative Shackles Chief Need of Coal, Say Spokesmen; McAuliffe Favors Full Fact-Finding

Washington, D. C., May 4.—The public interest will best be served by allowing the coal industry to work out its own salvation, unhampered by further legislative enactments. This is the answer spokesmen for the coal trade are making before the House committee on interstate and foreign commerce, which is considering proposals for broadening the scope of federal powers in mediation, emergency distribution and continuous, compulsory fact-finding. Action along the lines suggested, they assert, would either be unconstitutional or impracticable or both. Moreover, government interference in the past, it was charged, has been responsible for national strikes.

The attack begun by Harry L. Gandy, executive secretary, National Coal Association, at the hearings last week and continued by Walter Barnum, president, Pacific Coast Co., was renewed yesterday by Roderick Stephens, chairman, committee on governmental relations, National Retail Coal Merchants' Association; Charles O'Neill, secretary, Central Pennsylvania Coal Producers' Association, and J. G. Bradley, head of the Elk River Coal & Lumber Co. and a former president of the National Coal Association.

The only voice of dissent so far heard in this chorus of condemnation by representatives of the industry has been that of Eugene McAuliffe, president of the Union Pacific Coal Co., a subsidiary of the Union Pacific R.R. Mr. McAuliffe, who appeared before the committee on April 29, came out flat-footedly for government fact-finding, mediation in labor disputes and full emergency control.

Anthracite Counsel Testifies

This morning the anthracite industry was given its first opportunity to reply to the many charges made against it by some of the earlier witnesses when Walter Gordon Merritt, general counsel for the Anthracite Operators' Conference, took the stand. Mr. Merritt was just summarizing his review of labor relationships, which he characterized as the dominant problem, when the committee adjourned for the day. The witness emphasized the adherence of his clients to the principle of arbitration, but reserved stating the attitude of the industry on the specific legislative proposals being considered by the committee until later in his testimony.

Chairman James S. Parker, who discussed the situation with the President last Friday, has stated both publicly and privately that the committee will report out a bill at this session. He is hopeful that the House will pass the measure before adjournment. No official disclosure as to the scope of the committee bill has been made. Many observers, however, are convinced that it will incorporate compulsory fact-finding in some form in its provisions. Whether it will go beyond that is considered more or less doubtful, although committee members in their examination of witnesses have appeared to be unwilling to accept the contention that the government is powerless to prevent an interruption to the flow of coal.

A subcommittee of the Senate committee on education and labor also is wrestling with a bill, but no hearings have been held on the measure. This Senate bill, framed by Senators Borah (Idaho), Metcalf (Rhode Island) and Copeland (New York), would give the President emergency seizure powers and re-enact the provisions of the Federal Fuel Distributor law for emergency control of distribution. Fact-finding machinery, probably under the supervision of the Bureau of Mines, would be set up. Senator Copeland is quoted as saying he will press for early consideration, but definite action at this session of Congress seems unlikely.

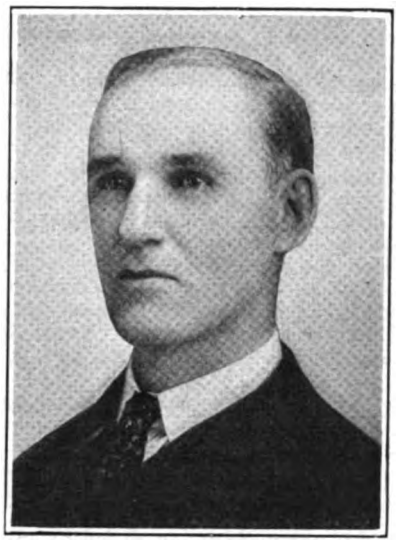
The biggest element of uncertainty which has been injected into the situation is when Congress will adjourn. Originally it was planned to end the sessions on May 15. That date has gone into the discard and June 1 is doubtful because of the insistence of certain members that other legislation, notably farm relief and radio control, be acted upon before Congress winds up its business. If the adjournment is unduly held up, proponents of coal bills will be given an opportunity for urging action on their program.

Calls Retailer Innocent Bystander

The testimony of Mr. Stephens before the House committee yesterday in a measure was an amplification of the position taken by the retailers when called upon recently by Secretary Hoover to state their attitude toward coal legislation. The retailers, he explained, are not directly involved in mine labor disputes and, therefore, can express only the views of the innocent bystander. He did not think, however, that the problem of labor relations could "be solved by legislation." Questioned by Representative Newton (Minnesota), Mr. Stephens said that he did not believe it was the function of Congress to act as a "wet nurse" to the public. At the same time he did not object to granting the President power "to handle a real emergency" if such powers had not already been given.

It was the opinion of the retailers that distribution in times of stress could be worked out more equitably and successfully by the industry itself than by a government agency. Mr. Stephens also questioned the conclusion that "fact information" is a cure-all. "If facts could prevent coal shortages and high prices," he asked, "why is it that strikes have occurred so frequently since the Coal Commission made its report?"

Fact-finding in normal times, he contended, can serve no useful purpose unless the federal government intends to set up machinery to control prices and profits. But no reason has been suggested why coal should be singled out for such treatment and a general excursion into the field of regulation of production, distribution and prices is counter to the American theory of government.



Eugene McAuliffe

Representative Wyant (Pennsylvania), who several times since the hearings opened has stressed the spread between mine quotations and retail prices, examined Mr. Stephens on that subject. It developed that the witness had sold Clearfield mine-run, costing approximately $6, New York, at $7.75 and $8.75 during the strike and West Virginia coal at a maximum of $9.50. The domestic consumer, however, demanded choice screened fuel, for which the New York retailer had charged $14 to $18. This coal had cost as high as $7.50 at the mines and carried a freight rate of $4.19. It was subject to a heavy degradation, leaving slack in the dealers' hands for which there was no market.

Retailers Unjustly Accused

Mr. Stephens sharply challenged charges of profiteering made against Washington retailers at a Senate committee hearing several weeks ago. It was unfair, he said, to take the price on one grade of coal and ignore the costs and realizations on all the other sizes and grades which the retailer must handle. As a matter of fact, Washington dealers had not averaged over 25c. a ton net on their business, some lost as much as 18c. and the highest average profit was under 50c.

Congressman Newton pointed to the conflict between the witness and Representative Wyant on the question of responsibility for profiteering as evidence of the need for a disinterested fact-finding body. He also brought up the subject of licensing dealers in interstate commerce as a means of regulation. Mr. Stephens thought conditions so changed since 1919-20 in the proportion of union-mined coal and in the attitude of the public toward substitutes as shown in the recent anthracite strike that such control was unnecessary.

Generally speaking, the witness told Congressman Corning (New York),

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there would be no disinclination upon the part of the retailer to opening his books to an impartial agency, provided that the examination would cover a long enough period to take in both valleys and peaks and so give a true picture. It was Mr. Stephens' belief, however, that more could be accomplished through voluntary co-operation than mandatory legislation.

How the intrusion of the federal government in wage negotiations has made national strikes possible was described to the committee by Mr. O'Neill. Between 1886 and 1919 there had been only one strike of any consequence in the unionized bituminous fields and that had been settled without government interference or public inconvenience. Prior to the time Dr. Garfield, U. S. Fuel Administrator, participated in the negotiations in the fall of 1917, agreements in different parts of the country expired on different dates. The basic Central Competitive Field contract ran out March 31, but agreements in the Southwest, Pacific Coast and Intermountain states, western Kentucky and the Kanawha and New River districts of West Virginia did not.

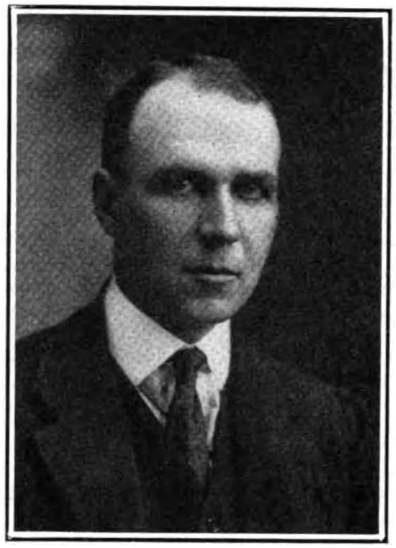
Deplores Federal Interference

Without government interference the industry itself "had worked out an arrangement which provided for an effective basic wage agreement made by a large and representative group of tonnage upon the economic conditions existing in the country and yet preventing the exercise of the arbitrary power to shut down all the unionized mines in the nation." The Washington agreement provided for the same expiration date in all districts. Thus, "with one stroke of the pen, governmental activity was instrumental in wiping out the system that avoided the emergency of a nation-wide strike which this committee is now talking about and considering."

That the government cannot compel men to work was shown in the injunction proceedings of 1919. "The court ordered the United Mine Workers to withdraw the strike order. A meeting of the miners' officials was called and the strike order was canceled—but the miners remained on strike." In the subsequent negotiations, added the witness, three branches of the government—the Department of Labor, the Fuel Administration and the Bituminous Coal Commission—"made three interpretations of the same state of facts and arrived at three different conclusions!"

Economic conditions, said Mr. O'Neill, are working to restore the pre-war situation. The unsound system maintained by the union is driving more and more tonnage to the non-union fields. Freight rates, too, are helping the Southern districts. The union output is contracting. "Government cannot cure this." Restoration of the pre-war status can and will be brought by the industry itself in a very short time. "The best that Congress can do to help this along is to leave the matter alone."

During the war, Mr. O'Neill testified in answer to a question from Congressman Wyant, the government had encouraged overdevelopment by allowing a 75c. premium to wagon mines. These mines, for the most part loading box cars, had enjoyed a full car supply.



J. G. Bradley

Mr. Bradley, the next witness, caustically criticized Congressmen introducing coal-control bills. His remarks drew a rebuke from the committee and a demand that the speaker confine himself to the subject under discussion. The crises which have provoked Congress to consider legislation, he said, have come from without the industry. In 1916-17 and in 1919-20 it was a failure of transportation that caused prices to skyrocket. In the 1919 and 1922 strikes the industry was the victim of a lawless organization. The transportation situation had changed and the labor problem, he contended, was taking care of itself in the expansion of non-union tonnage. If Congress wants to do something, let it change the appropriations given the Department of Justice by removing the bar against using such money in prosecution of labor combinations.

Charges Juggling of Statistics

Questioned by Congressman Mapes (Michigan) on fact-finding, Mr. Bradley replied that he had suggested to Mr. Hoover the advisability of amending the Census law so that the Census Bureau might have the same authority over mines as over manufacturers. He was opposed, however, to the creation of special bureaus to collect special statistics because such statistics were manipulated to support special theories. The Coal Commission, he declared, could not have reached some of the conclusions it did had it studied the statistics gathered under its direction.

Mr. Mapes wanted to know whether the witness would abolish the Department of Agriculture and the Bureau of Foreign and Domestic Commerce. Another member remarked *sotto voce* that the witness was in favor of abolishing everything. Mr. Bradley's declaration that it was not the function of the government to act as "a smelling committee" led Mr. Mapes to retort that the proper function of the government was to aid industry. Mr. Wyant asked whether the President should have power to protect the public. Mr. Newton repeated the thought in another form. The witness answered that such powers as might lawfully be granted the President already had and that the hope of federal interference in strikes would prolong such contests.

Mr. Gandy, concluding his testimony April 28, answered a barrage of questions from Congressmen Newton, Lea (California), Nelson (Maine), Huddleston (Alabama), Shallenberger (Nebraska) and Dennison (Illinois). He again explained his objections to the proposed legislative program. He could conceive neither of complete unionization as a remedy for coal-trade ills nor the possibility of modification of the Sherman law. Strikes, he pointed out, were not profitable. Prices over the years had been reasonable to the public and were little higher today, despite increases in production costs, than before the war. Emergency wage-fixing by governmental authority would only postpone a settlement of labor disputes.

Mr. Barnum, who followed Mr. Gandy, insisted that both relatively and actually the bituminous industry was efficiently conducted. In support of that position he compared average realizations in the United States with coal prices abroad, percentages of coal mined by machines and output per person employed. In 1921, for example, the average realization in this country was $3.24 per ton, against $5.04 in Great Britain and $6.27 in Belgium; in 1924 the average here was $2.46, as compared with $4.16 in Great Britain and $4.43 in Germany.

Can't Account for Hoover Dictum

Asked how he reconciled his claims on efficiency with Secretary Hoover's famous characterization of the industry, Mr. Barnum replied that he could not account for Mr. Hoover's views. He felt, however, that those directly engaged in the industry have a better opportunity to judge its efficiency. The witness told the committee that the margin of profit was too narrow and that the operators would be overjoyed with an average of 25c. per ton.

"The coal industry," maintained Mr. McAuliffe, the only witness heard last Thursday, "needs a new viewpoint." It has been too much a gambling venture, depending upon strikes and transportation difficulties to create panic demands. No industry of comparable importance has been as backward in labor relations, marketing methods and general production technique. For example, the steel industry, twenty-five years ago as chaotic as the coal industry today, "has displayed a will to compose its business and labor affairs. The coal industry, saturated with coal-mining and sales traditions imported from Great Britain, has failed to make even a substantial start in that direction.'"

Irregularity in coal operations and unbalanced, hysterical buying have compelled the railroads to invest two dollars in transportation facilities to handle coal for every dollar invested in the mines. Most of this railroad investment is non-productive eight months out of the year. This is a burden which indirectly falls upon the coal consumer although it has removed

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transportation shortage as a cause of high coal prices.

There are signs, too, that labor also must accept the principle of a business relation with the industry or disappear by attrition. The curse of present-day unionism, he said, was the craze for office. If someone could guarantee Mr. Lewis his job, the witness thought the president of the union would express a different viewpoint. Today, however, conservative officers are the victims of the political machinery of their organizations.

The Jacksonville agreement, he stated a little later during a colloquy with Congressman Huddleston, had been the best thing under the circumstances. He though that Mr. Lewis had felt that a three-year contract would give labor a chance to compose itself and lay the ground for a prevention of recurring strikes. The witness was satisfied to go along with the union if given a business administration. If not possible to work with the United Mine Workers, he probably would shift to the company union as the next best thing.

The witness put himself on record as definitely opposed to government ownership and to compulsory arbitration. "All the industry needs is a little intelligent guidance in finding itself." He advocated a law which would provide for a true and complete assembly by the Bureau of Mines of all the facts, including labor costs, cost of materials, hours worked, total costs and realizations. Such data would form a basis for intelligent determination of disputes and pave the way for mediation and conciliation on a sound basis. The cost of collecting such facts would be inconsequential both to the government and to the industry.

"The theory of a fact-finding law and a mediation and conciliation board," explained Mr. McAuliffe, "is based on the principle that neither side to a controversy could afford to defy public opinion when the facts relating to the same were available and of an authoritative and dependable character." Facts now available do not meet these tests.

Arbitration Methods Resented

It was the witness' belief that the method and character of arbitration heretofore employed were "more objectionable to labor than is the principle. Provision should be made by law for placing in the hands of the President the broadest possible power over the industry in the event a cessation of production, in part or whole, takes place and which is of a proportion that prejudices the well-being of the people." Such authority should cover emergency operation and distribution and include power to temporarily fix wages and selling prices. The determination of the exact methods to be employed should rest with the President and the working out of details with the Secretaries of Labor, Commerce and War.

Although urging these broad powers, Mr. McAuliffe voiced the belief that with all the facts available, their exercise probably would not be necessary. "The coal industry today," he concluded, "is in no sense organized, preferring to remain divided along



Walter Barnum

labor, geographical, market and other lines. It has had a generation of opportunity to find itself—and has failed. What it most needs today is to know the truth about itself, and, given such, it will pick its way up to and on to higher ground. Coal is a basic, fundamental necessity, and the welfare of society and government depends on its continuous production and transportation. It is, as managed today, wasting labor, wasting human life, and wasting itself."

Many Illinois Operators Now Handling Non-Union Coal

Invasion of non-union western Kentucky continues by Illinois operators seeking coal tonnage for distribution to replace their own product, made practically unsaleable by the wage scale in union territory. Almost all of the Illinois shippers are now selling western Kentucky coal, having suspended operations at their own mines because of the unsatisfactory price return.

Except for the Peabody Coal Co. and the Old Ben Coal Corporation, shippers handling non-union product maintain silence on the connections they have, regarding the non-union venture as merely an expedient.

In Chicago the move into western Kentucky is accepted as something more than a mere gesture in the attempt to bring about a solution of the wage problem when the union scale expires next spring. The jobbers' move is considered as an expansion of definite permanency aimed at broadening tonnages available for sale and distribution.

Gossip in Chicago on consolidations in Illinois is light. The reported merger at Belleville, in the Standard field, by the Bell & Zoller interests apparently is slumbering. It is declared there will be no development of note in this direction for the present.

Latest estimates are that only 100 mines in the state out of a total of approximately 400 are in operation and that one-third of the 100 mines are "captive" or industrially owned, leaving a scant 60 to 70 commercial mines to provide Illinois coal for the market.

Paisley's Boyd Mine Resumes On Non-Union Basis

Operations were resumed on a non-union basis April 29 at the Boyd mine of the Elm Grove Mining Co., Elm Grove, W. Va. The mine, which is controlled by the J. A. Paisley interests, of Cleveland, had shut down more than a month ago following a strike by union miners who refused to agree to a monthly payday. Three others of the company's mines were closed at the same time.

The Boyd mine had been operating under the Jacksonville agreement previous to the shutdown.

Pickets were on duty near the Boyd mine when the attempt to resume was made, but the picketers remained well away from company property. Ten state troopers were stationed in Triadelphia, but none was at the mine during the first few days. However, they are being held subject to call.

The new wage scale posted at the Boyd mine is: Loading machine coal, net ton, 63c.; cutting, 12½c.; entry yardage, 72c.; entry room yardage, 72c.; room neck yardage, 56c.; track layers (day), $6.50; drivers, $6; motormen, $6; trip drivers, $6; all inside day labor, $5.70, and all outside laborers, $5.44. The reduction is approximately $1.56 per man per day.

John Cinque, president of the sub-District No. 5 of District 6, United Mine Workers, in charge of the local district, stated that the members of the United Mine Workers would not go back to work under the proposed agreement.

Overtures made to the United Mine Workers of eastern Ohio by John S. Snure, manager of the Valley Camp Coal Co., also controlled by the J. A. Paisley interests, in connection with the operation of the Lucy and the Oco mines, located in Belmont County, have been ignored by the miners.

It was proposed by Snure that the two mines resume under the Jacksonville agreement, with the monthly payday, instead of the semi-monthly pay.

Union Firm for Jacksonville Pact

W. T. Roberts, secretary of the district union, said that "Paisley knows the Jacksonville contract and that is what he will have to live up to, to do business with us. We accept nothing short of the complete scale agreement."

Operations were resumed on an open-shop basis at the Mona Mine, at Maidsville, late last week, two cars being loaded during the first day's operation. This Paisley mine under normal conditions has a capacity of about 20 railroad cars. As to whether or not an effort will be made in the immediate future to operate the Connellsville By-Product Coal Co. plant on Scotts Run, the largest single producing mine in that section of West Virginia, no announcement has been made other than that the company has nothing to offer the employees except the 1917 scale.

Union miners continue to picket the plants of the Cleveland-Morgantown Coal Co., owned by the Pursglove interests, as well as the Paisley Connellsville By-Product plant, but so far there has not been any interference with the men going to work.

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House Committee Hopes To Report Constitutional Fact-Finding Bill Soon

By Paul Wooton
Washington Correspondent of *Coal Age*

Assurances have been given the President by Chairman Parker of the House committee on interstate and foreign commerce that a coal bill will be reported by his committee and will be pressed for passage at this session of Congress. The President has been advised further that a majority of the committee has come to an understanding as to the principle of the bill that will be recommended, although the details have not been worked out as yet.

It was stated at the White House that this information is very gratifying to the President and that he thinks Congress should enact legislation at this session along the lines indicated.

Any coal bill recommended by the committee is likely to pass. The committee on interstate commerce as now constituted enjoys high prestige in the House. It has the reputation of being conservative and careful. This means that many members who will not have had an opportunity to study the bill will vote with the committee. Moreover, any champions that the coal industry may have among the members of the House seem not to be aggressive.

When Representative Jacobstein made his speech in the House on April 27 a fine opportunity was presented to call to the attention of a large attendance of the membership the arguments against the constitutionality of the proposals made by the New York Congressman. As it was, ten members participated in the debate, but their object was not to disagree with the conclusions of Mr. Jacobstein but to bring out additional points to support his contentions. No champion of the coal industry arose to point out the vulnerable spot in the New York legislator's argument. This tends to confirm the opinion that no great difficulty will be experienced in getting a coal bill through the House.

Action Less Likely in Senate

In the Senate interest centers on other things. The prospects for action are more remote. A sub-committee of the committee on education and labor is considering all of the coal bills in the hope that the Copeland measure can be revamped into such form as will meet the approval of the full committee. Some of the provisions of the Oddie bill probably will be attached to the legislation which may be reported out. The chances all are that any bill that this committee may report will be less acceptable to the Senate than the bill likely to be presented in the House. The Senate, however, is in no humor to take up new business likely to provoke long debate.

The most significant point in the situation, however, is the fact that a bill passed by the House at this session will be before the Senate when Congress meets in December. At that time the rumblings of the storm likely to accompany negotiations for the renewal of the Jacksonville agreement will be heard. It is easy to see that a situation may develop that would cause the Senate to take quick action on pending coal legislation.

In the testimony of Eugene McAuliffe, of the Union Pacific Coal Co., the so-called administration members of the committee heard testimony very much to their liking. It will not be surprising if the legislation recommended by the committee will follow the advice of Mr. McAuliffe to propose a "federal fact-finding law that will provide for a true and complete assembly of all of the facts that surround the operations of the coal and coke industry, including the cost of labor, material, hours worked, hours of work available, total cost and realization, with the margin of profit gained or the loss sustained."

Smoke Nuisance Attacked

City combustion engineers in Chicago began a drive on smoke violators last week. The city Health Commissioner charges wanton air pollution and told a number of the violators haled before an inspection board that every man, woman and child in the city must pay an average of $12 a year because indolent and inefficient janitors and engineers cloud the air with smoke and soot. It was asserted that the aggregate cost is $35,000,000 annually for extra laundering and cleaning and that the annual waste in coal alone amounted to $7,500,000. The Health Commissioner said that 30,000,000 tons of coal literally went up the chimneys last year, as he said that smoke is nothing but unburned fuel.

38 Indiana Miners Jailed or Fined for Rioting

Following a trial lasting many days thirty-eight union miners were found guilty of riot by a jury in circuit court at Boonville, Ind., last week. A total of sixty-two defendants were tried. Three of those found guilty received fines and jail sentences, two fines without jail sentences and thirty-three were fined $25 and costs. William Stinson, of Oakland City, Ind., district board member of District No. 11, United Mine Workers, was find $500 and given ninety days in jail. Ed Spencer was fined $400 and given sixty days, and Alvie Lenn, $350 and thirty days. Steve Evans was fined $350, and Ersie Spencer, $200, with no jail sentence.

When the jury's verdict had been read the judge continued the bonds in force and continued the case until May 4, when the men were to be sentenced. No intimation was given as to what action the United Mine Workers will take toward an appeal. The case grew out of occurrences at the John Bull and Possum Ridge mines on Feb. 16, when organized miners are alleged to have beaten several non-union miners at each of these mines. Of the total of sixty-five miners indicted, three never have been apprehended.

Mining Engineer Hammond Banqueted by His Friends

Dinners were held in South Africa, Japan and in many European and American cities May 3 in honor of John Hayes Hammond on his attainment of the age of 71, but the largest celebration was held in New York City, which "Jack" Hammond himself attended. The President of the United States, the governors of ten states, twenty ambassadors and foreign ministers, railroad presidents, generals and admirals sent felicitations by telegraph, cable and mail.

C. S. Thomas, former U. S. Senator from Colorado, presided, and the speakers were Dr. A. T. Hadley, president, Yale University, who went to school and college with Mr. Hammond and who studied at Berlin when Mr. Hammond was at Freiburg; J. J. Davis, U. S. Secretary of Labor, on whose board of education Mr. Hammond had served; Dr. Alexander C. Humphreys, president of Stevens Institute of Technology, where Mr. Hammond received the doctorate; Key Pittman, U. S. Senator from Nevada, who recorded Mr. Hammond's contribution to mining, which latter he declared to be the determining factor in civilization, without which the upward progress of mankind could, in fact, be scarcely conceived; Colonel Henry D. Lindsay, past national commander, American Legion, who spoke of Mr. Hammond's war services; J. W. Bryan, of the National Press Club, whose club house, now building, finds in Mr. Hammond almost a foster-father, and Rev. J. E. Freeman, Bishop of Washington, who spoke of Mr. Hammond as a cathedral builder and, though eminently successful, not so much a man of wealth and power as one in happy accord with his fellow men. Dr. Humphreys in his address called attention to the fact that Mr. Hammond exemplified the oft-repeated statement that a man trained as an engineer and having an engineer's qualifications and aptitudes made an ideal man for service in public affairs.

Messages were read from Calvin Coolidge, the recently deceased Luther Burbank, Vice-President Dawes, Cardinal Hayes, Mayor Walker of New York and Chief Justice Taft, all of which spoke of Mr. Hammond in the highest of praise.

Coal Consumption by Trains Higher in February

Coal consumption during February by Class 1 railroads of the United States in locomotives in freight and passenger train service totaled 8,351,191 net tons, compared with 7,973,137 tons in the corresponding month of 1925, according to a report by the Interstate Commerce Commission. Consumption by districts was as follows: Eastern, 4,057,632 tons; Southern, 2,048,680 tons; Western, 2,244,879 tons, compared with 3,861,919, 1,879,326 and 2,231,892 tons, respectively, in February of last year. [The average cost of coal used by these railroads, printed in *Coal Age* last week —page 614—was erroneously stated as for March. The figures were for February.]

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Cassidy Mine Ordered Closed Because of Blowouts

Owing to a series of "blowouts," the last of which on April 6 caused the death of two miners, George Wilkinson, chief inspector of mines for British Columbia, ordered the closing of the affected section of the Granby Consolidated Mining, Smelting & Power Co.'s Cassidy colliery, in the Nanaimo district of Vancouver Island. Mr. Wilkinson stated that in the area affected, comprising some 20 acres, there had been 39 blowouts, or approximately one for every 150 ft. of driving. These blowouts often project heavy pieces of rock, and add considerably to the hazards of coal mining.

Charles Bocking, general manager; T. Plummer, comptroller for the Granby company, and Robert Henderson, superintendent of the Cassidy colliery, informed William Sloan, Minister of Mines, that the maintenance of the order would mean abandonment of further development in the southern area of the colliery, thereby limiting the life of the colliery to three and a half or possibly four years.

Mr. Sloan said that while he was anxious to assist the company in every way to bring production to the highest possible point, the safety of the miners was of primary importance. He said that careful consideration would be given to the situation by his department and a decision would be reached within two weeks.

Since the Cassidy mine was started, some six years ago, there have been 187 blowouts in different parts of it, and in 1921 there were two fatalities from this cause. The company employed George S. Rice, of the U. S. Bureau of Mines, to make an examination of the property, find the cause of the explosions, and suggest a remedy to safeguard the company's employees. Mr. Rice recommended that holes be drilled well ahead of the driving to relieve the gas pressure, and this practice has worked admirably in thick seams, but in development work, in driving through pinched portions of the seams, as in the instance of the recent fatal blowout, the practice recommended by Mr. Rice does not give the same warning, as the pockets of gas seem sometimes to escape the drillholes.

Chicago Association Expands

The Coal Division of the Chicago Contracting Team Owners' Association has been admitted to membership in the National Retail Coal Merchants' Association. Membership was obtained last week by Paul N. Snyder, manager of sales of the Calumet Coal Co., Frank Carey, of the Carey Coal Co., R. A. Miller, of Miller & Banker, and M. E. Robinson, Jr., of the M. E. Robinson Coal Co., all retailers with yards on the south side. About a year ago several members of the Chicago Coal Merchants' Association withdrew because of disagreements over policies and joined the Coal Division of the Chicago Contracting Team Owners' Association, which had previously been organized as a dual association in opposition to the Chicago Coal Merchants' Association.

Gay Mine Has First Fatality in Its History; In 22 Years Never Had Strike or Shutdown

For the first time in 22 years, the Gay Coal & Coke Co. had a fatality on April 28 at Gay mine, at Mount Gay, Logan County, W. Va. The mine had produced 4,000,000 tons of coal without a death. The Gay Coal & Coke Co. is the pioneer coal company in the Guyan Valley. The record is probably unsurpassed in the annals of the bituminous coal industry.

The fatal accident happened at 1:30 a.m., April 28, when Bud Wheatley, a negro, was caught by a slate fall and instantly killed. One hundred and forty men are employed in the mine, which was opened on Thanksgiving Day, 1904, when it was necessary to haul the coal in wagons to a siding in the town of Logan. Three teams did this work and three of the four teamsters were alive according to last reports, they being Tom Gilpin, Don Ellis and Jack Dempsey, heavyweight boxing champion.

In summing up the history of the mine, Robert M. Lambie, chief of the state Department of Mines of West Virginia, said in part: "Twenty-two years without a fatality; 22 years without a strike; 22 years without a shutdown; 22 years under the same active management."

H. S. Gay, president of the company, attributes much of the success of the low fatality rate to the systematic methods of F. C. Kellerman, foreman of the mine for the first 17 years of operation. Other factors, Mr. Gay said, were observance of the mining laws, good roof conditions, timbering done under the supervision of a company official, employment of native West Virginians with few exceptions and up-to-date transportation equipment and methods.

Ask Concessions on Deadwork To Open Ohio Mines

Several meetings of operators in the southern Ohio field, especially in the Nelsonville-Athens section, have been held recently at Nelsonville in an effort to obtain concessions from the various locals of the miners' union, which it is believed would enable some mines to resume operations. The matter is being worked out by the special scale committee and steps will soon be taken to have a joint meeting with union officials to consider the proposition. The proposal being worked out by the operators has to do with reduction in the cost of yardage, laying of track and setting of props as well as other small jobs. Under the Jacksonville scale miners are not permitted to do this work, but it is planned to get concessions which will permit mines to do such odd jobs and thus decrease the cost of production.

N. D. Monsarrat, head of Monsarrat Bros., operators in the Hocking field, has a plan which he will probably submit to the miners. His proposal is to have 60 per cent of the selling price go to the miners, to be divided equitably, and 40 per cent to the operators, the scale to be adjusted every three months and the miners having permission to audit the company's books. This proposition is not meeting with much favor among miners as a rule.

Southern Ry. Buys Equipment

The Southern Ry. has closed an agreement for equipment to cost $6,900,000. The purchases will include twenty Mikado type locomotives, ten consolidated type locomotives, twelve Pacific type locomotives, seven Mallet locomotives, twelve eight-wheel switching locomotives, four steel postal cars, twenty-five steel passenger coaches, fifteen steel baggage-express cars, 1,000 steel-frame coal cars, six steel mail-baggage cars, 1,000 box cars and 250 ballast cars.

Opening for Coal Economist

The U. S. Civil Service Commission announces an examination for assistant business economist (coal) to fill a vacancy in the Bureau of Mines, Washington, D. C., and vacancies occurring in positions requiring similar qualifications, for duty in Washington, D. C., or in the field. The entrance salary is $2,400 a year. After the probational period required by the civil-service act and rules, advancement in pay, without material change in duties, may be made to higher rates within the pay range for the grade, up to a maximum of $3,000 a year. Promotion to higher grades may be made in accordance with the civil-service rules as vacancies occur, provided the employees possess the qualifications deemed necessary for the corresponding advance in duties and responsibilities. Receipt of applications will close May 11, 1926.

The Commission also announces an examination for associate physicist ($3,000) and assistant physicist ($2,400), receipt of applications for which will close June 6. The examinations are to fill vacancies in the Bureau of Standards and the Bureau of Mines, Department of Commerce, and in positions requiring similar qualifications. At present there is a vacancy in the Bureau of Mines, in the position of assistant physicist, for duty at Pittsburgh, Pa. Advancement in pay may be made to $3,600 a year for associate physicist, and $3,000 for assistant physicist.

For physical chemist, applications will close May 25. The examination is to fill a vacancy in the Pittsburgh station of the Bureau of Mines and vacancies in positions requiring similar qualifications. The entrance salary is $3,800, and advancement may be made without change in assignment up to $5,000.

Information and application blanks may be obtained from the U. S. Civil Service Commission, Washington, D. C., or the board of civil service examiners at the post office or custom house in any city.

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Miners Strike Over Wage Cut By Gilbert-Davis Co.

A possible break with the union by the Gilbert-Davis Coal Co., the last remaining company actively operating in the northern West Virginia field under an agreement with the United Mine Workers, was indicated late last week when miners at the company's plant in the Scotts Run district of Monongalia County, West Virginia, went on strike as soon as it became known that they were supposed to have been working on a reduced wage scale since April 1. The reduction amounted to 15 per cent.

At the meeting at which it was decided by union miners to discontinue work, James Rogers, president of the Gilbert-Davis local, admitted that he had been notified some time ago by R. M. Davis, general manager of the company, that a 15-per cent cut would be made April 1, but because no further notice had been forthcoming he had not notified the pit committee. A further conference was scheduled for early this week, it was stated by Sanford Snyder, international representative in charge of Monongalia County union affairs.

Snyder asserted that the union was not taking any backward step and that there could be no deviation from the Jacksonville wage scale.

Reorganization Sought

An attempt is being made to reorganize the Carbonizing Process Corporation, capitalized under Delaware laws at $1,000,000. Two of the stockholders —George W. Disher and George S. Johns—have filed suit for a receiver in the Circuit Court of St. Louis County at Clayton, Mo. The concern was formed to produce a low-temperature process for reducing oil shale and creating a smokeless fuel from coal. The Coal Products Engineering Co., a subsidiary, had the Missouri rights and operated an experimental plant at Affton, Mo., with offices in the Federal Commerce Trust Building, St. Louis.

The receivership petition alleges that the directors of the Carbonizing Process Corporation diverted funds of that company to the use of the Coal Products Engineering Co., which had an identical board of directors. Mismanagement, waste of property, assets and income also are charged.

It was further charged that large blocks of stock were issued without consideration to F. W. Love, George W. Marshall, O. W. Hoopaw and others, and that a reorganization in 1924 was carried through without the approval of a majority of the stockholders of the company.

Walter Barnum, president of the Pacific Coast Co., New York, which has coal operations in the State of Washington, is being urged strongly for the presidency of the National Coal Association. The suggestion seems to be regarded as a happy one by so many of the operators that some are predicting his election at the Chicago meeting, June 9-11.

Forty-Year Service League Of Union Pacific Co.

Those who have been with the Union Pacific Coal Co. twenty or more years are eligible to membership in the company's Old Timers' Association, which will hold its second annual meeting on June 6 at Rock Springs, Wyo. These youngsters of twenty years' service and the officials of the company, who are likewise eligible even though still more recent, have little standing in the organization alongside of the real old timers who have served more than forty years, of whom there are 24, including James Moon, president of the association and a trackman, who has served 52 years, and Thomas H. Butler, the mine superintendent at Hanna, Wyo., who can show only 45 years of service. One man has been with the company 49 years; three, 47 years; three, 46 years; four, 45 years; four, 44 years; two, 43 years; two, 42 years; three, 41 years, and only one 40 years.

Canadian Steamship Lines To Stay in Coal Trade

"There is no foundation for the statement that the Canada Steamship Lines, Ltd., is withdrawing from the coal business," said T. R. Enderby, general manager of the company, in commenting on recent reports current in Montreal to the effect that the company was likely to retire from the coal business.

"During the 1925 season an extensive business in the sale and handling of coal was carried on by its subsidiary, the Century Coal Co.

"Acquisition of the George Hall Coal & Shipping Corporation and the Great Lakes Transportation Co. will add to the equipment formerly used by the Century Coal Co."

Private Enterprise to Exploit Korean Coal Reserves?

Shanghai, China, Feb. 27.—A survey by the government general of Korea of reserve coal deposits in the Daido, Koto, Kosei, Junsen and Kaisen districts, South Heian Province, indicates a total of 600,000,000 tons. Calculating the annual demand in Korea at 1,000,000 tons, the reserves are sufficient for 600 years. It is understood that in exploiting these fields, the government general is in favor of leasing them to private interests for operation rather than developing them under government auspices.

Since improved traffic facilities, such as the Heijo-Gensan and Kan-Kyo railways and the harbors at Sei-shin, Yuki, and Chinnampo, are in a fair way of realization, according to Mr. Kuroki, chief of the mining section in the government general, it is likely that a decision in regard to exploitation of the coal fields will be made soon.

High Safety Records Made In Bronze Trophy Contest

Extraordinary records of production with no loss of time occasioned by accidents were revealed in connection with the announcement made April 29 by Secretary Hoover of the Department of Commerce, of the names of mines and quarries adjudged winners of the national safety competition held under the auspices of the Bureau of Mines for the bronze trophy, "Sentinels of Safety," donated by the *Explosives Engineer* magazine. A Maryland quarry operated 350 days and worked 202,663 man hours during 1925 with no loss of time from accidents. Four other quarries, located in Indiana, Tennessee, New York and California, also operated with no loss of time due to personal injuries.

The winner in the anthracite group is the Upper Lehigh mine, Upper Lehigh, Pa., operated by the Hazle Brook Coal Co. Honorable mention was accorded the Midvalley mine, Wilburton, Pa., operated by the same company.

The winner in the bituminous coal mining group is No. 6 mine of the United States Coal & Coke Co., at Gary, W. Va. Honorable mention was given the No. 3 mine of the same company, also located at Gary, and the Rossiter No. 4 and 5 mine, at Rossiter, Pa., operated by the Clearfield Bituminous Coal Corporation.

Members of the jury of award were H. Foster Bain, James F. Callbreath, W. H. Cameron, H. L. Gandy, A. T. Goldbock, William Green and H. G. Jacobsen.

Gets Life Term for Murder In Insurance Plot

William H. Turner, former superintendent of the Auburn Coal Co. mine at McCarr, Ky., under indictment for the murder of two miners on Jan. 17, 1925, in an alleged framed explosion was sentenced to life imprisonment April 29 by a jury in the Circuit Court at Pikeville, Ky. One of the dead men was identified as Turner and members of his family collected about $85,000 of insurance money. Later Turner, who had fled to Europe, turned up and confessed the plot, apparently as a result of his failure to get part of the money.

Evidence indicated that Turner and some of his relatives conceived the scheme of sending Henry Wilson and another man into the mine to fire a shot when no one else was in the mine. Wires apparently had been connected so that when the men made connections at the other end, the explosion took place. The men were so badly mutilated that it was impossible to identify them positively, as both were decapitated. Turner had left his coat, watch and other personal effects at the scene of the explosion.

The Artemus Jellico Railroad Co., a coal road from Artemus, Ky., to Anchor, formerly the Cumberland Railroad Co., has asked the Interstate Commerce Commission for authority to operate the line and right of extension. It is understood that the company plans connections through the mountains to Knoxville, Tenn.

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Germany Resuming Old Place In Export Coal Market

Berlin, Germany, April 15.—Definite figures on the German exports and imports, now available, show 7,680,000 tons of bituminous coal imported in 1925, compared with 13,000,000 tons in 1924 and 10,540,000 tons in 1913. Exports last year were 13,645,000 tons. These figures clearly demonstrate that the foreign coal trade has again become an asset of German business. In 1924 imports of 13,000,000 tons were only in small part balanced by exports of 2,795,000 tons. In 1923, the year of the Ruhr occupation, exports were only 1,200,000 tons as against imports of 25,000,000 tons.

More marked still is the change in coke movement. Imports last year dropped to 69,000 tons, as compared with 338,000 tons in 1924. Exports, on the other hand, rose 3,776,000 tons. Although both imports and exports still remain behind those of 1913, the approach to pre-war conditions is unmistakable, especially when considering that large quantities of coal and coke going to France and Belgium under the Dawes plan are not included in the official statistics.

Of the 7,600,000 tons of coal imported nearly 4,000,000 tons came from former German possessions, the Sarre district, Polish Upper Silesia, and in a minor degree Alsace-Lorraine. Imports from Polish Upper Silesia, however, ceased during the second half of 1925 owing to the fact that the agreement reached after the partition of Upper Silesia, stipulating monthly shipments to Germany of approximately 500,000 tons, has expired and presumably will never be renewed.

Britain Only Exporter to Germany

The present situation leaves Great Britain practically the sole exporter to Germany of coal and in a lesser degree also of coke. As far as British imports are concerned, it is partly based upon the fact that the British market is still able to offer coal in German districts reached by water transportation at or below corresponding German prices. Quality also plays some part. Vigorous endeavors are being made to eliminate British coal from the German market as far as it is bought in consideration of prices, but preliminary figures of business within the first months of the year indicate no success of this movement in spite of special freight rates having been granted for coal shipped to districts in which British competition is most pressing. The increased coal exports of 1925 are a reward of the strenuous efforts made in this direction.

German coal has made progress in nearly all its pre-war markets, with the exception of the Austro-Hungarian successor states, Russia, Belgium and France, which latter two countries still receive considerable quantities on reparation account. Furthermore, a number of new countries are registered as a market of German coal in the definite returns of 1925 which were not listed in those of 1913. Among such may be mentioned Norway, Portugal, British Mediterranean, Dutch India, Turkey and Uruguay. The best coal customer is Holland.

Traffic News

No Cut in Belleville Rates To Missouri River

Equalization of rates from the Belleville district to Kansas City and St. Joseph, Mo., and Atchison and Leavenworth, Kan., with rates in effect from the Springfield district of Illinois via the Alton and Wabash railroads has been denied by the Interstate Commerce Commission in a decision in *Fifth & Ninth Districts Coal Traffic Bureau vs. Chicago, Rock Island & Pacific Ry. Co. et al.* The Commission, in an opinion by Commissioner Meyer, finds the existing rates from the complaining field neither unreasonable nor unduly prejudicial.

The case just decided is another chapter in the fight over rates to Missouri River crossings and related points which started ten years ago when the Chicago & Alton slashed its charges from Springfield to Kansas City and, as a result, built up its fine coal movement from practically nothing to over 500,000 tons per year. The Wabash, not to be outdone, met the cut via its Hannibal route. Other roads, however, have never reduced their rates to the Alton-Wabash levels.

Prior to the summer of 1916, the rates from Belleville, except via the Southern Ry., were 25c. per ton higher than from Springfield and rates from the group of mines immediately north of the Belleville district proper were on a parity with the Springfield district rates to Kansas City. At the present time the Wabash and Alton rates from the Springfield district to Kansas City are $2.49 on fancy lump, $2.37 on commercial lump and $1.98 on fine coal.

Via the Burlington the rates are $2.89 on lump and $2.38 on fine coal; via other routes rates of $2.98 and $2.92 are in effect. Lines charging $2.98 and $2.92 extend those rates to the other destination points involved; via the Wabash and Alton, a differential of 40c. per ton over the Kansas City rates is in effect.

Except via the Burlington, where a $3.28 rate is in effect on lump, complainants' mines are charged $2.98 on lump and $2.92 on fine coal.

The Alton was originally a defendant in this case, but complaint against it was withdrawn by the complainants. This, the Commission, held, narrowed down the question of undue prejudice to the Wabash R.R. This latter line was not responsible for the reductions from the Springfield district, but merely followed the lead of the Alton to protect its traffic. The Commission, therefore, found the charge of undue prejudice was not sustained.

Penna. Rate Makers Reversed

The Pennsylvania Public Service Commission was without authority to reduce freight rates on intrastate shipments of coal within six months of the return of the carriers to private control from federal control under the Transportation Act of 1920, the U. S. Supreme Court held April 26 in a decision by Justice Holmes. The decision reversed the rulings of the state courts, which had ordered the Pennsylvania and New York Central railroads to grant reparations to the New York & Pennsylvania Co., a shipper, for alleged overcharges on intrastate shipments of coal during the period involved.

At Odds on Coke Rates from Alabama to Michigan

A hearing was held before the coal, coke and iron ore committee, representing coal-carrying railroads, in the Chamber of Commerce, Pittsburgh, Pa., on April 29, to consider the continuation of emergency rates on coke from Birmingham, Ala., to points in Michigan, instituted during the anthracite strike. The emergency schedule expired April 30. The Birmingham interests asked continuation of the emergency rates. Byproduct plants in the Connellsville region were willing that through rates be continued, but contended that they should be on a higher level than the rates which expired.

No decision was reached by the committee and the matter probably will get before the Interstate Commerce Commission in an informal way in an effort to find some common ground and fair basis to both the Southern and Northern operators. These rates have already been the cause of considerable litigation before the I. C. C., the Northern interests having opposed their establishment before they were instituted. The rate from Connellsville to Detroit, 372 miles, is $3.65; Birmingham to Detroit, 742 miles, $4.65; Connellsville to Grand Rapids, 490 miles, $4.16; Birmingham to Grand Rapids, 767 miles, $4.91.

Indiana Miners and Operators Ask More Favorable Rates

Representatives of the coal mining industry in Indiana, including both operators and miners, are urging the state Public Service Commission to use its influence in bringing about a change in freight rates so that Indiana coal may compete with coal produced in Kentucky, West Virginia and other states. The complaints against prevailing rates were presented April 23 at the request of the state mining board.

The conference was held behind closed doors and attendants refused to discuss the plans considered. It was suggested that the Interstate Commerce Commission make a change in the rates with a possible view to raising them as they relate to some of the other zones and lowering them as they affect the Indiana field. The particular shipping destination point seemed to be Chicago and surrounding territory.

Members of the mining board, all of whom attended the conference, are: William A. Mitch, secretary-treasurer of District 11, United Mine Workers, and John A. Templeton, operator, both of Terre Haute; Tyler G. Lawton, of Bicknell, president of District 11; Jonas Waffie, of Terre Haute, and Albert Daly, of Knightsville, state mine inspector. Others who attended were Warren Blauvelt, William Zellars, Jet Moorman and B. E. Neal, operators. The commission made no promises, but heard the arguments advanced.

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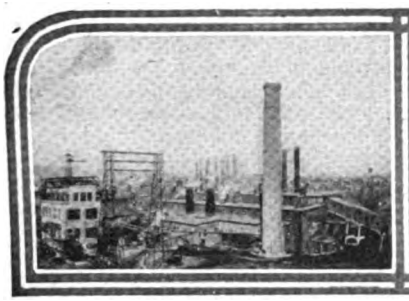

News Items From Field and Trade



ALABAMA

Convict Probe Broadens.—Inquiry into the death under mysterious circumstances of James W. Knox, a convict at the Flat Top camp, has been steadily widening as new witnesses appear before the Grand July. The Grand Jury will investigate conditions at other convict camps, including the Banner Mines, and possibly the entire convict leasing system and some of the high officials. Reports indicate that the Grand Jury's attention had been called to two other deaths at Flat Top under conditions similar to Knox's. A visit to the Banner camp and another to Flat Top are scheduled.

A new steel tipple is being erected and other improvements made to facilitate handling and preparation of output at the Parrish mine of the Railway Fuel Co. This operation, on the Mary Lee seam in Walker County, is one of the largest producers in the district, the output being in excess of 600,000 tons annually. It is a subsidiary of the Southern Ry., the lines of this system taking the entire output for locomotive and other fuel requirements.

The Southeastern Coal Co., formerly the Winona Coal Co., is erecting 50 five-room houses for employees at its mines at Gorgas.

COLORADO

Coal output in Colorado in March was 791,000 tons, an increase of 170,000 tons over the corresponding month of 1925, according to the state coal mine inspector's report. This increase in production was obtained with 12,296 men employed, compared with 13,008 a year ago.

The Colorado Fuel & Iron Co. reports for the first quarter of the year a surplus after all charges of $1,121,115, against $569,752 in the same period a year ago. Gross receipts were $10,557,454, in comparison with $10,866,067, while operating expenses were $8,571,837, in contrast with $9,429,861.

Examinations for deputy state coal mine inspector will be held at the Capitol Building, Denver, June 3, 4 and 5, under supervision of the Civil Service Commission. Applications must be filed by May 25. On the same dates at the same place, examinations will be held for mine officials by the state board of coal mine examiners.

INDIANA

According to an order by Judge Caleb J. Lindsey, L. A. Folsom, receiver, will receive bids for the Pigeon Creek Coal Co. strip mine property at Boonville for thirty-five days. The company has been operating under a receivership for some time. A portion of the property consists of a large acreage of strip coa . In case the receiver shall receive a bid sufficient to discharge all liens against the property, he was ordered to report to the court. If bids are insufficient, the receiver was ordered to sell the property at public sale on the fifteenth day following the expiration of the thirty-five days.

Plans are under way for a third coal mine at Somerville, 25 miles north of Evansville, to be operated by the same company which is now operating mine No. 1 at Somerville. The new mine will be known as mine No. 3 and will give employment to between 100 and 200 men, it is announced.

According to William Mitch, secretary-treasurer of the Indiana miners' union, a rock-dusting bill was passed at the last session of the state Legislature which compelled rock dusting in gassy or dusty mines, but it was lost somewhere between the Legislature and the Governor's office and therefore never was signed and did not become a law. The miners are preparing another similar bill for the next Legislature.

The Possum Ridge Coal Co.'s mine between Evansville and Boonville, has been closed down for several weeks while the company has been constructing a new airshaft at the suggestion of the state mine inspector.

KANSAS

The suggestion that the Kansas state mine-rescue and first-aid meet be held at Pittsburg later this year was definitely rejected at a meeting in Pittsburg on April 26. A couple of weeks before, plans for holding the meet in Pittsburg in May were halted because of lack of money. It is probable that a meet of smaller scope than that originally planned will be held in connection with Labor Day festivities at Arma.

Work Was Resumed April 17 at Jackson-Walker Coal & Mining Co.'s mine No. 16, near Dunkirk. The mine had been closed down six weeks. It is operated under lease by John Fulton.

At the mine examinations in Pittsburg, April 17, seven men sought certificates as shotfirers; three as gasmen, five as engineers and eight as mine foremen.

Fire of Unknown Origin during the night of April 19 destroyed the tipple and top buildings at Hamilton Coal & Mining Co.'s mine No. 7, near Radley. The mine was operated under lease by the Englevale Coal Co. The structures will be rebuilt.

KENTUCKY

An explosion early the morning of April 27 occurred while Burley Fugate and Jeff Wilson, inspectors for the Duvin Coal Co., at Providence, were making an inspection prior to start of the day's work in the mine. Wilson was cut off by a slate fall and was later taken from the mine dead. Fugate was not injured, and was able to get to the surface and call assistance. The mine caught fire, but the blaze was put out and the barricade removed within a few hours.

Orlando Seymour, 18 years of age, self-confessed slayer of William Schanzenbacher, 33 years of age, manager of one of the yards of the St. Bernard division, West Kentucky Coal Co., Louisville, has been sentenced to death for the crime. Seymour and a boy named Huddleston tried to hold up Schanzenbacher and take company money, which the latter was taking to his home for safe keeping. Evidence showed that the boy demanded the cash, and then started shooting. The other boy hasn't been tried as yet.

The West Kentucky Coal Co. discontinued the loading of coal at its South Diamond mine, near Morton's Gap, on May 1. The mine has been operated for 40 years. The company will continue to mine coal from workings of the mine but it will be hauled to the tipple of the Fox Run mine of the company, near St. Charles, where coal from both mines will be loaded into railroad cars. Employees of the mine will be distributed at the Arnold Nos. 9 and 11 mines, near Earlington, and at Fox Run mine.

MINNESOTA

The Carnegie Dock & Fuel Co. has taken over the business of two prominent independent retail concerns, the Crail Coal Co. and the Murray Coal Co. The Carnegie company already had yards in St. Paul and Minneapolis.

OHIO

Bids will be received by the clerk of the Cincinnati Board of Education until May 10 for supplying public schools with coal in the following amounts: 10,445 tons of smokeless mine-run, 5,115 tons of bituminous nut and slack, 1,466 tons of bituminous lump and 541 tons of bituminous mine-run.

The tipple of the Preston-Morgan Coal Co.'s mine near Nelsonville was burned to the ground recently, entailing a loss of about $18,000. It is doubtful if the tipple will be rebuilt for the time being at least.

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The Columbus Board of Purchase has rejected all bids for 21,700 tons of Ohio nut, pea and slack which were opened April 14. The board was authorized to purchase coal for the various city departments on the open market for the time being. The W. S. Harman Coal Co., Columbus, was low bidder at $1.24 per ton for 15,000 tons Hocking nut, pea and slack while the Red Jacket Consolidated Coal & Coke Co., Columbus, was low bidder on 6,700 tons of West Virginia nut, pea and slack, at $1.25 per ton for the Water Works Department.

Charles Minich, of Greenville, has been appointed receiver for the Ohio Tennessee Coal Co., which owns 4,700 acres of land in Monroe County. Directors in filing a receivership petition declared the company had assets of $556,763 but was in danger of insolvency because of threatened foreclosures. The company was organized to mine coal in the southeastern Ohio field.

OKLAHOMA

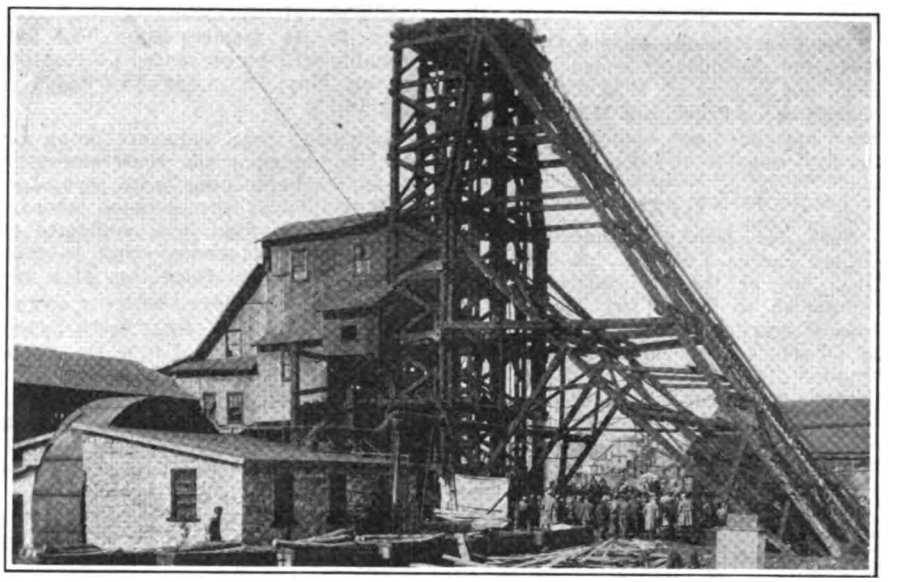
The Cambridge Collieries Co., which has 14 mines in the vicinity of Cambridge, is preparing to operate after a year's shutdown. The company has promulgated an adjusted wage scale based on the 1917 agreement and has announced its intention of opening its mines "with or without the miners' union."

PENNSYLVANIA

Lewis to Boost Pinchot.—John L. Lewis, international president of the United Mine Workers, will campaign in Pennsylvania next week in the interest of the candidacy of Governor Pinchot for the Republican nomination for United States Senator. Mr. Lewis will be accompanied by Thomas Kennedy, international secretary, and Philip Murray, vice-president. May 10 and May 11 will be spent in the soft-coal fields of western and central Pennsylvania, and the remainder of the week in the hard-coal regions. The officers of the five districts of the United Mine Workers in Pennsylvania recently indorsed the candidacy of Mr. Pinchot. The primary will be held on May 18. The other candidates seeking the Republican Senatorial nomination are Senator George Wharton Pepper and Congressman William S. Vare.

The Kuhn Brothers mine at Cokeburg Junction, one of the largest independent mines in the district, has resumed operations under the Jacksonville wage scale. The mine, which had been idle for several months, employs 600 men when operating at capacity.

Osborne Mine Resumes Open-Shop.—The Youghiogheny & Ohio Coal Co. has reopened its Osborne mine, at Wyano, on a non-union basis. The first attempt to operate was made Monday, May 3. The scale is not exactly the 1917 list, in some respects being slightly higher and in others slightly under. Prior to reopening the company posted notices calling on former employees to return to work, saying that a number of them had made overtures for the resumption of the mine. The mine had been shut down since July, 1924.



Crab Orchard Tipple, Eccles W. Va.

Shows surface plant of the Crab Orchard Improvement Co., where nineteen men perished in two explosions on March 8. The first blast occurred in Mine No. 5, where twenty-nine men were working, and spread to No. 6, where thirty-seven others were engaged. Forty-seven were rescued. In April, 1914, an open light caused a coal-gas explosion in No. 5 mine, in which 186 men lost their lives. The Crab Orchard company is a subsidiary of the Stonega Coke & Coal Co., controlled by the Wentz interests.

The Superior Court of Pennsylvania last week sustained the conviction of John A. Bell, former Carnegie banker and coal operator, and refused his appeal for a new trial. He was found guilty of embezzling and misapplying more than $600,000 of the funds of the Carnegie Trust Co., of which he was president.

Net earnings of $93,352, after charges, are reported for the first quarter by the Cosgrove-Meehan Coal Corporation. This is equal to 37c. a share on the 240,462 shares of common stock outstanding. Earnings for that quarter in 1925 were $18,353.

The Cowanshannock Coal & Coke Co. is building at its mine near Yatesboro a modern steel tipple similar to the one built by the Rochester & Pittsburgh Coal & Iron Co. at Ernest.

What has been referred to as a "monkey breaker" has been placed in operation by the Philadelphia & Reading Coal & Iron Co. at its Alaska mine, near Mount Carmel, where the breaker was recently destroyed by fire. This so-called "monkey breaker" was erected in record breaking time and coal is now being prepared in steam sizes for the market. The men laid off by the breaker fire have already returned to their former positions. In the meantime the coal company is pushing work on plans for the new steel breaker at the Alaska mine.

Oscar B. Goodyear and others have purchased from Madeira, Hill & Co. the entire capital stock of the Ashman Coal Co. Mr. Goodyear and his associates have taken over the operation of the Ghem mine, at Munson, including the sale of the coal.

Officials of the Hudson Coal Co. are anxious to purchase outright the cemetery of St. Hedwig's Polish Catholic Church at Larksville. Some time ago the company offered to move all of the bodies to a new cemetery and pay something for the change besides but the offer was rejected. It is the desire of the company to mine all the coal beneath the burial grounds. Most of the members of this congregation are mine employees.

Pinchot Can "Fire" Coal Police.—Whether or not Governor Pinchot is contemplating making wholesale dismissals among the coal and iron police he has just asked for and received an opinion from Attorney General Woodruff which informs him that he can dismiss them "to the extent of elimination." The Governor's grievance seems to be with the coal police, and the Attorney General in his decision on the points raised by the Executive says that during the past sixty years there have been complaints that the special policemen have been used in a way "to harass and oppress the striking miners of certain parts of the Commonwealth." A year ago twenty coal and iron police were dismissed from service in the western part of the state.

The Pennsylvania Coal & Coke Co. and subsidiaries report March deficit of $46,470 after charges, ordinary taxes, depreciation and depletion, but before federal taxes, against a deficit of $39,910 in March, 1925. Deficit for the first three months of 1926 totaled $20,205, comparing with a deficit of $158,684 in the same period of the previous year.

After baffling all efforts of fire fighters for many years a blaze in the old Jersey mine, in Plymouth township, is now beyond control and as a result the Glen Alden Coal Co. has closed operations at the Avondale mine, and the George Lindsay Coal Co., an independent concern, also has been forced to curtail mine production, putting 1,000 men and boys out of work. Several workers of the Avondale and Lindsay mines were overcome by blackdamp while fighting the flames. All modern methods are being used to fight the blaze, but officials admit the situation has become serious.

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TEXAS

The Texas Pacific Coal & Oil Co. reports for the quarter ended March 31, 1926, net income of $774,522 after expenses and charges, but before depreciation and depletion, against $493,126 in the first quarter of 1925.

UTAH

Sues for Heavy Damages. — The United States Fuel Co., of Salt Lake City, one of the two largest mining companies in Utah, has filed suit in federal court against the Lion Coal Co., of Ogden, to recover damages in the amount of $173,400.88. The two companies own adjacent properties in Carbon County and the plaintiff company alleges that in underground workings the Lion company has extracted $10,684 worth of coal from the ground belonging to it. It is further charged that the workings of the Ogden company have shut off from the United States Fuel Co.'s mine coal valued at $51,996.78. The plaintiff company charges that defendants have mined the coal entirely away from the adjoining boundary, making it necessary to leave pillars 100 ft. wide. The Industrial Commission of Utah requires that pillars 50 ft. wide shall be left at the exterior borders of a coal mine as a safety precaution.

VIRGINIA

For the first quarter of 1926 the Clinchfield Coal Corporation reports a net income of $126,684, after fixed charges and federal taxes, compared with $158,450 in the same period last year. The 1926 earnings are equal, after preferred dividendes and preferred-stock sinking funds, to 63c. a share on 145,476 shares of common stock, while the 1925 quarterly income equaled 86c. a share.

WASHINGTON

E. L. Brewer, of Satsop, has been elected president of the Morton Coal Co., which owns a valuable property at that place. J. W. Strubel, Elma business man, was chosen vice-president, and J. M. Bell, of La Grande, secretary. John McDonnell, of Morton; Floyd Sherwood, of Ajlune, and H. W. Gibson have been added to the board of directors. Plans have been made to develop a daily output of 300 to 400 tons.

New washing machines are being installed at the Bellingham coal mines.

WEST VIRGINIA

To Hear Coal Men on Taxes.—Taxation in West Virginia as it affects coal will be discussed by prominent coal men during a series of public hearings to be conducted by the tax commission of seven appointed by Governor Gore under legislative resolution to investigate and report on the question of revenue for state purposes. Meetings are to be held at Bluefield, May 10; Huntington, May 12; Charleston, May 14; Martinsburg, May 31; Clarksburg, June 2, and Wheeling, June 4. The West Virginia Coal Association is preparing a brief with particular reference to comparative receipts and expenditures since 1910, together with a résumé of such information as has been heretofore issued through the offices of the association to its membership. The brief probably will be presented at Huntington on May 12 or at Charleston on May 14.

Admitting that plans are going forward to organize the coal miners for collective bargaining with operators, R. M. Williams, former union leader in the Fairmont field, has confirmed reports that he is endeavoring to enlist supporters in the formation of a new labor organization.

The Maryland Coal Co. has reopened its No. 2 mine at Wendell, in the Taylor County field, giving employment to about 300 miners. It is possible, officials state, to operate the mine from three to five days a week, and indications point to steady operations for some time to come. It is possible, according to reports, that the Permid and Morgan mines at Hardman will resume operations soon, after being closed down for several months.

Carl L. Hornor, of Clarksburg, has been named as receiver for the personal property of the Wilbur Fuel Co., operating a mining plant at Lost Creek, Harrison County, on petition of H. D. Talbott Co., Inc., a general insurance and bonding concern. The Talbott company claims that it holds a debt of $7,991.51 against the Wilbur Fuel Co., the Thermal Coal Co., the Vulcan Coal Co. and others, and that there is an indebtedness of $700,000 against the Wilbur company, which is said to be unable to meet the obligation. Back pay of $12,000 also is said to be due miners.

Rock-dusting is nearly completed in the Carolina mine, No. 86, of the Consolidation Coal Co. Limestone has been used in nearly all of the workings and the treatment will be repeated as needed.

Administration offices of the Sycamore Coal Co., operating in the Winifrede seam near Williamson, will be removed to Huntington, quarters in the First Huntington National Bank building having been leased. S. W. Patterson and George Patterson, brothers, owners of the company, are residents of Huntington and are active in the civic and business life of the city. Production of the Sycamore mines is handled through the Old Ben Coal Corporation, Chicago.

One of the largest gatherings of mining men in southern West Virginia will be held in the Look Creek Y. M. C. A. at Mount Hope on Saturday evening, May 8, when the Fayette County and Raleigh County Mining Institutes and the men in the mining extension department of West Virginia University, Morgantown, will hold a banquet.

The West Virginia Eagle Coal Co. Boncar, Fayette County, is erecting a tipple with shaker screens, picking tables and loading booms at a cost of $25,000. The Eagle and No. 2 gas seams are worked there and the plant will have a capacity of 1200 tons.

A wooden tipple of the Davis Creek Land & Coal Co., five miles from Charleston, was burned down on April 24.

According to an announcement made on May 1 by Robert M. Lambie, chief of the state Department of Mines, 115 safety meetings were held in West Virginia during March.

E. W. Tildesley, president, and Sidney S. Stone, secretary and treasurer of the Tildesley Collieries Co., a coal sales agency of Charleston, which went into bankruptcy several months ago, were sentenced on April 30 by Judge McClintock, in federal court in Charleston, to serve two and a half years in the federal penitentiary in Atlanta, Ga. Both men entered a plea of guilty to using the mails to defraud in that they gave false financial ratings and statements. Failure of the concern caused three coal companies to go into bankruptcy, according to reports.

The New River & Pocahontas Consolidated Coal Co. has just completed work on a new steel tipple at its Kaymoor No. 1 mine. It is a four-track structure, capable of handling 250 tons of coal an hour. An output of 900 tons a day is now being handled over it. With better facilities now available for handling output at the No. 1 mine and with a decreased demand for coal, the No. 2, mine, at South Fayette, has been closed indefinitely.

The Ephraim Creek Coal & Coke Co. near Thurmond, Fayette County, has started to rock-dust its mine, according to a report received by the state Department of Mines, in Charleston.

The Camp Branch Coal Co., Greendale, Nicholas County, is planning to install a new tipple at its operation, according to reports.

WISCONSIN

The Stott Briquet Co. is enlarging its briquetting plant at Superior to increase its capacity. A new dryer will be added to the equipment. The present rated capacity of the plant is about 60 tons per hour and the improvements will permit an hourly output of 90 tons of briquets made from anthracite dust.

CANADA

J. S. Woodsworth (Labor, Winnipeg North Centre) called attention in the Dominion House of Commons April 23 to a report appearing in an English newspaper to the effect that 10,000 Welsh miners were coming to Canada in connection with a scheme which would "revolutionize coal mining in Canada." If this report were correct, had these men been informed of conditions in the Dominion? Charles Stewart, acting Minister of Immigration and Colonization, replied that he had no knowledge of the scheme to bring these miners to Canada or the proposed development.

Representatives of 25 municipalities in various parts of Ontario met in Toronto April 27 to consider the coal situation. The meeting was addressed by Premier Ferguson of Ontario and Premier Brownlee of Alberta, and a resolution was adopted calling for the appointment of a special committee to make an effort to obtain a supply of Alberta coal for Ontario. The speakers urged that, if necessary, the traffic be encouraged by a government subsidy.

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Among the Coal Men

A. J. Johnson, who recently severed his connection with the Standard Elkhorn Coal Co., Garrett, Ky., as vice-president and general manager, is now president of the Jacks Creek Coal Co., Johnsonia, Ky. His successor with the latter company is **H. H. Davis**, of Huntington, W. Va., formerly general manager of the Kentucky Elkhorn By-Product Coal Co., Dorton, Ky.

A. T. Watson has been appointed director of purchases and stores of the Consolidation Coal Co., with headquarters at Fairmont, W. Va., effective May 1. He has been succeeded as general purchasing agent by F. C. Davis. C. S. Moss, who was in charge of the stores of the Kentucky division, has been appointed general manager of stores with headquarters at Fairmont. The announcement of the changes was made by F. R. Lyon, vice-president in charge of operations of the Consolidation company, the appointments having been approved by C. W. Watson, president of the company.

R. C. ("Jack") Ferrell has resigned as secretary of the Logan Fuel Co., coal wholesalers, with offices in Charleston, W. Va., to accept a position with the Kanawha & Hocking Coal Co., at Longacre. C. A. Pauley, who had been Mr. Ferrell's assistant for some time, has been made secretary of the Logan Fuel Co. The changes were effective April 1.

George Wolfe, former secretary of the Winding Gulf Operators Association, underwent an operation last week which will keep him several weeks in a hospital. Mr. Wolfe was injured while exercising in the Y. M. C. A. gymnasium at Norfolk, Va.

C. W. Watson, president of the Consolidation Coal Co., has been elected to the executive committee of the Elk Horn Coal Corporation, succeeding J. W. M. Stewart, of Ashland, Ky., and to the board of directors, succeeding Harry Clark, of Fairmont, W. Va. The Consolidation Coal Co. stockholders at their annual meeting elected **G. J. Anderson**, executive vice-president, a director to succeed George C. Jenkins, resigned.

G. J. Anderson, executive vice-president of the Consolidation Coal Co., has been elected a director to succeed George C. Jenkins, resigned.

John A. Emslie has been appointed by general sales manager J. E. Westervelt, of Castner, Curran & Billitt, as the company's resident sales manager at Cincinnati. He was vice-president and general manager of the Creech Fuel Co. His place in the latter company has been taken by **Cliff R. Thomas**, long associated with the organization. **Elmer Wierhake**, who was for many years with the Kentenia Coal Co. and who opened the Cincinnati office for the General Coal Co. in 1924, has been appointed assistant to Mr. Emslie and will have charge of distribution for the company in Ohio.

A. B. Thurman, for a number of years property man for the Crowe Coal Co., has been appointed justice of the peace in Arma, Kan., to succeed Henry Forsyth, another former coal company employee, who died recently after having served as justice in Arma for many years.

Paul Shriver, for eight years a member of the Norfolk staff of the Smokeless Fuel Co., has accepted a position in the Norfolk office of the Consolidation Coal Co., which is enlarging its force. His position with the former concern has not been filled.



George S. Brackett

George S. Brackett, head of the Brackett Statistical Service, Fairmont, W. Va., became identified with the Consolidation Coal Co. on May 1. The understanding is that Mr. Brackett's work will be similar to that which he has done for the operators as a whole in the northern West Virginia field. The Brackett Service has been replaced by the Northern West Virginia Coal Bureau, which will operate under a governing committee of five operators, of which J. A. Clark, Jr., is chairman.

Milton Goodman resigned April 1 as sales manager of Richards & Sons, producers of Indiana coal, to manage his own company, the Gibraltar Coal Corp., 1930 Straus Building, Chicago. Mr. Goodman is president of the Gibraltar company, which is newly organized. **E. E. Munger** will be associated with him as vice-president. They will handle all coals, principally southwestern Indiana, southern Illinois and western Kentucky. **H. L. Jump** succeeds Mr. Goodman as sales manager of Richards & Sons. Mr. Jump comes from the eastern department of the company.

R. S. Frazier, for the past five years engineer at the Hiawatha mine of the United States Fuel Co., Hiawatha, Utah, has resigned to take up orange-growing in California.

Obituary

S. M. Williams, Former Head Of Burns Bros., Dies

Stephen M. Williams, former vice-president of the Central Railroad of New Jersey and chairman of the board of directors of Burns Brothers' Coal Co., died April 29 at the Hotel Majestic, New York City, in his eighty-seventh year.

He was born and educated in New York City. While a young man he entered the service of the Central Railroad of New Jersey in a minor capacity. After rising to the vice-presidency he retired about twenty years ago and became interested in several coal companies in New Jersey. When they were merged several years ago with Burns Brothers, he became an official of that corporation. He had not been active in business in recent years.

During the eighties and nineties when he lived in Roselle, N. J., Mr. Williams was active in New Jersey politics, serving several times as chairman of the Democratic State Convention.

W. H. D. Gibson, vice-president in charge of sales of the J. K. Dering Coal Co., Chicago, died from heart disease April 25 at San Antonio, Texas. He was buried April 27 in Oakwood Cemetery, following funeral services at Oakwood Chapel at 3 p. m. Mr. Gibson was 55 years of age and is survived by a brother and two sisters. He began as an office boy with the Chicago & Eastern Illinois R.R. and rose to the general freight agent position from which he stepped into the organization of the J. K. Dering Coal Co.

William Potter, who was appointed by President Wilson during the war as Federal Fuel Administrator for Pennsylvania, died April 29 at the Jefferson Hospital, Philadelphia, Pa., following an operation for appendicitis. Besides being the head of the large oilcloth manufacturing business of Thomas Potter's Sons, he held many positions of importance, being at one time ambassador to Italy, and at his death he was president of Jefferson Medical College, Philadelphia.

Association Activities

The Virginia Coal Operators' Association at its annual meeting, April 17, elected the following officers: President, Lee Long, president, Clinchfield Corp., Dante; Vice-president, Webb J. Willis, president, Norton Coal Co., Norton; Secretary-Treasurer, C. B. Neel, Norton. The directors include the officers and Douglas Terpstra, general manager, Premier Red Ash Coal Co., Red Ash; A. W. Wagner, president, Virginia-Lee Co., St. Charles; J. D. Martin, general superintendent of coal mines, Virginia Iron, Coal & Coke Co., Roanoke; R. E. Taggart, vice-president, Stonega Coke & Coal Co., Big Stone Gap, and R. S. Graham, vice-president, Wise Coal & Coke Co., Norton.

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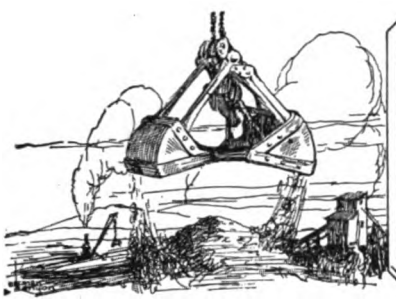
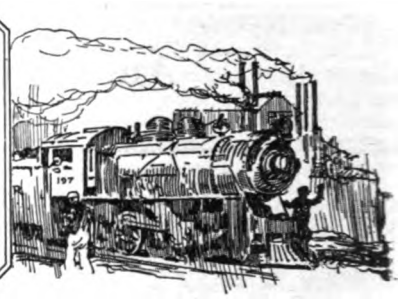


Production And the Market



Soft-Coal Trade Suffers from Waiting Policy; Anthracite Demand Quiet but Steady

Positive progress toward stability in the bituminous-coal trade is still difficult to discern, developments during the last week having been largely of a negative character. While the British labor tie-up brought about by the collapse of negotiations between the coal miners and operators will inevitably influence the coal trade on this side of the Atlantic, its effect at first will be more of a psychological than a tangible nature. It is too early at this writing to foresee how far-reaching its results may be, which will depend on the extent of the strike and how long it lasts.

Delay in the opening of lake navigation continues to limit the movement of tonnage from eastern Kentucky and West Virginia, which is having a depressing effect on sentiment in those fields. General industrial demand is good—in fact, is increasing in some lines—but open-market buying is keeping producers on the ragged edge. Contracting is backward in all markets, Mr. Micawber's policy being played for all it is worth.

Shift to Non-Union Coal in Midwest Still On

Large Middle Western consumers continue to shift from Illinois and Indiana coals to the cheaper output of non-union mines, the latest development along that line being the recent decision of one of the railroads to close its own Illinois mines and obtain its fuel supply from the docks. Smokeless coals showed renewed strength in the Chicago market last week because of export possibilities, and in Cincinnati an advance is expected within a fortnight. The Hocking Valley Ry. has lifted its embargo on shipments from southern West Virginia to Toledo, but fears are felt that there will be another tie-up unless navigation opens soon. Trade continues quiet at the Head of the Lakes and in the Southwest. The general sluggishness is unrelieved in central and eastern Ohio, western and central Pennsylvania and at Buffalo.

A slightly firmer tone has appeared in New England, due to the possibility of a demand from British shippers. At New York a more cheerful note prevails; surplus tonnages are diminishing and increased activity in contract renewals is expected. The Philadelphia, Baltimore and Birmingham markets are marking time.

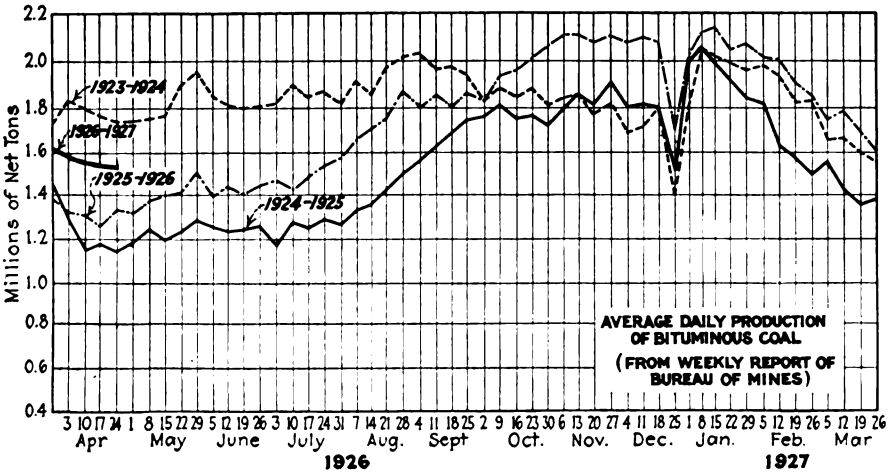
Price changes have been so slight as to make scarcely any appreciable difference in the average figure, *Coal Age* Index on May 3 standing at a fraction under 159 and the corresponding price at $1.92, a decline of about 1c. from the preceding week.

Production of bituminous coal also varies but little from recent levels, the total for the week ended April 24 being estimated by the Bureau of Mines at 9,251,000 net tons, a decline of 54,000 tons from the preceding week. Anthracite output continues to advance slightly, as shown by a total for the week ended April 24 of 2,095,000 net tons, an increase of 9,000 tons over the week before.

Domestic Hard Coal Firm; Steam Sizes Weak

Company producers of anthracite are moving domestic sizes without much difficulty, though buyers exhibit no unseemly anxiety to place orders. Independents are able to obtain only small premiums for their product, with pea in best demand. The weather has helped current demand, but buying for spring and summer fill-ups is below normal. May 1 circulars continue the price basis established at the close of the anthracite strike, as forecast in *Coal Age* at that time. Steam sizes are feeble.

The Connellsville coke market is dull, and an increase in spot offerings threatens to depress prices still further.



Estimates of Production
(Net Tons)

		1925	1926
BITUMINOUS			
April 10		7,843,000	9,420,000
April 17 (*a*)		7,515,000	9,306,000
April 24 (*b*)		8,030,000	9,251,000
Daily average		1,338,000	1,542,000
Cal. yr. to date	(c)	154,389,000	178,296,000
Daily av. to date		1,595,000	1,841,000
ANTHRACITE			
April 10		1,672,000	1,793,000
April 17		1,522,000	2,086,000
April 24 (*b*)		1,880,000	2,095,000
Cal. yr. to date	(c)	27,461,000	17,484,000
BEEHIVE COKE			
April 17		201,000	233,000
April 24		189,000	228,000
Cal. yr. to date	(c)	3,938,000	5,746,000

(*a*) Revised since last report. (*b*) Subject to revision. (*c*) Adjusted to equalize number of days in the two years.

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Shift to Non-Union Coals Continues

In the Middle West the shift of large consumers from Illinois and Indiana to the cheaper non-union coals continues. Within the past few days one of the important railroads in that section has laid plans to close down its own Illinois mines and to seek its fuel supply from the docks. Many big industrial plants, which have not definitely changed over, keep the producers on tenterhooks by open-market purchases. This policy, however, helps to maintain firmness in spot quotations.

Domestic business is slow. No operation in the southern Illinois field is wholly free from "no bills" of prepared coal and the number of suspensions is steadily growing. Only a few mines are working in the Duquoin district, but railroad storage orders are helping out the Mt. Olive section. The Standard field still suffers from ruinous competition. Central Illinois and Indiana are finding the going hard these days.

In the Chicago market, smokeless coals were stronger last week because of the export possibilities. High-volatile offerings, on the other hand, were weak. There was some small-lot weather business in St. Louis territory, but the volume was not large. Retails schedules effective May 1 show Standard coal at $4.75; Mt. Olive, $5.50; Franklin County, $6.25; gas coke, $10.25; byproduct coke, $10.50@$11; smokeless coal, $8.75@$9; domestic anthracite, except pea, $15.75@$16.50, and pea, $13.50.

Late Lake Start Hurts Kentucky

The delay in opening up the lake shipping season is having a depressing effect upon sentiment in eastern Kentucky. General industrial demand, however, is good and in some lines the volume of tonnage moving is increasing. Spot screenings from both the eastern and the western fields are holding firmly at $1@$1.10. Average prices on eastern Kentucky block are slightly stronger. Western Kentucky nut is a trifle weaker and mine-run is less firm. The changes, however, have been slight.

The most interesting development at the Head of the Lakes has been the appreciation in quotations on prepared smokeless coals, which were marked up 50c. a few days ago. Mine-run and screenings were increased 25c. at the same time. Buying for household consumption was the explanation for the stronger tone. General industrial and retail demand, while fairly satisfactory in volume, is on a hand-to-mouth basis. Anthracite factors are confronted with an unwillingness of the consumer to store during the spring and summer.

Shipping Open to Milwaukee

The opening of the Straits of Mackinac has put Milwaukee coal dock managers in a state of expectancy. The steamer "W. K. Field" is due with a cargo of 10,730 tons of bituminous coal, and will be followed closely by other steamers from lower lake ports. The only other development in the situation

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	May 4 1925	April 19 1926	April 26 1926	May 3 1926†
Smokeless lump	Columbus	$2.85	$2.85	$2.60	$2.50@$2.75
Smokeless mine run	Columbus	1.85	1.90	1.90	1.85@ 2.00
Smokeless screenings	Columbus	1.40	1.10	1.20	**1.15@ 1.30**
Smokeless lump	Chicago	2.85	2.60	2.60	2.50@ 2.75
Smokeless mine run	Chicago	1.95	1.80	1.80	1.65@ 2.00
Smokeless lump	Cincinnati	2.85	2.75	2.75	**2.75@ 3.00**
Smokeless mine run	Cincinnati	2.00	1.85	1.85	*1.75@ 1.85*
Smokeless screenings	Cincinnati	1.50	1.35	1.35	1.25@ 1.50
*Smokeless mine run	Boston	4.15	4.30	4.10	**4.25@ 4.40**
Clearfield mine run	Boston	1.95	1.85	1.85	*1.65@ 2.00*
Cambria mine run	Boston	2.15	2.10	2.15	*2.00@ 2.25*
Somerset mine run	Boston	2.05	1.95	1.95	*1.75@ 2.10*
Pool 1 (Navy Standard)	New York	2.55	2.65	2.65	*2.50@ 2.75*
Pool 1 (Navy Standard)	Philadelphia	2.60	2.80	2.80	2.65@ 3.00
Pool 1 (Navy Standard)	Baltimore	1.95	2.05	1.95	1.90@ 2.00
Pool 9 (Super. Low Vol.)	New York	1.95	2.20	2.10	*1.90@ 2.25*
Pool 9 (Super. Low Vol.)	Philadelphia	2.00	2.35	2.35	2.20@ 2.50
Pool 9 (Super. Low Vol.)	Baltimore	1.85	1.90	1.75	1.70@ 1.80
Pool 10 (H.Gr.Low Vol.)	New York	1.85	1.85	1.85	1.70@ 2.00
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.70	2.05	2.05	1.90@ 2.25
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.70	1.75	1.60	1.55@ 1.65
Pool 11 (Low Vol.)	New York	1.50	1.70	1.60	1.50@ 1.75
Pool 11 (Low Vol.)	Philadelphia	1.55	1.70	1.70	1.55@ 1.85
Pool 11 (Low Vol.)	Baltimore	1.45	1.60	1.45	1.45@ 1.50
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.45	1.45	1.45	*1.30@ 1.55*
Pool 54-64 (Gas and St.)	Philadelphia	1.45	1.45	1.45	1.35@ 1.55
Pool 54-64 (Gas and St.)	Baltimore	1.50	1.30	1.25	1.25@ 1.30
Pittsburgh sc'd gas	Pittsburgh	2.40	2.40	2.30	2.25@ 2.40
Pittsburgh gas mine run	Pittsburgh	2.15	2.05	2.05	2.00@ 2.15
Pittsburgh mine run (St.)	Pittsburgh	1.80	1.95	1.95	*1.75@ 1.90*
Pittsburgh slack (Gas)	Pittsburgh	1.50	1.55	1.55	1.50@ 1.60
Kanawha lump	Columbus	2.10	2.05	2.05	1.85@ 2.25
Kanawha mine run	Columbus	1.40	1.55	1.55	1.40@ 1.70
Kanawha screenings	Columbus	1.20	.85	1.05	*.90@ 1.10*
W. Va. lump	Cincinnati	2.00	1.85	1.80	**1.75@ 2.00**
W. Va. gas mine run	Cincinnati	1.45	1.50	1.50	1.40@ 1.65
W. Va. steam mine run	Cincinnati	1.30	1.30	1.40	1.35@ 1.50
W. Va. screenings	Cincinnati	1.15	.85	1.00	.90@ 1.10
Hocking lump	Columbus	2.25	2.35	2.35	2.25@ 2.50
Hocking mine run	Columbus	1.40	1.55	1.55	1.40@ 1.70
Hocking screenings	Columbus	1.25	1.05	1.15	*1.00@ 1.15*
Pitts. No. 8 lump	Cleveland	2.25	2.25	2.20	1.80@ 2.65
Pitts. No. 8 mine run	Cleveland	1.90	1.80	1.80	1.80@ 1.85
Pitts. No. 8 screenings	Cleveland	1.50	1.40	1.40	1.35@ 1.45

Midwest	Market Quoted	May 4 1925	April 19 1926	April 26 1926	May 3 1926†
Franklin, Ill. lump	Chicago	$2.60	$2.60	$2.60	$2.60
Franklin, Ill. mine run	Chicago	2.35	2.40	2.40	**2.35@ 2.50**
Franklin, Ill. screenings	Chicago	2.10	1.85	1.90	1.85@ 2.00
Central, Ill. lump	Chicago	2.35	2.30	2.30	2.25@ 2.40
Central, Ill. mine run	Chicago	2.10	2.05	2.05	**2.00@ 2.15**
Central, Ill. screenings	Chicago	1.85	1.30	1.50	**1.50@ 1.65**
Ind. 4th Vein lump	Chicago	2.60	2.40	2.40	2.25@ 2.60
Ind. 4th Vein mine run	Chicago	2.35	2.15	2.15	2.10@ 2.25
Ind. 4th Vein screenings	Chicago	1.95	1.70	1.80	1.75@ 1.90
Ind. 5th Vein lump	Chicago	2.25	2.15	2.15	2.00@ 2.35
Ind. 5th Vein mine run	Chicago	1.95	1.95	1.95	1.85@ 2.10
Ind. 5th Vein screenings	Chicago	1.55	1.30	1.35	1.30@ 1.45
Mt. Olive lump	St. Louis	2.50	2.50	2.50	2.50
Mt. Olive mine run	St. Louis	2.25	2.15	2.15	2.15
Mt. Olive screenings	St. Louis	1.75	1.40	1.40	1.40
Standard lump	St. Louis	2.25	2.50	2.50	2.50
Standard mine run	St. Louis	1.80	1.80	1.80	1.75@ 1.85
Standard screenings	St. Louis	1.70	1.15	1.15	1.15@ 1.20
West Ky. block	Louisville	1.80	1.75	1.75	1.65@ 1.85
West Ky. mine run	Louisville	1.35	1.25	1.25	1.10@ 1.40
West Ky. screenings	Louisville	1.20	1.00	1.05	1.00@ 1.10
West Ky. block	Chicago	2.00	1.75	1.75	1.65@ 1.85
West Ky. mine run	Chicago	1.30	1.15	1.15	.80@ 1.50
South and Southwest					
Big Seam lump	Birmingham	2.40	2.00	2.00	**1.90@ 2.40**
Big Seam mine run	Birmingham	1.75	2.00	2.00	1.75@ 2.25
Big Seam (washed)	Birmingham	1.85	2.00	2.00	1.75@ 2.25
S. E. Ky. block	Chicago	2.25	2.25	2.25	**2.10@ 2.75**
S. E. Ky. mine run	Chicago	1.65	1.65	1.65	1.50@ 1.85
S. E. Ky. block	Louisville	2.10	2.05	2.00	**1.85@ 2.25**
S. E. Ky. mine run	Louisville	1.30	1.45	1.50	1.35@ 1.65
S. E. Ky. screenings	Louisville	1.20	1.05	1.05	1.00@ 1.10
S. E. Ky. lump	Cincinnati	2.20	2.10	2.10	**2.00@ 3.00**
S. E. Ky. mine run	Cincinnati	1.35	1.50	1.55	*1.25@ 1.75*
S. E. Ky. screenings	Cincinnati	1.15	.85	1.05	*.90@ 1.10*
Kansas lump	Kansas City	4.50	4.25	4.25	*4.00*
Kansas mine run	Kansas City	3.00	2.85	2.85	**3.00**
Kansas screenings	Kansas City	2.60	2.50	2.50	2.50

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**; declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	May 4, 1925 Independent	May 4, 1925 Company	April 26, 1926 Independent	April 26, 1926 Company	May 3, 1926† Independent	May 3, 1926† Company
Broken	New York	$2.34	.....	$8.05@$8.60	.....	$8.15@$9.25	.....	**$8.25@$9.25**
Broken	Philadelphia	2.39	.....	8.60	$9.25	9.00@ 9.25	$9.25	9.00@ 9.25
Egg	New York	2.34	$8.50@$8.75	8.35@ 8.60	9.25@ 9.50	8.75@ 9.25	*9.00@ 9.50*	8.75@ 9.25
Egg	Philadelphia	2 39	8.60@ 9.20	8.40@ 8.60	9.25@ 9.85	9.15@ 9.25	9.25@ 9.85	9.15@ 9.25
Egg	Chicago*	5.06	7.86@ 8.50	7.44@ 8.18	8.48	8.13	8.48	8.13
Stove	New York	2.34	8.75@ 9.00	8.85@ 9.10	9.25@ 9.75	9.25@ 9.50	9.25@ 9.75	9.25@ 9.50
Stove	Philadelphia	2.39	9.20@ 9.55	8.85@ 9.00	9.60@10.10	9.35@ 9.50	9.60@10.10	9.35@ 9.50
Stove	Chicago*	5 06	8.22@ 8.70	7.92@ 8.10	8.84	8.33@ 8.58	8.84	8.33@ 8.58
Chestnut	New York	2.34	8.50@ 8.75	8.35@ 8.60	9.25@ 9.50	8.75@ 9.15	9.25@ 9.50	8.75@ 9.15
Chestnut	Philadelphia	2.39	8.60@ 9.45	8.50@ 8.60	9.25@ 9.75	9.00@ 9.15	9.25@ 9.75	9.00@ 9.15
Chestnut	Chicago*	5.06	8.14@ 8.35	7.69@ 8.00	8.71	8.38@ 8.58	8.71	8.38@ 8.58
Pea	New York	2.22	5.00@ 5.25	5.00@ 5.60	6.50@ 7.00	6.00@ 6.35	**6.50@ 7.25**	*6.00@ 6.25*
Pea	Philadelphia	2.14	5.40@ 5.75	5.35@ 5.40	6.50@ 7.00	6.00@ 6.50	6.50@ 7.00	6.00@ 6.50
Pea	Chicago*	4.79	4.91@ 5.36	4.69@ 5.00	6.03	5.65@ 5.80	6.03	5.65@ 5.80
Buckwheat No. 1	New York	2.22	2.00@ 2.50	2.50	1.75@ 2.25	3.00@ 3.50	**1.85@ 2.50**	3.00@ 3.50
Buckwheat No. 1	Philadelphia	2.14	2.25@ 2.75	2.50	2.25@ 2.75	3.00	2.25@ 2.75	*2.50@ 2.75*
Rice	New York	2.22	1.75@ 2.10	2.00	1.50@ 1.85	2.00@ 2.25	**1.50@ 2.25**	2.00@ 2.25
Rice	Philadelphia	2.14	1.90@ 2.00	2.00	2.00@ 2.25	2.25	2.00@ 2.25	*2.00@ 2.25*
Barley	New York	2.22	1.40@ 1.50	1.50	1.10@ 1.40	1.60@ 1.75	1.00@ 1.50	*1.50@ 1.75*
Barley	Philadelphia	2.14	1.50	1.50	1.50@ 1.60	1.75	1.50@ 1.60	1.75
Birdseye	New York	2.22	1.40@ 1.60	1.60	1.00@ 1.50	2.00	1.00@ 1.50	2.00

*Net tons, f.o.b. mines. †Advances over previous week shown in **heavy type**; declines in *italics*.

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was a sharp cut in the price of coke, the Milwaukee Solvay Coke Co. announcing that beginning May 1 it will deliver coke at $12.90 a ton instead of $15, which had been the price for some time past.

With warm weather prevailing at the Twin Cities there is little buying except for steam use. Some industries using water power, principally public utilities and some flour mills, have had to use steam auxiliary power because of the low stage of water due to the lack of rain. But demand from other industries has not been as active as had been hoped. Little is being done in contracting in any direction.

Spring Price Cuts in Southwest

Southwestern operators swung in line last week with announcements of spring reductions in prices. The top quotation on Kansas shaft lump was cut to $4. Strip-pit lump is quoted at $3.50; nut, $3.25; straight mine-run, $3; crushed mine-run, $2.50. These reductions and colder weather cleaned up an accumulation of "no bills." Prospects of a brisk storage business are bright. Except for those mines with industrial and railroad contracts, however, the current movement is light.

Farther west, milder temperatures slowed down business at the Colorado mines, although shippers still report a fairly steady demand for lump and nut sizes. Industrial demand also is active. In Utah, on the other hand, there is practically no call for domestic sizes and trade in general is more quiet than it has been for several months.

Ciucinnati Market Holds Its Own

Though winter's hold on the skirts of spring has slowed down lake movement, it has caused Cincinnati retailers to put in more buying orders than for years and to clean up bins and reserves in a way that is gratifying. With the regular stocking season coming, the upper lakes contemplating what must be expected from the Jacksonville agreement's termination next spring, and the British mine trouble the market is holding its own.

The best glimmer of hope has been a $3 circular on standard smokeless with excellent prospect of $3.25 spot within a fortnight. Stove and nut have been raised to $2.50, some naming $1.85 for mine-run, others $1.75. The effort to get $1.50 for byproduct slack still holds, but a scattering of screenings is still obtainable for $1.25. However the market is more $1.35-$1.40 than it is $1.25-$1.50.

The heavy make of 2-in. high-volatile, in anticipation of the opening of the lakes, is pretty well narrowed down and getting it for "mine-run" is a thing of the past. That with a lake designation takes $1.65@$1.95. Block, egg and mine-run are practically where they were a week ago. Screenings and slack still hold firm.

Last month was the best volume April in ten years for local retailers. Prices for May are unchanged. River business is at capacity with nothing untoward retarding it.

Sluggish uncertainty still marks the trade in central Ohio. Activity, it is felt, hinges largely upon the opening of lake navigation, as local steam business is quiet and domestic demand wholly dependent upon the whims of the weather man. Some railroad contracts have been closed, but many more are open. In a number of cases industrial consumers have signed up half-year agreements. For the most part, the price ideas of buyers and sellers are far apart. Southern Ohio production does not average over 17 per cent of capacity.

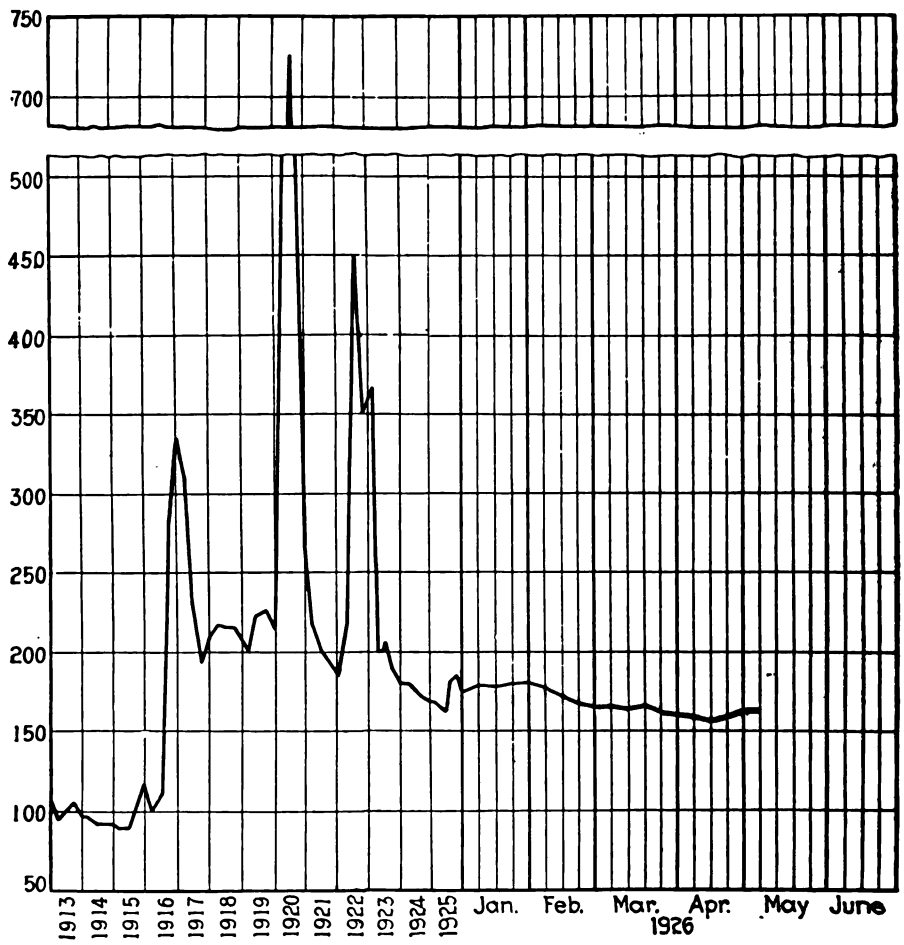
Demand Absent in Eastern Ohio

Eastern Ohio operators and jobbers report that inquiries are practically nil, and the retail business is gone absolutely. Some feelers have been out recently from large consumers for contract quotations, but no sizable agreements have been closed. Prices are unchanged except for distress lots sold at concessions to avoid demurrage. Production is being maintained at around 30 per cent of capacity. During the week ended April 24 the eastern Ohio No. 8 district produced 220,000 tons, which is 8,000 tons over output of the preceding week, and 13,000 tons over the corresponding week a year ago. Several additional mines are said to be on the verge of closing down, however.

Pessimism is the prevailing tone in western and central Pennsylvania. In the Pittsburgh district about half of the present greatly reduced output is coming from mines that have broken with the union. Mine-run prices are weakening. Youghiogheny gas holds to $2@$2.25, but good quality gas coal can be had at $1.90 or less and three-quarter at a shade under $2.25. There is little movement in steam mine-run and prices are off 10 to 15c.

In the central part of the state operators are struggling to keep mines running, but the contest is a disheartening one. "No bills" are accumulating and prices are sinking to lower levels. Pool 1 is $2.15@$2.40; pool 71, $2@$2.25; pool 9, $1.90@$2.15; pool 10, $1.75@$2; pool 11, $1.65@$1.80; pool 18, $1.60@$1.70. Except on pool 11, which is unchanged, these prices represent reductions of 10 to 30c.

Buffalo is as gloomy as ever. Fairmont quotations are off 5 to 10c. In the domestic market, offerings of anthracite and coke leave little room for bituminous and demand for soft-coal for house-heating is extremely light. Buffalo is displaying no interest in premium anthracite. The lake trade is again in operation. Three companies already have taken tonnage and others



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926				1925	1924
	May 3	April 26	April 19	April 12	May 4	May 5
Index	159	159	158	158	162	169
Weighted average price	$1.92	$1.93	$1.92	$1.91	$1.96	$2.05

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.

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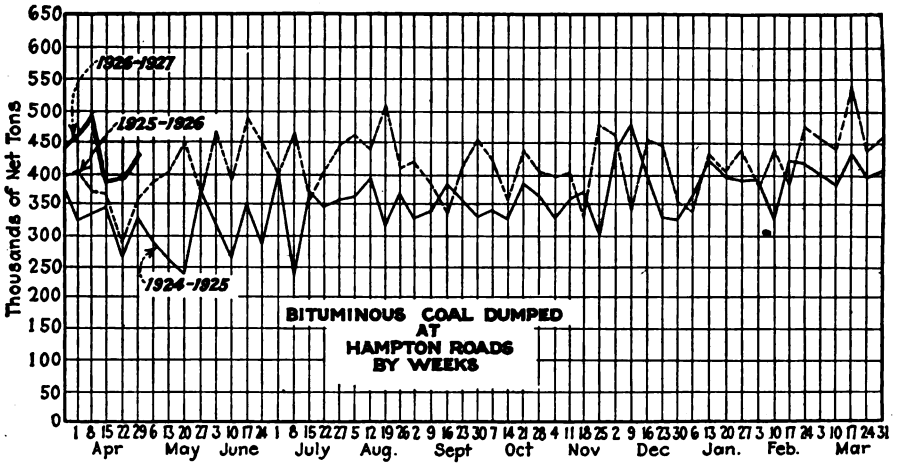


Car Loadings and Supply

	Cars Loaded	
	All Cars	Coal Cars
Week ended April 17, 1926	964,935	167,249
Preceding week	929,506	163,897
Week ended April 18, 1925	922,778	134,172

	Surplus Cars		Car Shortages	
	All Cars	Coal Cars	All Cars	Coal Cars
April 15, 1926	284,396	130,152	.....	.....
April 8, 1926	274,219	127,084	.....	.....
April 15, 1925	343,048	177,916	.....	.....

will follow. Actual clearances, however, will be delayed several days.

Continued cold weather keeps the retail trade at Toronto busy distributing coal. Added to this are the orders being placed for next winter's supplies. At the present time Pennsylvania anthracite has the call on the market. A small quantity of Welsh coal is moving and quite a demand for coke. Freight rates shut out Alberta coal. Recent reductions in tariffs on manufactured goods may have an adverse demand on the sale of steam sizes.

New England Spot Market Firmer

Owing partly to possible demand from English shippers the spot market for steam coals f.o.b. Hampton Roads last week was slightly firmer. Compared with $4.10@$4.15 as a minimum for No. 1 Navy Standard Pocahontas and New River a week ago there have been sales since at $4.25@$4.35, although the tonnages placed have been by no means heavy. Accumulations are still the rule, but further curtailment has been taking place and more careful supervision exercised than during most of April.

At practically all the discharging ports at this end there has been no relief from the dull market that has prevailed for some weeks. Prices on cars at Providence have been depressed to $5.25 as a minimum per gross ton, with only a reasonable volume of coal being absorbed, while at Boston the range has been about 20 to 25c. higher. Several contracts have been placed for six to nine month periods at barely in excess of $5.50.

Neither all-rail nor by water routes is there any demand for central Pennsylvania output, save in the narrow territory reserved to all-rail shippers. Prices are based on the cost of mining operations, and in no direction is there buying of any moment.

Optimists Reappear at New York

The optimists are showing their faces in the New York bituminous market. Reserve tonnages are diminishing and there is promise of more activity in contract renewals this month. It is no longer easy to buy coal at tidewater on a basis under mine quotations and spot quotations generally are so low that producers consider closing down more profitable than further reductions. Movement over the piers runs between 400 and 500 cars a day.

Slack coal is the most active size in the Philadelphia spot market. With demand for prepared sizes at such a low ebb, the tonnage of free slack naturally is limited and readily commands $1.20@$1.30. In spite of complaints that consumers will not contract, there is, nevertheless, a substantial movement of coal from the mines and no indications that the quantity will be materially reduced. The bunker market is slightly more active as some vessel owners are taking on extra coal because of the British situation. The Baltimore market is marking time.

Disposition of low-grade steam coals on the Birmingham spot market is becoming more difficult, but the medium- and high-grade fuels are moving in fair volume. Contract business is confined largely to renewals and the majority of the new agreements carry modest increases over last year's prices. A number of railroad contracts, including that of the Seaboard Air Line, are pending.

Effective May 1, prices on domestic sizes were advanced 15 to 20c. per ton. Big Seam lump is now $1.90@$2.40; Carbon Hill, $2.65; Cahaba, $3.70@$4.20; Black Creek, $3.70@$3.95; Corona, $2.90; Montevallo-Straven, $4.45; Montevallo-Dogwood, $4.70; Montevallo-Aldrich, $4.95. Egg prices are 25c. and nut 75c. under the lump quotations. There has been no change in steam prices. The foundry coke market is firm at $5.50@$6.50, ovens. Domestic egg and nut coke drag at $4.50@$5.

Hard-Coal Demand Unhurried

The New York market is absorbing all the tonnage of company domestic anthracite offered, but there is no feverish buying. Only small premiums are obtainable on independent coal, with pea the most active size. As forecast, the May 1 circulars continued the basis established at the end of the anthracite strike. Steam sizes are weak. Some distress rice was offered last week at $1 and some barley as low as 75c.

At Philadelphia the consumer demand for hard coal has been supported by the weather, but there is less than the normal buying for spring and summer fill-ups. High-premium coals are in eclipse and certain independent shippers are trying to persuade retailers to take monthly allotments at prices only 25c. over company figures. Pea continues to be in unusual demand and some dealers have been trying to satisfy their trade with a mixture of nut and No. 1 buckwheat.

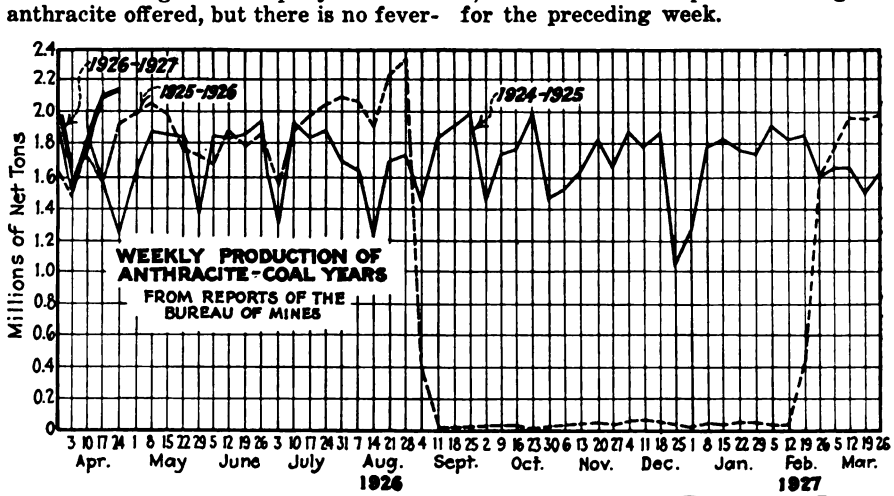
The juniors drag. One of the largest company shippers is openly offering No. 1 buckwheat for spot shipment at $2.50 and has reduced the contract price to the same figure. Barley stands up better than either buckwheat or rice.

Baltimore retailers have been enjoying a good business in deliveries for current consumption. The desire upon the part of the consumers to lay in coal for next winter, however, appears to have been dampened.

Spot Offers Menace Coke Market

Dullness rules in the Connellsville region. Prices are unchanged, but there has been a disquieting increase in the offerings of spot furnace coke. Unless production is more sharply curtailed, it is predicted that prices will suffer. Foundries are working cautiously and most of the larger operations are well covered by contracts.

Coke output in the Connellsville and Lower Connellsville region during the week ended April 24 totaled 169,300 tons, according to the Connellsville *Courier*. Furnace oven output decreased 3,200 tons and merchant oven production, 70,100 tons, showed a decline of 3,000 tons when compared with figures for the preceding week.



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Foreign Market And Export News

Buying Pressure Grows In Welsh Coal Field, but Newcastle Market Lags

London, England, April 20.—The Welsh steam coal market is being subjected to pressure from both inland and foreign consumers, who are endeavoring to lay in all the stocks of coal they can before April 30. The operators have sold just about all the coal they can. Only odd lots are obtainable, and these can be obtained only at substantial premiums on recent quotations.

Prices in consequence show wide fluctuations and it is difficult to give a definite price for any class of coal, as operators are getting what they can while the rush lasts. It must be remembered that the present boom is unnatural and that the balance will be restored in a few weeks' time by unusual slackness.

There is greater optimism in Wales now over the outlook and a feeling prevails that some way out will be found which will avoid a national stoppage. One or two knotty points remain to be cleared up, chiefly the questions of national regulation of wages and working hours.

Newcastle provides a striking contrast to Wales. Though the latter field is experiencing a rush, Newcastle is quiet, and the reason probably is to be found in the fact that foreign buyers can get all the coal they want elsewhere at lower prices. There is something akin to a slump in the Newcastle market, with little prospect of a revival.

Output by British collieries during the week ended April 17, according to a special cable to *Coal Age*, totaled 5,610,000 gross tons, compared with 3,696,300 tons the preceding week.

Strike Threat Helps Belgium

Brussels, Belgium, April 17.—Fears of a general tie-up of British coal mines on May 1 have increased inquiries for Belgian fuel. The general situation, however is unsatisfactory. A number of operators are closing down collieries. Domestic stocks are growing and demand is fading.

On the industrial side, coking smalls are finding a ready market at 87@89 fr. and smalls for lime making are up to 72 fr. Lean duffs for cement burning are somewhat scarce at 42@45 fr. Official Syndicate prices on coke continue at 125 fr. for Belgian fuel and 120 fr. for German reparation coke, but open market prices are 117.50@120 fr. Effective May 1, however, the official price on reparation coke will be increased to 137 fr. and coking smalls from 83 to 88.50 fr.

French Trading Marks Time

Paris, France, April 22. — Current trading in the French coal marts jogs along with little material change. Domestic demand is seasonally dull. Industrial orders are well supported by the general commercial activity of the country. With sterling at 145 fr. and a general rush to buy British coals in anticipation of a strike, the purchases made by French buyers are very restricted. This, of course, reacts in favor of the French collieries.

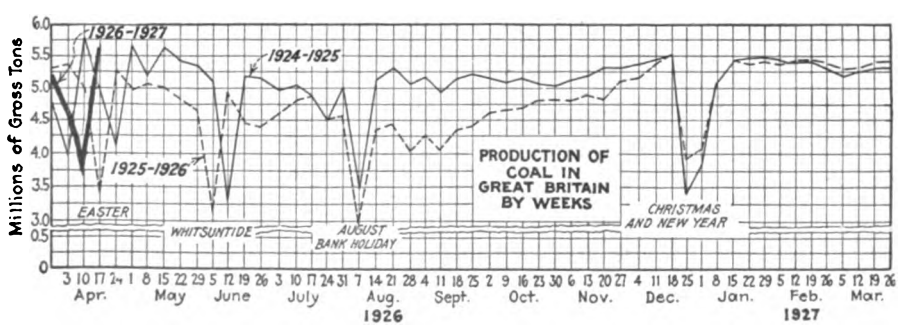
During March France imported 1,352,114 metric tons of coal—principally from Great Britain and Germany—and exported 390,892 tons. Coke imports, chiefly of German origin, totaled 518,084 tons; exports, 49,872 tons. Imports of patent fuel, with Belgium, Luxemburg and Germany the main sources of supply, were 91,294 tons; exports, 21,848 tons.

March Imports of Anthracite Make New Record

Anthracite imports into the United States during March struck a new high level, totaling 305,851 tons, of which 190,000 came from the United Kingdom, 71,000 from Germany and 25,000 from Belgium, according to the Minerals Division of the Department of Commerce. This is the greatest quantity of anthracite ever imported in an equal period of time, and is almost 100,000 tons in excess of February imports, when a record was also established.

Since Sept. 1 of last year up to April 1 this country has imported the unprecedented quantity of 938,000 tons of anthracite.

Imports of coke reached 86,000 tons, which exceeds imports of any month of this or last year. The United Kingdom led among sources of origin with 45,000 tons and was followed by the Netherlands with 34,000. Bituminous imports amounted to 45,000 tons as compared with 36,000 tons in the month preceding.



Heavy Bunkering at Panama

During March, 1926, the coal delivered by the Panama Canal coaling plants amounted to 50,031 tons. This was the largest month in coal disbursements since January, 1921, when a record of 63,420 tons was established.

On March 15, all previous records for a single day's bunkering were broken, when 8,846 tons were delivered to four commercial and three navy vessels. No record for rapid bunkering of any particular ship was established, however.

Export Clearances, Week Ended April 29

FROM HAMPTON ROADS

	Tons
For British West Indies:	
Nor. Str. Jessie, for St. Lucia	3,503
For Argentine:	
Br. Str. Vera Radcliffe, for Buenos Aires	7,726
For Italy:	
Ital. Str. Maria Enrica, for Porto Ferrajo	10,593
Ital. Str. Adamello, for Porto Ferrajo	8,402
For Brazil:	
Br. Str. Maresfield, for Rio de Janeiro	5,648
For Canada:	
Ital. Str. Eltore, for Three Rivers	6,183

FROM PHILADELPHIA

For Cuba:	
Br. Str. Baron Ailsa, for Antilla	

FROM BALTIMORE

For Italy:	
Ital. Str. Monte Nero	6,591

Hampton Roads Coal Dumpings*

(In Gross Tons)

	Apr. 22	Apr. 29
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week	124,837	159,421
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	89,821	112,559
C. & O. Piers, Newport News:		
Tons dumped for week	139,041	113,812

* Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS

	April 24	May 1†
Pool 1, New York	$5.50@$5.75	$5.50@$5.75
Pool 9, New York	5.05@ 5.25	5.00@ 5.20
Pool 10, New York	4.75@ 5.00	4.75@ 5.00
Pool 11, New York	4.50@ 4.75	4.50@ 4.75
Pool 9, Philadelphia	5.10@ 5.40	5.10@ 5.40
Pool 10, Philadelphia	4.80@ 5.15	4.80@ 5.15
Pool 11, Philadelphia	4.25@ 4.50	4.25@ 4.50
Pool 1, Hamp. Roads	4.25	4.25
Pool 2, Hamp. Roads	4.05	4.15
Pool 3, Hamp. Roads	3.90@ 4.00	4.75
Pools 5-6-7, Hamp. Rds	3.90	4.10 @4.15

BUNKERS

Pool 1, New York	$5.75@$6.00	$5.75@$6.00
Pool 9, New York	5.30@ 5.50	5.25@ 5.45
Pool 10, New York	5.00@ 5.25	5.00@ 5.25
Pool 11, New York	4.75@ 5.00	4.75@ 5.00
Pool 9, Philadelphia	5.35@ 5.65	5.35@ 5.65
Pool 10, Philadelphia	5.05@ 5.40	5.05@ 5.40
Pool 11, Philadelphia	4.50@ 4.75	4.50@ 4.75
Pool 1, Hamp. Roads	4.35	4.35
Pool 2, Hamp. Roads	4.15	4.25
Pools 5-6-7, Hamp. Rds.	4.00	4.15

Current Quotations, British Coal, f.o.b. Port, Gross Tons

Quotations by Cable to *Coal Age*

Cardiff:	April 24	May 1†
Admiralty, large	26s.6d.	27s 6d.
Steam smalls	17s.@18s.	18s 3d.
Newcastle:		
Best steams	16s.6d.	16s.3d.
Best gas	20s.	20s.
Best bunkers	17s.6d.	17s.6d.

†Advances over previous week shown in **heavy** type; declines in *italics*.

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Coming Meetings

Chamber of Commerce of the United States. United States Chamber of Commerce Bldg., Washington, D. C., May 10-13.

Chemical Equipment and Process Engineering Exposition, under the auspices of the Association of Chemical Equipment Manufacturers, Inc., at the Public Hall, Cleveland, Ohio, May 10-15. Secretary, Roberts Everett, 1328 Broadway, New York City.

Mine Inspectors' Institute of America. Annual meeting, Seventh Avenue Hotel, Pittsburgh, Pa., May 11-13. Secretary, G. B. Butterfield, Hartford, Conn.

International Railway Fuel Association. Hotel Sherman, Chicago, Ill., May 11-14. Secretary, J. B. Hutchinson, Omaha, Neb.

National Retail Coal Merchants' Association. New Willard Hotel, Washington, D. C., May 17-19. Resident vice-president, Joseph E. O'Toole, Transportation Bldg., Washington, D. C.

The American Mining Congress. Annual Exposition of Coal Mining Equipment, May 24-28, at Cincinnati, Ohio, with operating conference. Assistant secretary, E. R. Coombes, Washington, D. C.

International Geological Congress. Fourteenth congress, Madrid, Spain, May 24, 1926. Secretary, E. Dupuy de Lome, Plaza de los Mostenses, 2, Madrid, Spain.

Midwest Retail Coal Merchants Association. Annual meeting, May 25 and 26, at Kansas City, Mo. Secretary, James P. Andriano, St. Joseph, Mo.

Pennsylvania Retail Coal Merchants' Association. Annual meeting, York, Pa., May 27 and 28. Secretary, W. M. Bertolet, Reading, Pa.

Western Canada Fuel Association. Annual meeting at Winnipeg, Manitoba, Can., May 27 and 28. Secretary, W. H. Morrison, Winnipeg.

West Virginia Coal Mining Institute. Annual meeting, June 1-2, Bluefield, W. Va. (tentative). Secretary, R. E. Sherwood, Charleston, W. Va.

American Wholesale Coal Association. Annual meeting at Toledo, Ohio, June 7-9. Treasurer, R. B. Starek, Union Fuel Bldg., Chicago, Ill.

Association of Iron & Steel Electrical Engineers. Exposition and convention at Hotel Sherman, Chicago, Ill., June 7-10. Secretary, J. F. Kelly, 1007 Empire Bldg., Pittsburgh, Pa.

National Coal Association, June 9-11, at Drake Hotel, Chicago, Ill. Executive secretary, Harry L. Gandy, Southern Bldg., Washington, D. C.

American Institute of Electrical Engineers. Annual convention, White Sulphur Springs, W. Va., June 21-25. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

Illinois Mining Institute. Annual summer meeting on steamer "Cape Girardeau," leaving St. Louis, Mo., June 24 and returning June 26. Secretary, Frank F. Tirre, Central National Bank Bldg., St. Louis, Mo.

New Equipment

Pressure Assures Positive Lubrication of Worm

Worm speed-reduction gears usually are lubricated by a splash system. Either the worm or the worm wheel dips into the lubricant and the oil thrown off by the moving parts is allowed to find its way down the inside of the casing to the bearings. Special channels or other means may be provided to facilitate this method of lubrication. Splash oiling is not adequate, however, for reductions operating at high speed or those transmitting large quantities of energy.

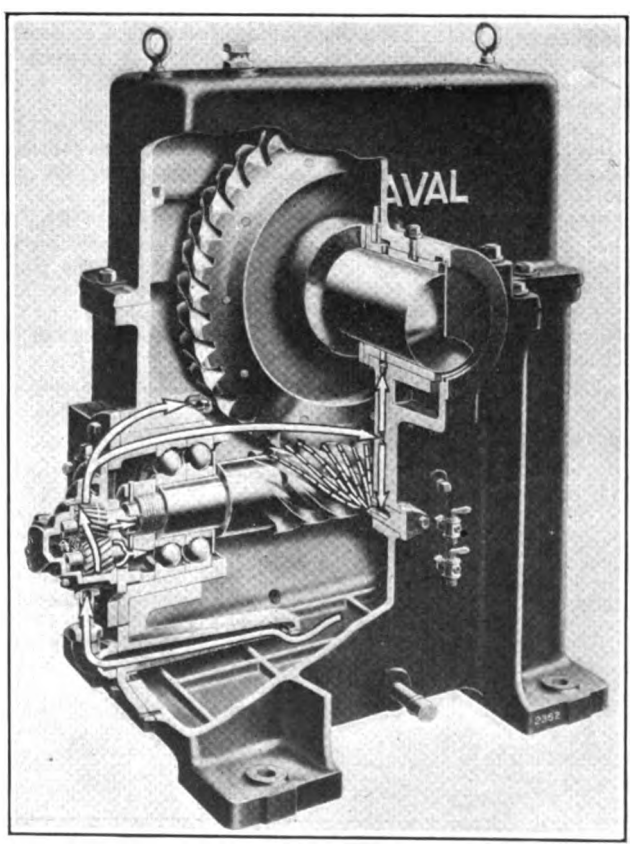
Gears intended for such speed and for the transmission of heavy mechanical loads as manufactured by the De Laval Steam Turbine Co., of Trenton, N. J., are provided with forced-feed lubrication. Oil is not only forced into the bearings but sprayed under pressure onto the worm threads. This assures a constant circulation of the oil and copious lubrication of contact surfaces at the most advantageous point. By means of a rotary pump the oil is drawn upward through a large bronze strainer, placed some distance above the bottom of the gear case. The pump delivers it through passages in the casing to the bearings and to spray nozzles located upon either side of the worm. The oil passages may be easily and readily cleaned, and the spray nozzles may be removed without disturbing any of the other piping. If desired an oil cooler may be incorporated into this system. The oil pressure is maintained constant, irrespective of the speed of the drive by means of an automatic relief valve.

Forced feed is said to eliminate heating which is so noticeable—and by reason of the excessive churning of the oil by the gears, so inevitable—with the splash system. It also obviates the frothing of the oil which is also a concomitant of the churning action. With the forced-feed system, it is claimed, a positive and continuous feed is provided to all surfaces requiring lubrication.

Alloy Valves Resist Attacks Of Corrosive Waters

A new line of acid- and corrosion-resisting valves and cocks is being placed on the market by the Barber Asphalt Co., of Philadelphia, Pa. The valves are of the gate type made with either screwed or flanged ends built in sizes ranging from ¾ to 6 in. The cocks are built with screwed ends only and in sizes from ¼ to 3 in. They are of the extra heavy, plug, two-way type.

All of these fittings are made of an alloy known as Aterite, the exact composition of which is varied to suit the intended use. This alloy possesses some interesting physical qualities. Thus its elastic limit averages about 18,000 lb. and its ultimate strength about 55,000 lb. per square inch. A



Oil Where Oil Is Needed

This shows, somewhat diagrammatically, the course taken by the oil from the reservoir in the base of the casing, through the rotary pump, then through passages in the casing to the main bearings and spray nozzles. Splash systems of oiling appear to this manufacturer suited only to low speeds or the lighter installations. Frothing and heating of the oil are said to be eliminated by the forced feed because no longer is the oil picked up and churned by the worm in its rotation.

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pressure of 180,000 lb. on a test piece of this metal decreased its length one half or from 1⅛ in. to ⅛ in. without developing cracks or flaws of any kind. The metal is thus shown to be extremely tough and ductile.

While this metal is not entirely immune to the attack of acid it is capable of resisting its ravages for a surprising length of time. It also possesses great ability to resist electrolytic corrosion when used in conjunction or in contact with the commoner metals such as copper, lead, zinc and iron. It is particularly recommended for use in chemical works but will doubtless find a place in mines where trouble is experienced from acidulous water.

Rotates Pipe and Cuts Thread

The Borden Co., Warren, Ohio, is manufacturing a machine for threading and cutting pipe called the "No. 44 Beaver power drive." This is a portable machine in which the pipe revolves and the tool remains still. Cutters can be bought for it or it can be used with hand tools. It holds pipe from ¼ to 2-in. diameter. By means of a universal-jointed shaft, it will cut 2½ to 6-in. diameter pipe by driving a No. 106 Beaver cutter.

Air Filter for Compressors And Gas Engines

Much trouble in the operation and maintenance of air compressors and internal combustion engines can be avoided by removing dirt, dust, and abrasive materials from the air before it is drawn into the cylinder. An air filter designed for this purpose is manufactured by the Spray Engineering Co., 60 High St., Boston, Mass.

In this make of filter, dust is removed by causing it to impinge on an adhesive surface, which is done by rapidly and repeatedly changing the direction of the air flow. The filter media are arranged from coarse to fine in the direction of air flow, so that where the largest percentage of dust is retained, ample space is provided for its accumulation without materially obstructing the flow of the air. By dipping or charging the cell with a special solution called "Dustix," the surfaces of the filter media are made adhesive. When the filters become dirty they may be cleaned by washing them in a hot solution of water and washing soda, thus removing the clinging dirt.

These filters are built entirely of heavy-gage metal to withstand hard usage. They are made in two types—namely, type "C" and the box type. Type "C" filters are intended for small capacities, and the box type has been designed for larger capacities. The former are small and light and can be bolted to a standard pipe flange, which, in turn, is screwed directly onto the air intake pipe.

Industrial Notes

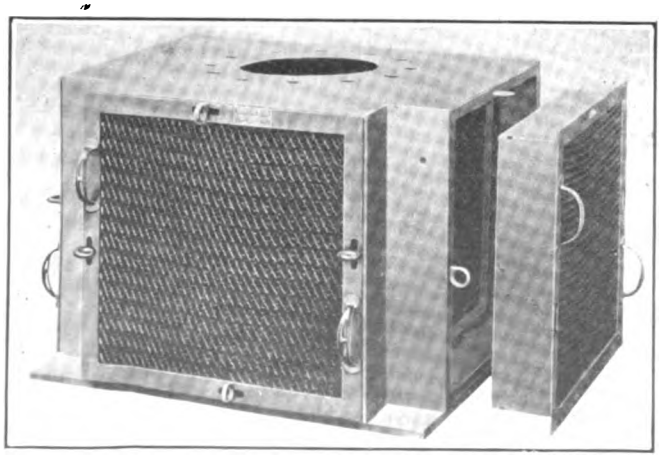
Leonard Sargeant, former sales manager and assistant general manager of the Fairmont Mining Machinery Co., Fairmont, W. Va., has been promoted to the position of general manager following the resignation of J. E. Johnson, former general manager, who will leave soon for New York City. Mr. Johnson has not announced his plans for the future.

Directors of **E. I. du Pont de Nemours & Co.** recently elected **Lammot du Pont** as president of the company to succeed Irenee du Pont, who desired to be released from the duties of the office so that he might devote more of his time to personal affairs. The retiring president was made vice-chairman of the board of directors and chairman of the finance committee. He retired from the executive committee and the new president was made its chairman.

The Electric Storage Battery Co., Philadelphia, announces the appointment of **H. B. Gay** as vice-president. Mr. Gay will continue in charge of sales. Mr. Gay, who is a graduate of Cornell University, entered the employ of the Electric Storage Battery Co. in June, 1901.

The Goulds Manufacturing Co., Seneca Falls, N. Y., announces a change in corporate name, effective April 1, to **Goulds Pumps.** There is no change in organization, business policy or ownership. The board of directors, officers, managers and personnel remain the same.

The Dodge Manufacturing Corp., of Mishawaka, Ind., has taken over the entire business and personnel of the **Hugh P. Robbins** organization, of Chicago, and has created a new division known as the material handling division, headed by Mr. Robbins.



Air Filter

Made of heavy gage metal and designed for large capacity. Air used in compressors should be free of dirt, dust and abrasive materials. A solution causes dust to adhere to metal surfaces.

New Companies

The Huskery Coal Co., 37 West Van Buren Street, Chicago, was recently incorporated, with capital of $500,000 to engage in coal mining. The incorporators are H. A. Huskery, W. P. Worth, E. C. Scarls, Frank A. Stava and Frank L. Wolf.

Super Coal Co., Inc., New York City, manufacturing coal products and briquets, has been chartered at Albany with a capital of 500 shares preferred stock of $100 par value and 15,000 shares common stock of no par value. Almet R. Latson, Jr., 193 East 17th St.; Ethel M. Jennings, 45½ Pulaski St., and Olga Beiswenger, 28 Palmetto St., Brooklyn, are the directors and subscribers. Latson & Tamblyn, 66 Broadway, New York City, are attorneys for the corporation.

The Southern West Virginia Coal Co., of Ashford, Kanawha County, W. Va., having a capital of $25,000, has been chartered by W. L. Peters, F. M. Stambaugh, D. W. Orth, D. A. Marsh and C. L. Bird, all of Charleston, W. Va.

The Camp Fork Coal Co. recently was organized with a capital of $200,000 to operate near Greendale, in the Nicholas County field of West Virginia. Among those interested in the new company are Ottway Gunmore, of Gauley Bridge; George C. Backus, E. M. Johnson, C. D. Burges and C. E. Krebs, all of Charleston, W. Va.

Bertha Jellico Coal Co., Grays, Ky., capital $10,000, has been chartered by Mattie Gray, J. H. Gray and R. C Gray.

The Kentucky Knox Coal Co., capital $25,000, has been incorporated at Barbourville, Ky., in the eastern Kentucky district, by J. R. Ketcham, J. Q. Redding and R. D. McDade.

Articles of incorporation have been filed by the **Anchor Fuel Co.**, of Trinidad, Colo. The company is incorporated for $100,000 and has as its purpose to mine and sell coal. Incorporators are Enis A. Siegfried, Conway E. Risley and Oliver M. Knecht. Mr. Siegfried said he was not ready to announce the details of the new company's operations but that the Anchor Fuel Co. will take over the operation of some coal mining properties in Las Animas County.

The formation of the **Gifford-Brown Coal Co.**, New York City, has been announced. The members are **James S.** Gifford, who was connected for several years with Williams & Peters; Willis H. Brown, who has been in the coal trade for many years, and J. C. Meyerhoff, Jr., who also is well known to the trade. The new concern will occupy offices on the 6th floor of No. 1 Broadway and will handle anthracite and bituminous coals on the line at tidewater and for bunkering.

Papers have been filed chartering the **Saltillo Mining Co.**, Cleveland, Ohio, with an authorized capital of $100,000 to mine and sell coal among other things. Incorporators are S. Eugene Wood, Henry B. Johnson, Margaret England, V. J. Borth and S. J. Gibbs.

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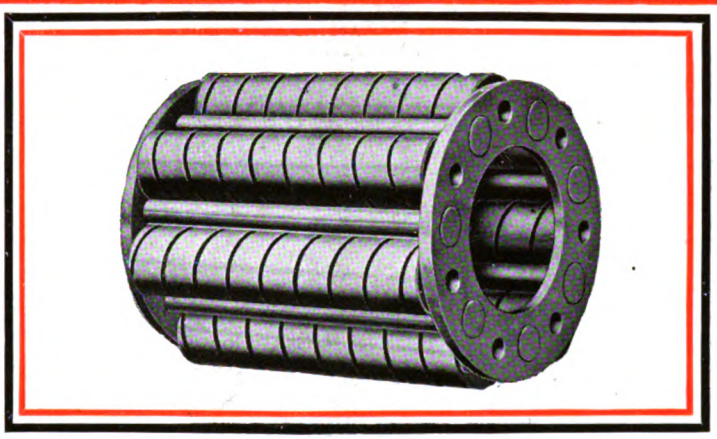
Mining Coal Without Explosives—See p. 667

MAY 14 1926

COAL AGE

The World's Accepted Authority on Coal Mining

McGraw-Hill Publishing Company, Inc. **May 13, 1926** Price Twenty Cents per Copy



—now they haul on Hyatts

They noticed that the efforts of three men were required to move a loaded car to the tipple. They saw their lubrication cost piled up as follows:

Their 175 plain bearing cars used 104 gallons of lubricating oil daily at 15c. a gallon. Figuring 220 operating days a year at $5.00 a day for labor they spent a total of $4,532 each year to keep the old fashioned cars running.

So they are investing in Hyatt Roller Bearing equipped cars for which the lubricant averages only $1.16 to $1.30 a year for each car. You can see that these rugged, modern bearings will rapidly pay for themselves in lubrication savings alone.

Now one of their men rolls a loaded Hyatt car to the tipple—a performance which reflects Hyatt economy in power—man, animal or electric—amounting to an average 50% reduction in draw bar pull on level track.

There are many large manufacturers of mine cars, furnishing Hyatt Roller Bearings today. Consult them about plans for modernizing your running gear, or write direct to Hyatt.

HYATT ROLLER BEARING COMPANY
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Pay a visit to Hyatt at Booths Nos. 33-52, Cincinnati Coal Equipment Exhibition—May 24-28

HYATT
ROLLER BEARINGS

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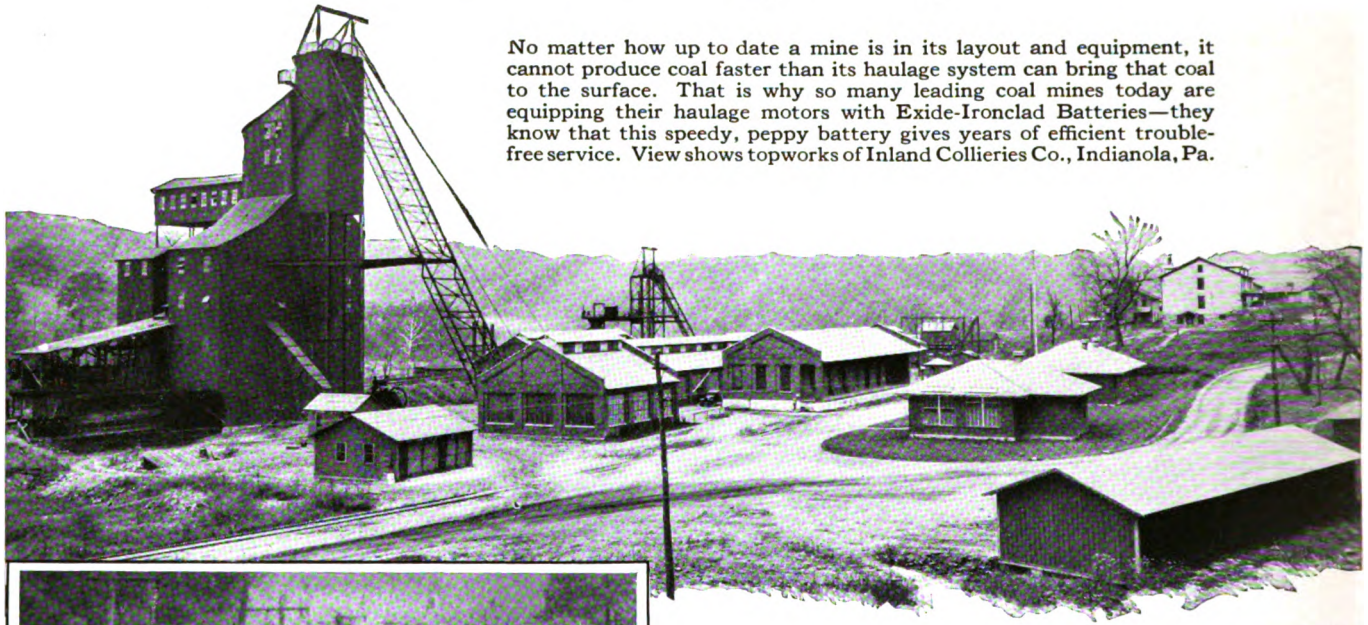
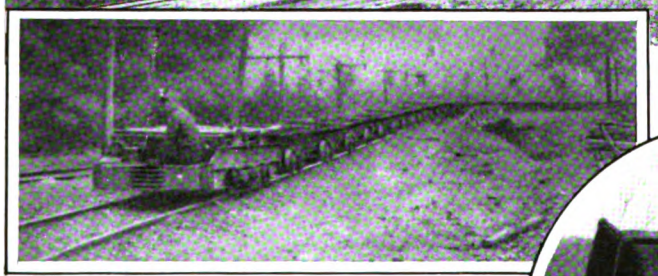
A mine is only as efficient as its haulage system

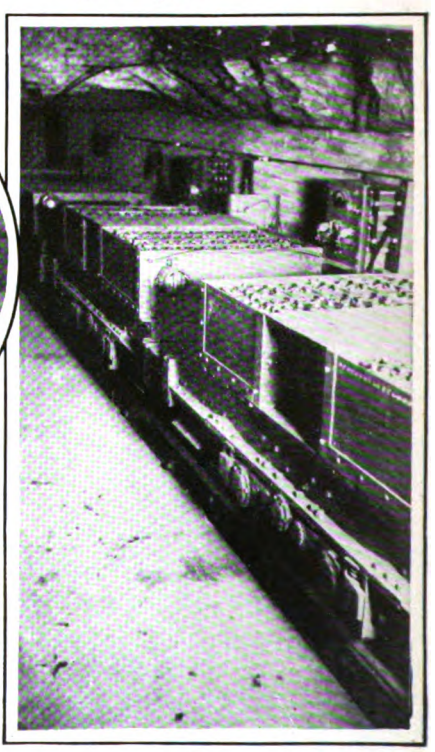
No matter how up to date a mine is in its layout and equipment, it cannot produce coal faster than its haulage system can bring that coal to the surface. That is why so many leading coal mines today are equipping their haulage motors with Exide-Ironclad Batteries—they know that this speedy, peppy battery gives years of efficient trouble-free service. View shows topworks of Inland Collieries Co., Indianola, Pa.





No matter how long the trip or how steep the grade, an Exide-Ironclad-equipped motor never falters, for it is packed with power, and when extra power is needed, it has the peculiar ability to deliver current at a much faster rate than usual.







This car of coal has reached the end of the trail so far as the mine is concerned. Between here and the working face lies the mine's chance to cut costs. One of the best places to start cutting costs is with the haulage system, and one way to start is to equip your haulage motors with Exide-Ironclad Batteries.

The mule is an economical means of hauling coal under certain conditions, but mules may get sick, whereas an Exide-Ironclad Battery is so ruggedly built that it stays on the job month after month and year after year without losing any time out of service for repairs.

An Exide-Ironclad Battery is not only efficient on the haulageways but also in the charging barn. It takes current in easily, quickly and stores up a high percentage of it as useful energy.

Send today for a free copy of our booklet, "Facts for Consideration in Selecting a Battery for Locomotive Service." Form No. 1791.

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 29 — New York, May 13, 1926 — *Number* 19

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Southern Illinois Big Central-Station Plants Deliver Reliable Power to Coal Mines 663
BY FRANK H. KNEELAND.

Mine Hoist Serving a Deep Shaft 665

Machine Cuts and Loads with Minimum Breakage and Without Aid of Explosives 667
BY OSCAR CARTLIDGE.

Charleston Welcomes Coal and Byproduct Men 670

British Coal Operators and Miners Consider Peace Proposal 676

Attacks on Anthracite Based on Old Prejudices and Misconceptions, Says Merritt 679

Lewis Denies Union Seeks Scale Modification 677
Will Settle British Tie-Up Without Disastrous Results, Is Belief in Washington 678
Union Seeks Injunction to Restrain Open-Shop Work 678
Plan New Outlet from Harlan 678
Lewis Refuses to Consider Wage Cut in Southwest 681
Berwind-White Co. Wins Suit Against Government 681
Lewis Orders Expulsion of Communists from Union 681
Open-Shop Operation Starts at Gilbert-Davis Plant 681
Would Deny Virginian Lease to Norfolk & Western 681
Amend Mine Leasing Act 681

Editorials 661
Underground Operation 672
Practical Pointers 674
News Items from Field and Trade 682
Weekly Review and the Market 686
Traffic 690
Foreign Market and Export News 691
New Equipment 692

Cincinnati Pre-Convention Issue

Coal Age is preparing to be in Cincinnati in force for the big Convention and Mine Machinery Show of the American Mining Congress. Mine executives will be there in numbers also, ready to learn what the year has brought forth in engineering progress.

In celebration of the event, the issue of *Coal Age* of May 20 will feature many of the biggest developments in the technical realm of coal. It will contain many stories vital to those who have mines to run—stories selected for the helpful suggestions they contain—an unusual issue suited to an out-of-the-ordinary occasion.

To Mark Time Is to Go Backward

The coal fields are sharing in the great mechanical development of the present times. To mark time is relatively to go backward—to mine coal unprofitably in the present and to find later, after all the loss occasioned by inefficient operation, that the expenditure in the end must be made or the mine must be closed. Modernization delayed means impoverishment in the present and a wholesale expenditure in the end. One may believe that "sitting tight" means "sitting pretty," but how will it look when accounts are balanced or the mine is evaluated?

What Washington Is Doing

Sydney A. Hale is in Washington week by week sitting in at the hearing on the desirability and possibility of regulating the coal business. You will appreciate the unbiased reports made by his well-seasoned pen, which records the high lights of the inquiry without regard to any opinions held by correspondent or his paper. You can draw your own conclusions, for you have all the facts.

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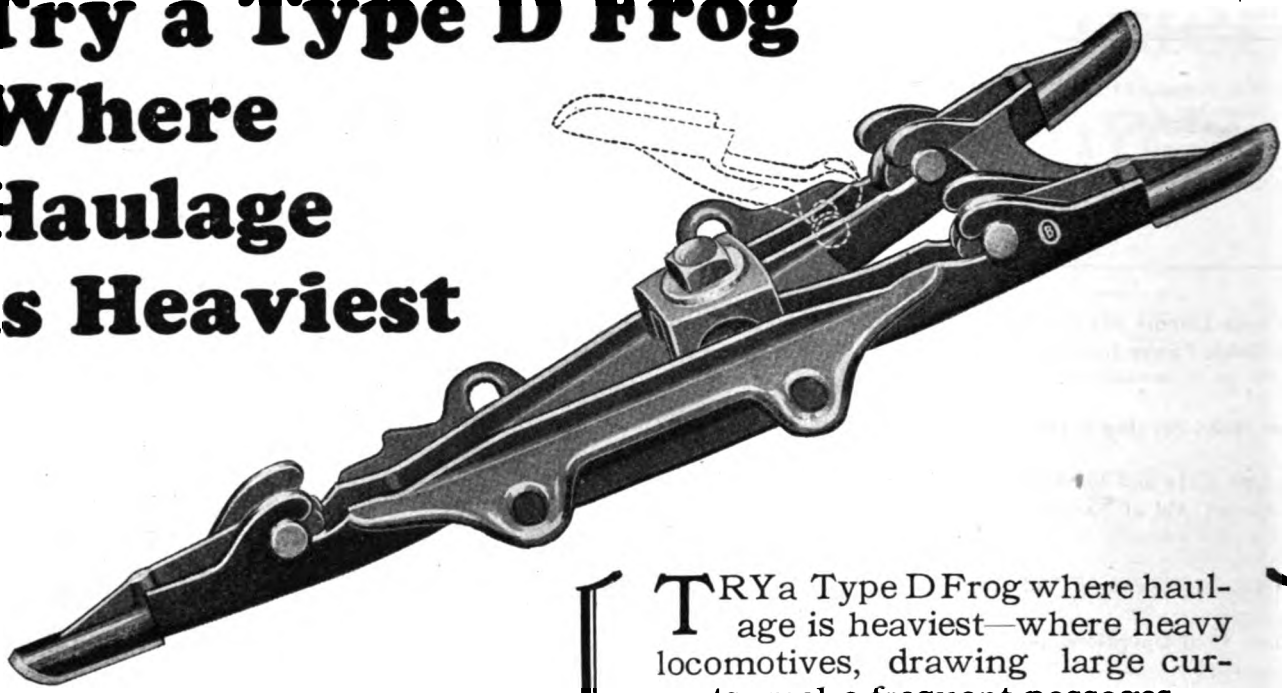
Try a Type D Frog Where Haulage is Heaviest



TRY a Type D Frog where haulage is heaviest—where heavy locomotives, drawing large currents, make frequent passages.

Then you will realize what there is in O-B hot-galvanized Flecto Iron, the treated malleable that does not become embrittled in galvanizing, in the design of the pan, in the cam tip approaches,—that make this frog popular in the mine.

Then you will find satisfactory trolley frog performance that saves on the up-keep cost.
Put up a Type D and see for yourself!

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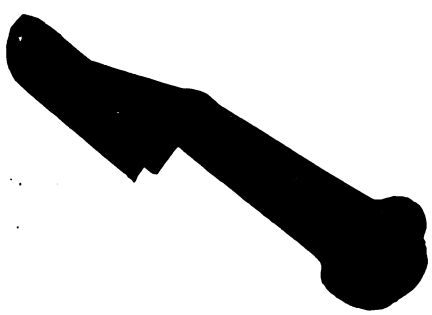

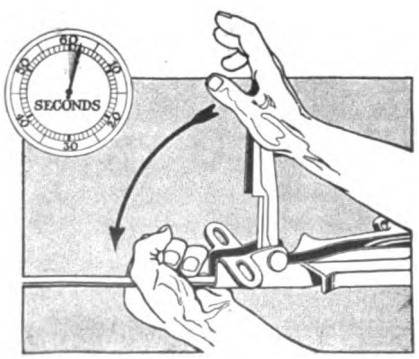

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COAL AGE

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 29 | NEW YORK, MAY 13, 1926 | Number 19

Postponed Troubles Draw Interest

THE BRITISH COAL CRISIS has shifted so rapidly from an industrial dispute to a class struggle threatening to merge into a civil war that, for the time being, the issues which precipitated the clash are submerged. This is unfortunate. A class army has been massed with the intention of compelling a nation to coerce the adversaries of a class group. This challenge to orderly government is serious enough to engage the attention of statesmen and citizens throughout the world. The outcome, if the issue is fought to a definite conclusion, necessarily will profoundly affect social and economic life and theories here and abroad.

These large aspects of the situation cannot and should not be minimized. Nevertheless, the coal industry and our government both will be the losers if they permit interest in these more general issues to obscure a clear understanding of the genesis of the trouble. The root of that trouble was economic, but attack upon it was delayed by official palliatives and political compromises. "Peace at any price" was the ruling consideration—until it was finally driven home that steady tribute paying was the price.

Prior to the World War the export trade was not only the key to the prosperity of the British coal industry but coal was the foundation of Great Britain's vast foreign commerce. Wreck that structure, and England ceases to be a first-rate power. The war disorganized and curtailed exports. The problem which faced the British coal industry when peace was restored was the recovery of the foreign markets it had lost. Home consumption has shown little change. The yearly fluctuations in the quantities used in Great Britain, both in tonnages and in percentages, in no wise compare with the fluctuations in this country.

British producers could not meet the demands of labor for higher wages and shorter hours and sell their coal in competition with other contenders for the world trade in fuel. Twice the government forestalled an economic settlement of the problem by subsidies, the last of which expired on April 30. Twice the industry was bribed to forget its internal differences in the hope, apparently, that a turn in the wheel of fortune would somehow eliminate the basic economic difficulties. The withdrawal of this contribution by the taxpayers set the stage for the present strife.

Happily there is no reason to fear that the United States may find itself in a similar predicament. Our non-union output is too large for that. But England's plight shows the dangers of the one-hundred per cent unionization advocated by the United Mine Workers as the cure for American coal evils. The English crisis also is a vindication of the loudly condemned policy of non-interference pursued by the national administration during the last anthracite strike. Interference would have only postponed the issue—and a postponed issue, as England is now learning, exacts a usurious rate of interest when the day of settlement arrives.

And yet the suggestion still is heard in Washington and elsewhere that the government be empowered to take over the mines in times of emergency and fix emergency wages and prices.

Possibilities in Research

FROM A SMALL MINE in southern West Virginia came a story in last week's issue of *Coal Age* on the use of storage batteries to smooth out the load curve of the mine substation and thereby reduce the monthly demand charge. By this means the company saved money. The public utility corporations operating direct-current stations and substations have long recognized the value of storage batteries floating on the line as a help during sudden peaks. Many industrial corporations are following the same plan. But this installation is, so far as we know, the first application at the mines of the principle of storing up current during periods of low demand to be later released upon attainment of a predetermined economical peakload.

Of course, results somewhat similar in principle have been and are obtained wherever locomotives and cutting machines are driven by storage batteries, which can be charged at night or at any time when the demand for power is low.

The fundamental principle of the use of storage batteries for this purpose is sound and possesses worthwhile possibilities as a subject for research, both for manufacturers who desire to widen their markets and for coal-mine operators who seek economies in operation. Battery installations of proper design will enable a mine to be carried over its heaviest peakload, will allow the mine to operate upon the most economical demand rate and will enable it to increase its load factor, the batteries discharging during peakloads and being recharged during periods of lessened power consumption.

The energy in kilowatt-hours put into the batteries at a comparatively low rate over a rather prolonged period will cost little compared with the saving the battery will make by keeping the kilowatt-demand rate within an economical limit. Kilowatt-hours are sold by the power companies at a few cents each whereas the kilowatt demand charge runs over $1 per unit.

Batteries in this class of service if properly inspected and kept in condition should last many years. It would seem that for such service the battery would not need to be so rugged as one used in locomotives of power-trucks. Despite the value of standardization, it might be well to design the batteries for this particular service to suit the needs of the job that the battery has to perform rather than to accord with standards set up for an entirely different class of work. In this way

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the batteries can be obtained for far less than is necessarily paid for locomotive and power-truck batteries that have to be capable of withstanding frequent shocks.

It Can't Be Done

AMERICA HAS GROWN POWERFUL because it has used power. Ever since about the year 1800 in all phases of this country's industrial activity the utilization of mechanical energy has steadily increased. First came the cumbrous saw- and gristmills driven by ponderous slow-turning overshot waterwheels. Later these gave way to the much smaller and, in most cases, more efficient hydraulic turbines.

With the development of the steamboat and locomotive came a corresponding development of the stationary steam engine. Then, just before the dawn of the present century the steam turbine became a potent factor in power generation. This machine and the electric generator were developed in large measure concomitantly because the one was admirably adapted to driving the other.

Electric distribution of power solved many of the problems in energy transmission that had long vexed industry. Not only was transmission greatly simplified but it was simultaneously rendered more efficient. Lineshafts, belts, ropes, tumbling rods and the like, could not compete, either in cost or utility, with the little, stationary, well-protected electrical conductors with which everyone is familiar today.

Electric transmission, also, has made it possible in many cases to take the machine to the work to be done instead of taking the work to the machine, as before it was necessary to do. This is well exemplified by the electric drill or the more recent electric hand saw that will cut wood from six to ten times as fast as it can be sawn by hand.

And all of this development and utilization of power has taken place because it paid financially. Among the ancients—and not so far back either—a person's prosperity was frequently judged largely by the retinue of servants he maintained. The number of slaves that a man owned and which were constantly at his beck and call, ready at all times to do his bidding, fixed his status in the civilization and community in which he lived.

Today residents of this country have working for them—far more continuously than any bondsmen of former times could possibly endure to work—machinery and mechanical devices of one sort and another equal in power to an average of thirty slaves for every man, woman and child in the land.

So efficient, so advantageous has the employment of mechanical energy become in the performance of work useful to humanity that it is today recognized as little short of an economic crime to employ human muscles during any appreciable period of time for doing any task that a machine can be made to perform. Unfortunately some people in the past—and plenty of their ilk are still extant—have been inclined "to buck" even to the point of violence, the adoption of labor-saving machines and devices.

They resent interference with the daily routine of their chosen vocations even though this may admittedly further the welfare of humanity, themselves included. Ultimately the economic rearrangement brought about by the adoption of new and better equipment and processes is as much to the workman's advantage as it is to that of the rest of mankind. For in any real democracy where lines of class distinction and caste are non-existent the status of the individual cannot rise without exerting a corresponding influence upon the body politic and vice versa.

When economic advantage lies predominatingly on the side of machinery, it is useless for any man or set or class of men to attempt for long to resist its adoption. Certain it is that many of the processes of coal mining now performed manually are susceptible of mechanization. There are naturally certain problems involved that cannot be worked out immediately or their solutions obtained over night. It is but natural, perhaps, in the light of past experience, that the innovation of mechanical loading should be resisted by the workmen affected by it. In the end however it will redound quite as much to the advantage of the miner himself as to that of the populace that consumes his product.

Concerted effort on the part of the mine workers to stay the advance of mine mechanization may act as a temporary deterrent to the universal adoption of machinery and mechanical processes. Economic laws, however, are as inexorable as are the laws of Nature and the mine workers might about as wisely attempt to prohibit the ebb and flow of the tides as to prevent the adoption of labor-saving machinery in the coal mines of America.

Safety and Sanity

A FAVORITE dictum of C. P. Tolman, at one time president of the National Safety Council, is that "Safety is only good engineering," by which he means that the engineer has not schemed the most profitable way of doing things if he has forgotten safety. He frequently illustrated his thought by showing how a dull band saw was not only a danger to all who had to work around it but wasted power, wrecked itself, cut an undue and irregular kerf and was anathema to a good engineer.

He, in the course of his work, has saved many a life from lead poisoning by conserving the lead of the company with careful methods of handling. A poor place, he thought, was the passing breeze and the bodies of the employees for the good lead dust that the company had been at expense to mine, to ship and to refine. He proved that fact abundantly by the savings resultant on his methods of keeping the dust where it belonged.

In coal mines it is no different. Safety is and always has been good engineering, even though it has become many times as important since the accidents of the mine worker have had to be paid for by his employers. Many an operator who was fully insured has had to deduct from his earnings or from his capital, if he had no earnings, the tremendous cost of an explosion or mine fire. Even the wrecking of a trip, the breaking of a switch, the loss of coal pillars or the injury to a machine is a recognizable charge on profit or on capital invested. The effect of accidents on morale also is bad. No operator is so hedged in by economic difficulties nor is any mine so profitable, that indifference to correct safety principles can be regarded as good engineering.

The Bureau of Mines is showing us in its safety efforts and studies not only the safer way but incidentally the cheaper way to mine coal.

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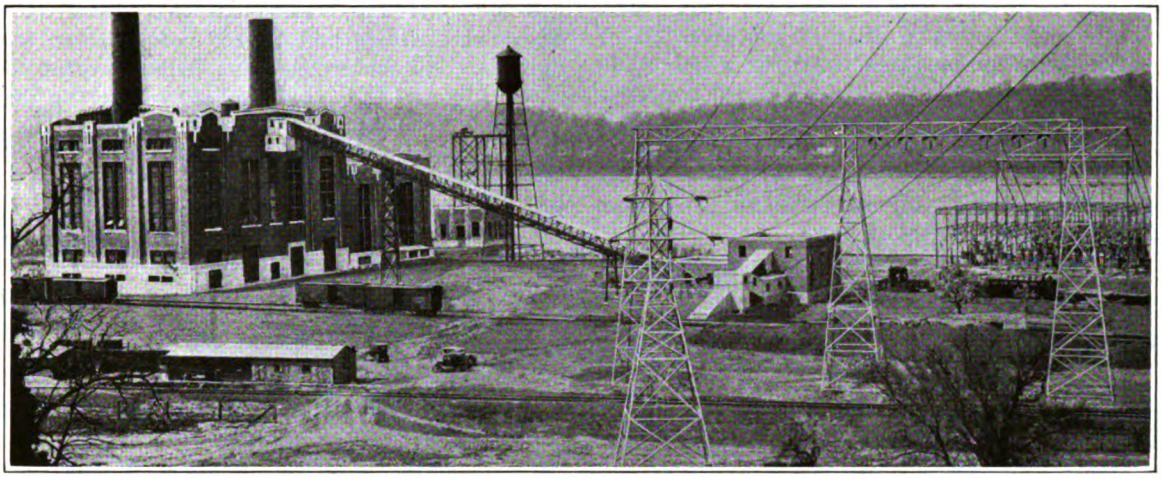

In Southern Illinois Big Central-Station Plants Deliver Reliable Power to Coal Mines

Two Efficient Plants Furnish Mines with Operating Energy — Diversified Load Factor Attained by Serving Industrial Plants and Municipalities Gives Results That Isolated Stations Cannot Attain

By Frank H. Kneeland
Associate Editor, *Coal Age*, New York, N. Y.

AS A RULE the public utilities that devote their energies to the generation and distribution of electric current seek as diversified a load as possible. Power plants can earn only when in operation, and their earnings are roughly proportional to the average percentage of the time during which their generating equipment is utilized. In other words, that plant earns most which operates most continuously day and night at or near its full capacity. The load factor or average percentage of loading on the plant thus plays an extremely important rôle in determining the earnings and profits of the installation.

The load factor afforded by coal mines alone is anything but good, especially in those regions where by union agreement practically all operations except ventilation are performed during the day shift, leaving the night load small and even inconsequential. It is interesting to learn, therefore, that large, reliable, efficient central stations and transmission lines can be built and operated profitably to serve a region whose basic industry is coal production.

To furnish the southern portion of Illinois, the Central Illinois Public Service Co. has built plants and erected transmission lines so that the counties of Union, Jackson, Williamson, Franklin, Saline and Gallatin, which produce by far the greater bulk of Illinois fuel, are afforded the benefits of central-station power. This is one of six practically complete power transmission systems owned and operated by this public utility in Illinois.

In the headpiece is shown the power plant at Grand Tower, Ill. Here are already installed 50,000 kw., and provision has been made for doubling its capacity twice, making 200,000 kw. in all. The transformer station at the extreme right steps up the generator voltage to that of the transmission line. The hills of Missouri may be seen on the opposite bank of the Mississippi.

In probably no other industry is continuity of service more important than in coal mining. Many, if not most, of the mines in this region are closed-light operations wherein any stoppage of ventilation may prove serious. Furthermore, if haulage is interrupted for any appreciable length of time miners will not long remain idle in their places but will quit for the day. As a result, all reasonable precautions must be taken to make the electrical service rendered thoroughly reliable.

The transmission system is provided with a power plant at each end of the territory served. On the west is the plant at Grand Tower located on the east bank of the Mississippi River. This is provided with six B. & W. boilers of 1,160 hp. each. All these boilers are equipped with chain-grate stokers, those on the east side of the plant being of Coxe and those on the west side of Illinois make. Each stoker is 18 ft. wide and the fuel consumed is 1½-in. Illinois screenings.

Ample Storage Is Provided

Coal is brought to this plant in drop-bottom cars. Ample space is available for storing fuel during the summer for use in winter. It is both stocked out and reclaimed by means of a locomotive crane, which is also available at all times for working over, moving and cooling off the coal should it at any time be threatened with spontaneous combustion or should it actually take fire.

From the railroad cars, coal is delivered to a track hopper from which it is discharged by means of a

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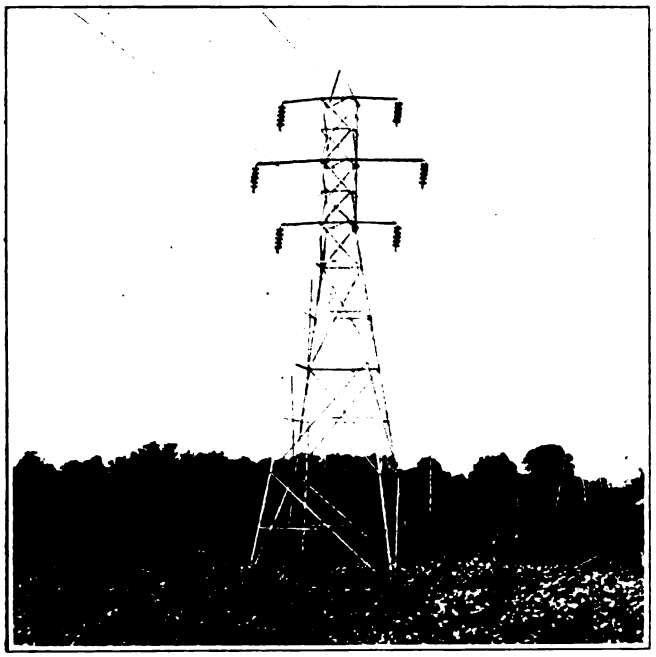
reciprocating plate feeder and passed through a Bradford breaker that not only breaks down any frozen lumps that may be present but removes any tramp iron or other extraneous material that it contains. It is then delivered to an inclined belt conveyor which leads to the top of the boiler plant. This inclined conveyor delivers to a similar one of the horizontal type that spans the top of the bunkers longitudinally. This latter conveyor is provided with a traveling tripper that can be moved either automatically (that is by the power of the belt passing over it) or by hand.

There are twelve bunkers in all, each of which is capable of holding about a carload of coal so that approximately 600 tons of fuel may be stored in the bunkers. This is roughly one day's supply. The bunkers are arranged in two rows (one to each row of boilers) with doors in the partition between them through which the coal may flow so that a boiler on either side of the plant may be fired with coal from the bunker on the opposite side.



Nervous System of the Territory Known as Egypt

Over sere pastures, waving corn and blooming buckwheat, clear across the southern end of the state from the Mississippi to the Ohio extends this 66,000-volt transmission line, furnishing the power to light the homes and mine the coal that warms the hearths of a prosperous people.

Steam is carried on the boilers at 400-lb. pressure and is superheated approximately 250 deg., giving a final temperature of about 700 deg. F. Each boiler is provided with its own forced-draft and its own induced-draft fan making control of the air passing through the fuel bed and boiler passages easy and certain. These steam-generating units absorb heat with great efficiency, the temperature of the stack gases being only about 270 deg. F. even when the boilers are forced to 250 per cent of their normal rating.

Two main generating units are installed in this plant. These are duplicate turbo-generators each of 25,000-kw. capacity. These machines take steam at full pressure and exhaust to a vacuum which averages approximately 29 in. Naturally these units are highly efficient, a kilowatt-hour of electrical energy being produced from 1½ to 1¾ lb. of coal with an average heat content of 11,500 B.t.u. per pound as delivered.

Abundant water is drawn from the river, but as Mississippi River water is notoriously roily, being exceeded in this respect by few streams in the country, the Missouri alone excepted, this water is carefully screened, strained and filtered before going to the condensers. All water used for boiler feeding is treated chemically and thus purified before entering the boilers. The hot circulating water is returned to the river at a point appreciably below or down stream from the intake, so that by no possibility can it again be drawn into the circulating system.

On the eastern end of this transmission system is the Muddy power plant at Harrisburg. This is a much older installation than the one just described although it is still highly efficient. In this plant steam is carried at 250 lb. pressure with 150 deg. of superheat. As this installation is not built beside any large stream able to furnish an abundant condenser supply, water for its operation is impounded, in a reservoir many acres in extent. This furnishes make-up to the spray pond through which the circulating water is passed upon leaving the condensers. In this plant four turbo-generators are installed. These comprise three 5,000-kw. and one 10,000-kw. units, making 25,000 kw. in all. The two power plants operate in parallel with each other in supplying current to the line between them.

MAKING THE LINE ACCIDENT-PROOF

But the most efficient power plant ever built would be at a woeful disadvantage from the standpoint of their value to the public if the line over which current is transmitted to the customer were not efficient. Any public-service company of this kind has two products to sell—kilowatt-hours or energy and service, or continuity of energy supply. It is necessary, therefore, that the transmission line be not only efficient but as nearly accident-proof as possible. If, as in this case, transmission is made by means of a main or trunk line and numerous side, or delivery, branches, reliability is equally important on all of these.

In this power system a double transmission line—that is, two sets of conductors, each set consisting of three cables or one for each phase—is carried on substantial steel towers extending northeast from the plant at Grand Tower to West Frankfort and from thence in a southeasterly direction to the power plant at Muddy. Here a similar line has been built northeast to Eldorado and thence southeast to Shawneetown on the banks of the Ohio River where connection is made to the line of the Kentucky Utilities Co., furnishing electrical energy to western Kentucky. The current is transmitted over this main trunk line at 66,000 volts. The standard towers of this line are about 80 ft. high and under normal conditions are spaced about 700 ft. apart.

WEST FRANKFORT'S TRANSFORMER STATION

Many power lines radiate from the big transformer station at West Frankfort, where the main line potential is stepped down from 66,000 to 33,000 volts for transmission to the various mines and communities served. The biggest industrial consumer in this locality is the Old Ben Coal Corporation. This company takes all its current at one point and transmits over its own lines to each of its twelve mines scattered throughout this region. This arrangement tends to equalize the demand and reduce excessive peaks. The more mines that are connected in this way the more thoroughly and completely are sharp demand peaks avoided.

Other companies served in this region are following

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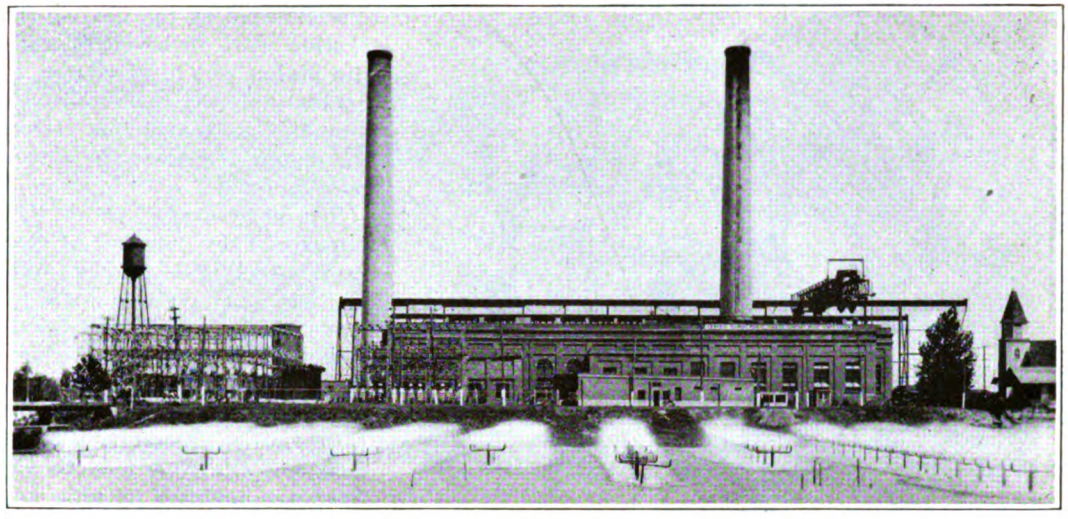
Across the Pond

This is a view of the Muddy plant taken from the bank of the spray pond. Make-up water for the operation of this plant is impounded in a reservoir several acres in extent which affords an ample supply for both condensing and boiler-feeding purposes.



a similar practice wherever possible. Thus, the Orient mines, Nos. 1 and 2, of the Chicago, Wilmington & Franklin Coal Co., are connected electrically, and power for their operation flows both ways from a common substation serving both mines.

Again, electric hoisting naturally constitutes an intermittent demand for power and tends to run up the peak requirements which, in turn, affects the price paid per unit of energy consumed. In order to lower, so far as possible, this demand charge, most electric hoists installed throughout this region are operated on the Ilgner, or Ward-Leonard, system. By this system a flywheel motor-generator set is interposed between the line and the hoist. The excessive momentary current requirement of the hoist is thus largely supplied by the momentum of the flywheel which thus irons out, or equalizes, the power demand.

Power Factor Is Ninety per Cent

A higher power factor is preserved throughout this transmission system because of the many synchronous motor-generator sets employed. This power factor averages 90 per cent or more on the entire system.

Throughout this region all or practically all, the mining load comes on in the daytime. About the only operations performed in the mines on the night shift are ventilation (this is common to the day load also), some pumping and some battery charging. In other words, the conditions in this field are such that the night load of the mines is extremely light compared to the demands of the day shift. This results in a bad load factor so far as the mines alone are concerned, their total requirements averaged throughout the entire 24-hr. period being only about 25 per cent of their maximum demand.

By lighting all the communities through which its lines pass and by supplying most of the local industries there located, the Central Illinois Public Service Co. is enabled to increase this load factor to about 45 per cent. This makes possible corresponding economies in power generation and consequently a lower sale price.

Again, the region served by this power system is one that is poorly watered. A glance at any map of Illinois will show that few sizable streams traverse this area, which in this respect differs somewhat from the central and northern portions of the state. Though the actual rainfall over the southern counties probably does not differ materially from that in other portions of the upper Mississippi valley, yet its distribution throughout the year appears to be more erratic. At times no rain has fallen in this region for as much as three months at a time, these being the hottest months of the summer. As a result the procurement of a water supply sufficient for the operation of a sizable power plant may prove to be both difficult and expensive, if not even impossible. Utilization of purchased power relieves the mine of this expense and the management from this source of trouble and worry.

Flat-Rope Hoist Planned For 4,265-Ft. Lift

IN HOISTING from extremely deep mines the great length of round rope that would be necessary on the ordinary drum cannot be accommodated and flat rope must be substituted. The following description of a deep mine hoist built to accommodate this type of rope is abstracted from *The Engineer*, London, England, of Feb. 19 and relates to a recent installation in the Belgian fields where the depth of the coal beds is excessive.

Flat rope used in such deep mines resembles a ribbon woven from steel wires. This is wound upon itself like tape on a bobbin as the cage is raised. Some decided constructional advantages inhere to this system. Thus, the hoist drums are simple and light in weight compared to those of the cylindrical or cylindro-conical type ordinarily used. They consequently impose small gravity and inertia stresses upon the machine.

In the accompanying illustration Fig. 1 shows a flat rope hoist recently installed by the Société Anonyme des Ateliers de Construction de Charleroi in Belgium. It raises coal from the main shaft of the Peiton pit of the Société des Carbonnages de Monceau-Fontaine. It was the original intention at this colliery to employ round ropes because of their greater durability, but the huge size of the drums necessary as well as other considerations caused the abandonment of this idea and the substitution of the flat rope system. The hoist in question is designed for an ultimate working depth of 1,300 m., or 4,265 ft. The present depth is 805 m. (2,640 ft.). Each cage complete weighs 4,000 kg. or 8,816 lb. and will hoist eight mine cars per trip. The weight of an empty car is 300 kg. or 662 lb. while its contents when full of coal will weigh 600 kg. or 1,322 lb. When loaded with rock this weight will be 950 kg. or 2,095 lb. When new the cable is 200x25 mm. (7.9x0.985 in.) in cross-section. It is composed of ten hawsers, each consisting

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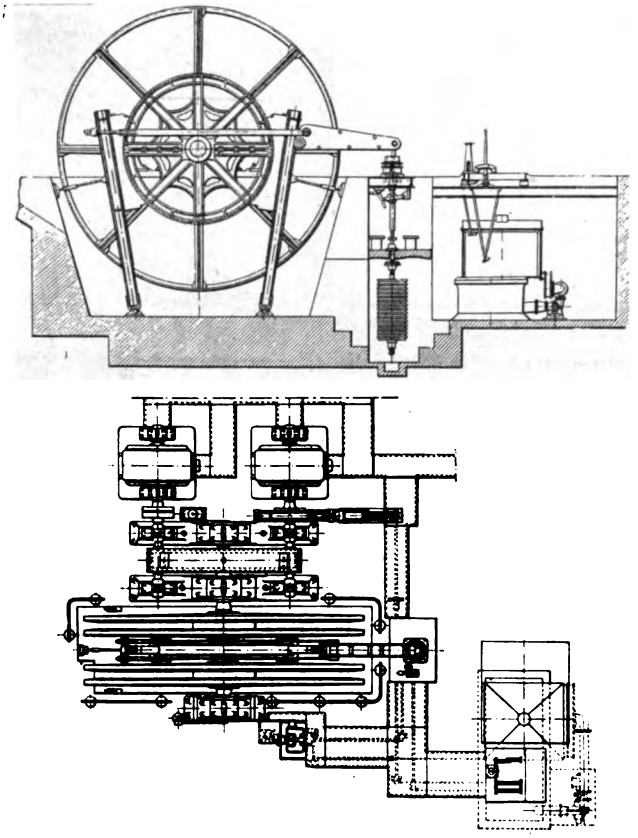

Fig. 1—Plan and Transverse Section of Hoist

This is a typical modern flat-rope hoist. Its distinguishing characteristics are the narrow width and light weight of the drums. Aside from this the machine here shown strongly resembles both in structure and duty cycle a modern American hoist fitted with double conical drum.

of four strands of eleven wires each. Its weight is 11.9 kg. per meter of length (about 8 lb. per foot) and its breaking strength is 212,000 kg. (about 468,000 lb.). This affords a factor of safety of 9 when carrying a maximum load of 23,500 kg. or 50,000 lb.

When hoisting from a depth of 805 m. (2,640 ft.) it was specified that the machine should be able to raise a useful load of 7,600 kg. (16,750 lb.) at the rate of 25 trips per hour. From a depth of 1,000 m. (3,280 ft.) it must be able to raise a useful load of 6,650 kg. (14,650 lb.) at a speed of 23 trips per hour, while from the full depth of 1,300 m. (4,264 ft.) it must be able to lift a useful load of 5,700 kg. (12,580 lb.) at the rate of 20 trips per hour. It was also specified that the machine must be able to raise a load of 500 kg. (1,100 lb.) from a depth of 1,000 m. at a speed not exceeding 75 per cent of normal. A further condition was that the hoist should have a good commercial efficiency when working with cages of half the capacity above mentioned from a depth of 805 meters.

In order to meet the conditions specified it was decided to drive the engine by means of two duplicate electric motors connected to the main shaft by double-helical gears. The arrangement is shown in the accompanying illustrations. The motors are placed side by side with their pinions meshing with opposite sides of the main gear wheel. The speed reduction thus secured amounts to 9.85 to 1. These motors are of the induction type, 3-phase, 50 cycle, 6,300 volts and have a continuous rating of 575 hp. each. Their synchronous speed is 500 r.p.m.

Should it become necessary to operate this hoist for a short period at reduced capacity, one motor may be disconnected at the flexible coupling, while, if such operation were to be continued over an extended period, the pinion would, of course, be removed. It should be noted that the pedestals of the pinion shafts are mounted on continuous transverse sole plates so that the distance between the various shaft centers is rigidly maintained.

The hoist drums are of the type common to Belgian mines. They consist of cast-iron centers carrying radial steel arms of built up T-sections and connected at their outer ends to angle iron rims. Arms and rims serve only as guides to insure an even coiling of the rope upon itself and consequently during normal operation no stress is thrown upon them. Each arm carrries a facing of oak where it comes in contact with the rope. Both drums are movable on the shaft so that adjustments of the rope may be easily and quickly effected. They are mounted on hubs keyed to the shaft and each can be instantly locked to its hub by means of a simple patented device. Provision is thus made for any degree of adjustment required.

DOUBLE WATER RHEOSTAT CONTROLS HOIST

The driving motors are started simultaneously by a double water rheostat, each part of which has three fixed electrodes, composed of numerous sheet iron plates about ⅛ in. thick. Each set of these electrodes is, of course, connected to the slip rings of the motor controlled. The plates are specially shaped to give the required rate of change of resistance as the depth of immersion varies. The liquid employed is a solution of carbonate of soda. This is delivered continuously by a small motor-driven centrifugal pump to the electrode chamber. The tank has a rectangular opening in one side provided with a sluice gate through which the solution can escape into a reinforced concrete tank below. This

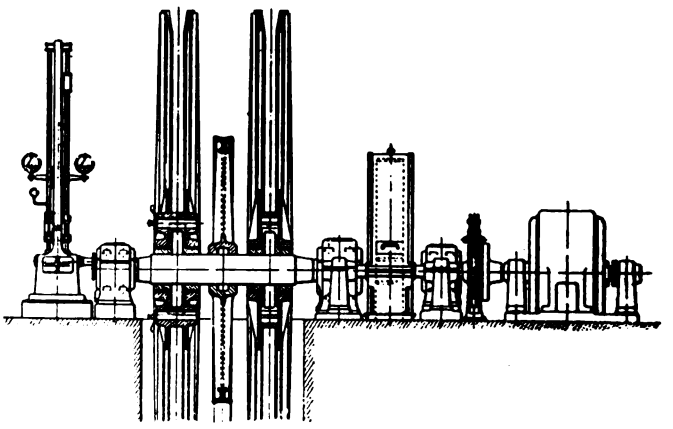

Fig. 2—Vertical Section Through Drums

The narrow width of the drums or spools is worthy of comment. The width of opening of each spool is of course only slightly greater than the width of the rope. Wearing strips of oak protect the drum spokes.

gate is operated by the starting lever and its position will obviously determine the rate at which the electrodes are immersed.

To reverse the direction of rotation of the motors and hoist, a three-pole change-over switch is connected mechanically to the rheostat lever. This switch controls the excitation of sets of solenoids which in turn operate the reversing oil switch. This reverses the connections of the two phases in the stator of each motor and thereby changes the direction of rotation of the magnetic field.

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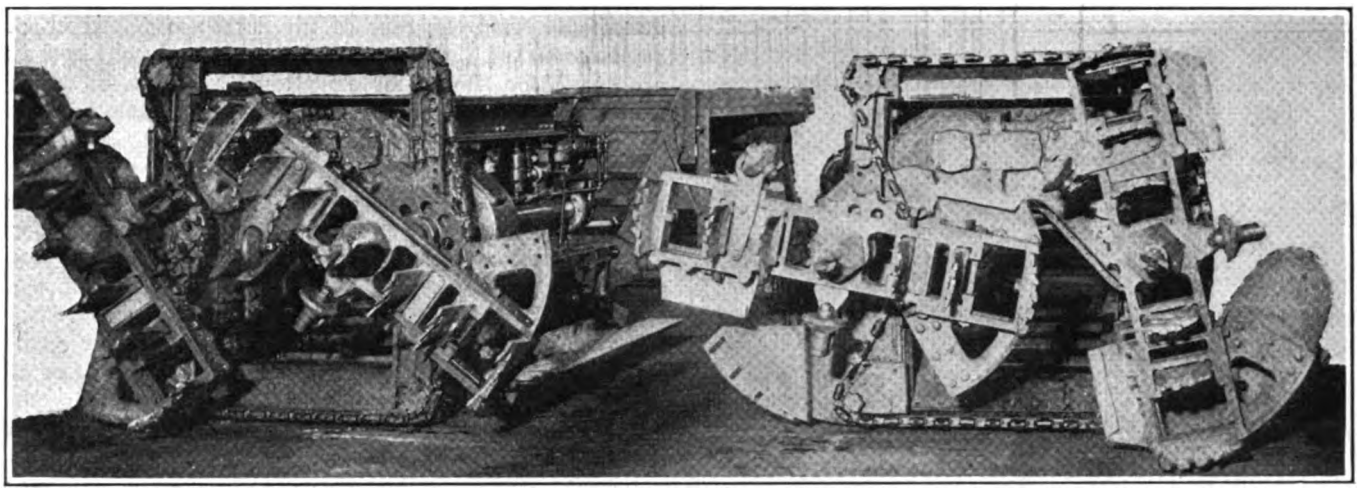

Machine Cuts and Loads with Minimum Breakage And Without Aid of Explosives

Advances One Foot in About Two Minutes—Saves Roof and Ribs by Making Blasting Unnecessary—Shape of Roadway as Driven Is Nearly Oval—Costs Are Less Than Those of Hand Mining

By Oscar Cartlidge
Consulting Mining Engineer
Charleston, W. Va.

TWO large revolving arms fitted with long, thin, protruding blades set with teeth of high-speed tool steel, followed by wedging wheels that break the coal down in large lumps onto a swiftly moving conveyor, the whole device advancing into the solid coal at the rate of an inch every ten seconds—such is the McKinlay automatic coal mining and loading machine, a mechanism that cuts coal out of the solid and delivers it into mine cars or to conveyors without the exercise of manual labor or the use of explosives.

One of these machines has advanced in Pocahontas No. 3 coal at the rate of over 7 in. per minute, cutting an entry approximately 5 ft. high and 10 ft. wide and loading three cars of 3-ton capacity in 10 minutes. In the Illinois No. 6 bed it has advanced an entry 6 ft. 2 in. high and 11 ft. 4 in. wide a distance of 195.5 ft. in 30 hours of consumed working time, with a production of 155 tons of coal. This was accomplished by entirely inexperienced men in the employ of the coal company, with no representative of the machine manufacturer present. None of the men operating it had ever seen a machine of this type before. Later runs in this same mine have averaged 8 ft. of advance per hour, the actual forward movement at times being as much as 4 in. per minute. Places have been driven for 35 ft. in this extremely hard coal without a change of cutting bits.

In a Kentucky mine the first machine of this type actually placed in operation, working under conditions where but one-third of the forward speed was available on account of power shortage, 368.5 ft. of advance was made in 24½ shifts. If full power had been available on the machine to push it into the coal, it is safe to assume that the advance would have been at least twice this distance, if not more. This entry was driven toward the outcrop and was actually advanced to within 4 ft. of daylight before the machine was compelled to halt. During the night the roof caved, and the next morning the machine runners walked outside through the opening. It would have been impossible to approach anywhere nearly as close to the outside if work had been conducted by ordinary methods and the coal brought down with explosives. This entry was 6 ft. high and 11 ft. 6 in. wide.

Actual labor costs for an average day at this mine, in comparison with the standard cycle of machine cutting, shooting and hand loading, is interesting. Such a comparison shows the results recorded in the table.

Cost of Operation of McKinlay Machine Compared with Machine Cutting with Hand Loading

McKinlay Machine		Standard Method	
Daily Expense			
Machine operator			$7.00
Helper			5.60
Car trimmer			5.60
Total labor			$18.20
Tons produced			62.4
Costs per Ton			
Labor	$0.291	Cutting	$0.120
Power (purchased)	0.025	Power	0.025
Depreciation (estimated)	0.100	Explosives	0.040
		Loading	0.620
Total production cost	$0.416	Yardage	0.100
		Total	$0.905
Difference, per ton, in favor of machine			0.489

A test made on this machine covering an entire day's run gave a metered power consumption costing 2½c. per ton of coal produced. Tests on an installation in

The headpiece shows the business ends of two McKinlay machines in different positions. The revolving heads cut out circular openings that slightly overlap each other, leaving triangular segments at top and bottom. These were cut away by means of the cutter chain that follows close behind the revolving heads.

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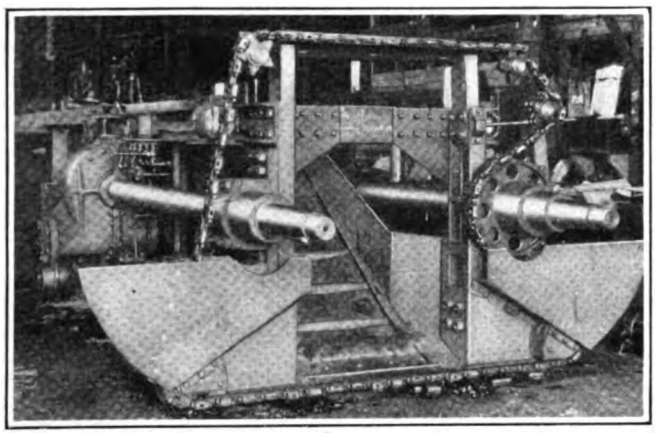

With Cutter Arms Removed to Show Conveyor

This shows more clearly the cutter chain and the means employed for driving it and altering its height. As shown the machine will cut a heading about 9 ft. wide and 7 ft. high. The cutter travels at a linear speed of about 100 ft. per minute.

Illinois showed an average demand of 65 hp. when the machine was advancing at the rate of 3 in. per minute.

In the softer Pocahontas coal, during a test run this machine when under full power required 55 amp. of current and three mine cars of 3-ton capacity each were loaded in 10 minutes.

This machine affords a complete process for mechanical coal mining and performs all of the usual functions of undercutting, blasting and loading. The frame is rectangular, built up of heavy structural members upon which the various parts are mounted. Steel castings, nickel-steel castings, steel forgings and nickel-steel forgings intended for extra heavy duty, with bearings of ample surface, are used throughout. Roller and ball bearings are employed where necessary, and the gears are all of hardened steel with cut teeth.

MANY SIMULTANEOUS ACTIONS

The entire unit is mounted on wheels and moves forward without tracks under its own propulsion traveling on the bottom of its own cut. The various operations performed are: (1) The cutting and wedging down of the coal, (2) the pushing or sweeping of the coal onto the conveyor, (3) the transport of the coal through the machine and into cars or onto auxiliary conveyors, and, (4) the movement of the machine forward as it cuts its way into the coal—that is, the feed. These will be considered briefly in the order named.

The cut made usually is about twice as wide as the height of the coal bed in which the machine is operating. In thin coal, however, the cut may be widened by the addition of one or more extra rotating arms. The shape of the cut is almost oval, but with a smooth, flat surface about the vertical axis at both the top and bottom.

The main cut is made by two heavy cast-steel bars, or arms, which revolve in slightly overlapping circles. These arms are driven by the two main shafts and are of nickel steel. Both revolve toward the center at the bottom. The heavy bearings of the drive shafts. with their rigid construction and the balanced motion of the arms, permit the cutting to be done with little vibration. Fitted into these cutter arms are long flat bit holders about 10 in. wide curved to the radius of the circle in which they operate.

These holders are made of nickel steel and are fitted at the ends with removable cutting bits. They are detachable from the rear of the cutter arms for quick replacement of the bits. The distance at which they are spaced on the cutter arms and the depth at which they cut are determined by the size of the product desired and the natural cleavage of the coal. Each bit holder makes a narrow circular kerf about 2 in. wide. When these kerfs are advanced to the proper depth—usually 12 to 18 in.—adjustable wedging wheels also carried on the cutter arms enter them and force the coal apart until it breaks and falls in front of the machine but in the rear of the arms.

The cutter arms, making two perfectly circular openings in the coal, leave two triangular segments, one at the top and the other at the bottom of the cut directly in front of the center of the machine. These segments are overcut and undercut respectively by a chain provided with removable bits driven by cast-steel sprockets on the main shafts. The guides for this chain form wedging plates which break the coal loose.

DRILL GUIDES PROGRESS OF MACHINE

In the center of each cutter arm is a pilot, or guide drill. This bores into the coal slightly in advance of the kerf-making bits and breaks it outward to the first or inner circular kerf. The cutter arms are driven by the main motor of the machine, which is geared to the main shafts. Practically all the power used is absorbed by the cutting tools.

In front of the main frame but behind the cutter arms is a space into which the dislodged coal falls. On the back of each cutter arm is mounted a heavy plate sweep or shovel. This, with a half sweeping, half shoveling action, delivers the coal to the machine conveyor, thoroughly cleaning up all the material that is broken down.

At the bottom of the frame and extending from its forward end to a point beyond its rear extremity, is a sturdily built steel flight or drag conveyor. The coal is pushed onto this conveyor by the sweeps and is delivered by it into mine cars or to an extension conveyor if the mine is using a conveyor system.

The rear ends of the main drive shafts terminate in ball bearings mounted on a steel-casting crosshead. At the center of this crosshead is mounted a hydraulic plunger or ram. This may be jacked to either side of the cut in the solid coal and moves the entire machine forward when pressure is applied through the pump.

CAN REGULATE FEED AT PLEASURE

It can be run at any speed desired by means of a variable-speed electric motor driving a hydraulic pump, employing light oil as the operating liquid. The greater the application of this pressure the faster will the machine move forward. All cutting stresses on the arms are transmitted directly through the main drive shafts to the thrust bearings on this crosshead and do not pass through the frame of the machine. The direction of the cut can be varied by adjusting the jacks extending from the ends of the ram to the sides of the cut. The machine also is kept in alignment by this means.

After the machine has been put in operation and the driver has become familiar with the proper feed to maintain in the coal in which it is working, the jacks can be set and the machine operated with little or no attention until it has moved forward the full stroke of the plunger. The flow of the liquid is then reversed,

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causing the plunger to move inward; the jacks meanwhile are reset. This operation takes about one minute, after which the machine again may be started.

While cutting is going on the men see to the delivery of the coal into the cars and keep up the mine track back of the machine. An operator soon becomes accustomed to the sound of the machine when it is working properly and needs to give it little attention except to reset the jacks.

The number of men required to operate this machine varies from three for the largest size to two for the smallest. At present three sizes are built, each having extensions on the ends of the cutter arms providing a variation of 8 in. in the diameter of the circular cuts.

The minimum and maximum dimensions of the cuts are: Small size, 4 ft. 6 in. high by 8 ft. wide, extensible to 5 ft. 2 in. high and 10 ft. wide; medium size, 5 ft. 4 in. high by 9 ft. 2 in. wide, which can be increased to 6 ft. 2 in. high and 11 ft. 4 in. wide, and the large size, which is 6 ft. 4 in. high by 11 ft. 6 in. wide, extensible to 7 ft. high and 12 ft. 2 in. wide.

CHAINS CAN BE CHANGED TO SUIT ARMS

When the cutter arms are either lengthened or shortened the cutter chain also must be raised or lowered in accordance. This is quickly done by altering the position of the sliding heads to which the corner sprockets are fastened. The same principle of moving the cutter chain up or down is used to make the machine conform to varying thicknesses and positions of partings when separating them from the coal.

In order to facilitate the handling of cars, the most recently constructed machines are provided with an extension conveyor long enough to permit several cars to be placed under its delivery end, the actual number depending on the size of the place being mined. The ram or pusher advances the cut about 3 ft. at one stroke, after which the oil is reversed and the machine made ready for another start. During the minute or so required for this operation the loaded cars are removed, being replaced with empties. Consequently the conveyor should be long enough to permit the spotting of enough cars to hold all the coal mined at one advance of the plunger.

The most recent machines are fitted with hydraulically operated leveling devices connected directly to the feed cylinder. They are thus enabled to follow any variation of the coal bed by changing the cutting angle.

For thin coal, in order to obtain width more than two circles may be cut or the two circles may be pitched farther apart, with the cutter chain loosening the coal between them. Another alternative would be to have several parallel cutter arms, driven from the main shafts, which would operate on long faces, being propelled by a rope or chain.

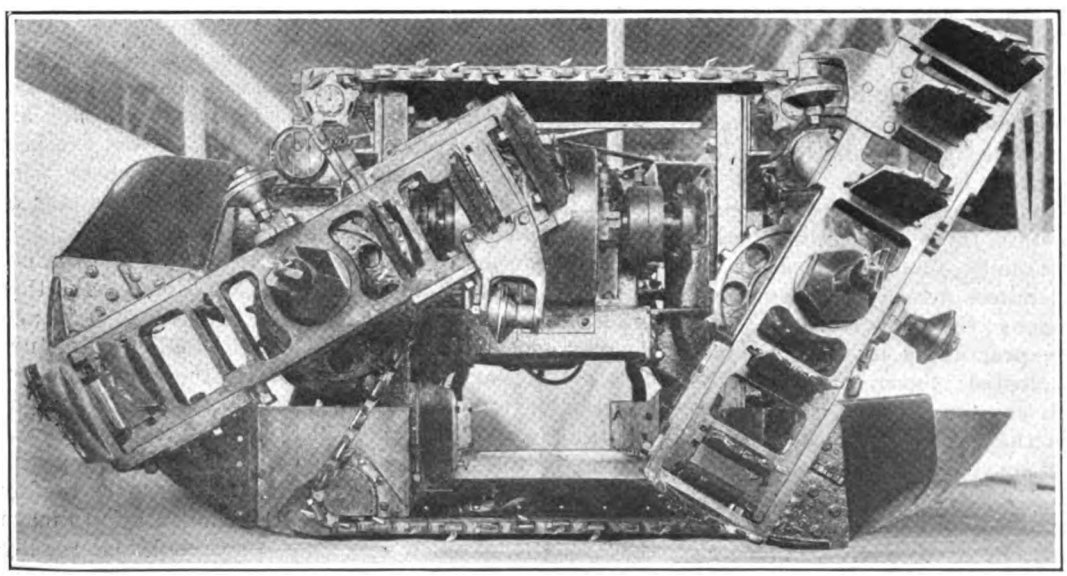
The present machines are provided with long axles and removable wheels that may be set to any gage. These are replaced by smaller wheels before the cutters are started into the coal. Dashpots, actuated by hydraulic power, raise and lower the wheels for easy and quick interchange.

Designs are being prepared for other sizes intended for work in coal as thin as 30 in. Still others will provide for the removal of bands of slate and other impurities. This is accomplished by superimposing one set of cutter arms above another, the lower cut extending from the floor to the parting and the upper from the parting to the roof or to the next band of impurity, if there is more than one.

The upper cut will advance slightly ahead of the lower, and the coal from it will be deposited by a short drag upon the main conveyor below. Wedging guide plates, supporting the chain that cuts out the triangular segments, will break up the slate band, and a short side conveyor will carry it to the gob. More than one band can be removed in this way by superimposing cutter arms, all of which will be securely fastened to the lower frame and driven from the main shafts by chain and sprockets. The upper cutter chain is so made that it can be raised and lowered. Thus a parting or band can be followed, should it increase in thickness or change position. It also is necessary to lower this chain when transporting the machine to another working place.

SHARPEN BITS ON EMERY WHEEL

The outer set of bits on the cutter arms, of course, travel much faster than those nearer the center of the cut and are in contact with more coal in any given length of time. As a result they dull more quickly. The number of rotations made by the cutter arms is about eighteen per minute. By experimenting with different grades of high-carbon tool steel and by using blunt-



"Bows On"

With bit holders and bits in place. The center augers, wedging wheels and the means employed for adjusting or changing the length of the cutting heads also are visible. The bits and augers are sharpened on an emery wheel instead of being heated and retempered. As much as 35 ft. of heading has been cut with one set of bits before replacement.

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nosed or hammer bits it has been possible to make an average advance of 35 ft. in the Illinois No. 6 bed before having to change bits. These bits are not heated and hammered to shape when dull but are simply "touched up" on an emery wheel without retempering.

Successful but experimental work has been done with this machine in fireclay mines. In these tests it was found that by setting the bit holders close together the clay was reduced to small pieces. This is desirable inasmuch as fireclay has to be finely ground before being made into any manufactured product. At present a machine with one crossarm is being built for a Cleveland contractor who intends to drive a tunnel with it in black slate. This passage will be 6 ft. in diameter and 6,000 ft. long. Doubtless the machine can be used to cut not only fireclay but slate and shale.

This machine, which is manufactured by the McKinlay Mining & Loading Machine Co., of Philadelphia, Pa., has a low maintenance cost and promotes safety by dispensing with explosives entirely and by cutting an approximately oval passage that gives more support to the roof than if the ribs were vertical. By making it possible to drive places without the use of explosives the roof, ribs and floor are saved the shattering that invariably accompanies blasting.

Charleston Welcomes Coal And Byproduct Men

Buyers of Coking Coal Call for Evaluation Table and Stabilized Prices—Possibilities of Gas Coals—Loading Problems Discussed

By a Staff Contributor

CONFINED AS IT WAS to coal mining and to the problems involved in producing and disposing of byproducts, the meeting at Charleston, W. Va., May 6 and 7, of the local section of the American Institute of Mining and Metallurgical Engineers proved of special interest to mining men. The attendance of fifty or more was made up for the most part of mine operators and mining engineers. Territory from New York to Illinois, inclusive, was represented.

Appropriately, the subject which to some operators has been a "bitter pill" was placed first on the program. A joint paper by Robert M. Lambie, chief of the West Virginia Department of Mines, and Gordon MacVean, of the Mine Safety Appliances Co., dealt with pertinent facts on the subject, "Rock-Dusting in West Virginia." In the discussion that followed, prominent operators told how "Bob" Lambie had slowly but surely convinced them of the value of rockdusting and how the dose was proving to be sweet rather than bitter.

In May of last year, there were but two completely rock-dusted mines in the state, these being mines Nos. 2 and 12 of the Boone County Coal Corporation at Sharples. Today thirty mines owned by twenty-two companies are listed among those rock-dusted. Although the center of the practice is in the Fairmont district, there are now dusted: Seven mines in the Wheeling-Panhandle district; five in the Pocahontas-Tug River field; four in the New River field; two in Logan County; two in Boone County and one in the Thacker field.

In the paper attention was called to the factors which influence the explosibility of coal dust. Important among these are the volatile content, the fineness and the dryness of the coal. Experiments indicate that with coals of varying volatile content the presence in the dust of the entry of from 54 to 75 per cent of incombustible matter will prevent the propagation of an explosion.

John H. Jones, safety engineer of the Old Ben Coal Corporation, led the discussion of this paper. He described in convincing terms the part that rock dust played in stopping the gas explosion at Orient No. 2 mine. The section of the mine in which it occurred had been dusted five or six months before, and the ratio of rock dust to coal dust was probably 80 to 20. The entries had been driven 250 ft. beyond the end of the dusting and were very wet for this distance. The gas accumulation at the face probably extended only 30 to 40 ft. This condition provided an excellent opportunity for the wet section to stop the explosion, but it failed.

AFTER 25 FT. NO COKE WAS SEEN

At a point 100 ft. from the face the coal dust did not ignite, but at 250 ft. ignition of the dust began. Twenty-five feet beyond the beginning of rock dust no coke was to be found. The inference was that water is of no value in stopping the propagation when such a body of gas is present, whereas rock dust is quite effective in extinguishing the flame.

Mr. Jones disagreed with a statement in the paper regarding the cleaning of the entries before dusting. He thinks it better to rock-dust without waiting to clean the dust from the entry. This gives immediate instead of delayed protection. In his opinion if the coal dust exceeds a certain limit there is no increased danger, for the force of the explosion is limited by the quantity of oxygen the air contains. Any excess of fuel for the flames remains unburned.

He said that in the Illinois mines the rock dusting did not deteriorate 10 per cent per month, as the readers of the paper asserted. Assuming 93 per cent of non-combustible to be present at the start, by the end of the first month the percentage will have dropped to approximately 83. At the end of the following month it will be 81 per cent, and in the succeeding months 80½, 80⅓ and so on. The Old Ben Coal Corporation had found that dusting twice a year would afford protection. The falling of the roof and the spalling of the ribs were the principal causes making redusting necessary.

The material from which the Old Ben Coal Corporation prepares its dust is a shale occurring above the coal. It is ground to an average fineness such that 92 per cent will pass through a 255-mesh screen. Although the dust was of so dark a color that it did not aid much in the illumination of the mine, it was the best that they had found, considering the fineness with which it could be pulverized and the high percentage of incombustible matter it contained.

Asked concerning the practice in the Old Ben mines in regard to rock-dust barriers, Mr. Jones said that the length of the trough has been reduced to 6 ft. and the dust content per trough from 200 to 60 lb. Moisture does not appear to affect the dust in the barriers to an appreciable extent. Certain barriers which were put up nine years ago are still as effective as ever. Although the troughs had been redesigned partly because troughs of smaller capacity were more readily supported, the main reason for the change was to make the troughs of such size that they could be readily

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lifted and carried, should their contents be needed to extinguish a mine fire.

He described how seven years ago a serious fire was extinguished by rock dust. The chemical extinguishers had failed to control the flame, and seals were in the process of erection, when someone suggested the use of rock dust. A number of troughs were brought to within 150 ft. of the fire, which was as close as they could be transported on account of the heat of the burning coal. A trough of dust was then thrown in the air toward the fire. This dust was carried into the flame by the air current. It cooled the flame to a noticeable extent. This was followed immediately by an advance of about 10 ft., at which point another trough was discharged. The fire fighters proceeded, gaining about 10 ft. with each discharge until at last the men walked right over the fire. Others following plastered dust over the points that were smoking. The extent of the fire is indicated by the fact that, on cleaning up the roadway, a car of coke was loaded. This was shipped to the power plant for boiler fuel.

WATER NOT WITHOUT EFFECT

Carl Scholz, manager of the Raleigh-Wyoming mines, stated that he believed moisture does have a marked effect in arresting or minimizing an explosion. He cited the case of the local gas explosion at Glen Rogers mine, which is very wet. After the explosion no coke could be found. To illustrate the difference in moisture between this mine and a certain Illinois mine he stated that he had to discontinue overcutting in the Illinois mine, whereas in the West Virginia operation he was able to centercut the coal without causing any appreciable dust. He closed his remarks by declaring his belief in the rock-dust remedy, repeating, however, his conviction that the presence of moisture was helpful.

Dr. T. T. Read, formerly of the Bureau of Mines and now assistant secretary of the American Institute of Mining and Metallurgical Engineers, then discussed the relation between the mechanicalization of mines and accidents. Generally speaking, the introduction of machinery in an industry does increase the hazard, but statistics so far show little or no relation between accidents per 1,000 men employed and the degree of mechanicalization of coal mines.

R. W. Sweetser, assistant to the vice-president of the American Rolling Mill Co., read a paper entitled "Evaluation of Coal in Metallurgy." He stated that the necessity for evaluating coal came to mind when he found how closely the quantity of coke required per ton of pig iron varied with the percentage of ash in the coke. The old idea that a certain quantity of ash was necessary in metallurgical coke to give it strength is entirely fallacious, said Mr. Sweetser.

Speaking generally, coke is used in a furnace solely to provide a source of carbon. The higher the carbon content of the coke the better. One per cent of ash in coking coal adds 30c. per ton to the cost of pig iron. Mr. Sweetser advised the coal men to start at the point at which the iron men have already arrived. They had prepared a schedule on which was based the premiums and penalties which determined the relative values of iron ore. He asserted that iron men had just as many variables and difficulties facing them in making a schedule as the coal men have in determining one for their product.

In the discussion Dr. T. T. Read emphasized the fact that a coal table would not have to show the correct relative values of the coke but would need only to provide a scale from which to measure. C. E. Krebs, consulting engineer, of Charleston, related the difficulties which he had encountered in trying to make a table evaluating coals on the basis of their various desirable and undesirable qualities.

OF MANY ANALYSES, SWORE BY BEST

Josiah Keely, president of the Cabin Creek Consolidated Coal Co., expressed the opinion that to base prices on an analysis would result in an endless squabble as to the fairness of the sampling. Mr. Sweetser replied that the iron men had all of these difficulties and more. Twenty years ago it was not unusual for the seller of ore to engage as many as three different laboratories to sample and analyze his shipments. He based his price on the best analysis. Today the sampling must be done by a method which had been adopted as a standard.

Mr. Kelly, a commercial chemist, stated that 75 per cent of all the coal samples sent to him for analysis are really worthless because of the improper sampling methods. He thinks, however, that a channel mine sample, within the limits of accuracy of the analyzing equipment, can be taken without difficulty.

O. O. Malleis, chief chemist of the laboratories of the Koppers Co., which are maintained at the Mellon Institute, delivered an illustrated talk on "Development in Byproduct Coke Ovens." He defined a coking coal as "one which will produce merchantable coke," saying that the limits are now so broad that this is the only safe definition. Most coal is still being pulverized to 70 to 80 per cent through a ⅛-in. hole before coking, but the Carnegie Steel Co. is charging ovens with coal crushed so as to pass a hole of 1½ in. diameter.

Josiah Keeley followed with a paper on "Mechanicalization of Coal Mines and Its Influence on Market Preparation" and Edward Graff, general superintendent of the New River Coal Co., one on "The Effect of Mechanicalization on the Cleaning of Coal."

SMALL CONSUMER WILL BURN SLACK

At a banquet held in the evening after the first day's meeting J. G. Bradley, president of the West Virginia Coal Association, who acted as toastmaster, said that the domestic stoker is a coming development which will widen the demand for coal and lessen the demand for lump sizes. Other speakers at the banquet were S. A. Taylor, of Pittsburgh, president of the A.I.M.E.; W. A. MacCorkle, ex-Governor of the state, and Walter Cunningham, secretary of the West Virginia Coal Association. About 200 were in attendance.

At the morning meeting of the second day J. J. Forest, president of the By-Products Coal Corporation, of Chicago, addressed the assemblage on "Byproduct-Plant Operation and Sale of Product" and later W. W. Freeman, of Cincinnati, president of the Union Gas & Electric Co., spoke on "The Utilization of Artificial Gas and Its Practicability as a Means to Supplement the Available Supply of Natural Gas in Various Industrial Communities."

The Charleston meeting was ended by a short talk by J. K. Taylor, president of the section, in which he deplored the interference of government bureaus in business, referring especially to the Interstate Commerce Commission.

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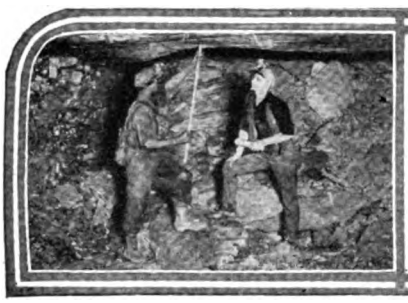
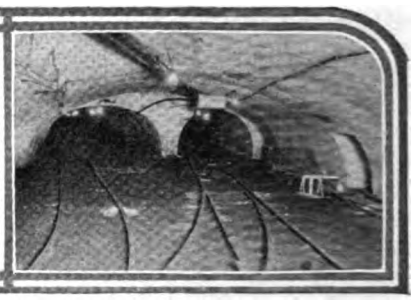


Underground Operation



Why No Mine Can Be Properly Ventilated Unless Roof Is Caved

Air in Open Spaces Should Be Renewed Many Times Each Hour—In Uncaved Mine, Power on Fan Must Be Increased One Thousand-Fold to Achieve That End

By Edward O'Toole
General Superintendent, United States Coal & Coke Co.,
Gary, W. Va.

Failure to extract pillars presents to the ventilation engineer almost insuperable problems. The vacant spaces harbor large quantities of coal dust, no matter how much air is supplied, and that is one reason for providing for such complete extraction that the roof will fall and cover such deposits.

If the air in a gaseous mine is not removed in the extraction areas either by falls of roof or ventilation it will contain dangerous quantities of methane. No really gaseous mine is receiving enough air to bring the atmosphere to a desirable degree of freedom from that gas.

Every Mine Its Own Hazard

In some mines danger is greater and more imminent than in others, but all mines have danger zones. The dangers in some are at the working face, where, as mining proceeds, explosive gas is liberated. Some mines have a danger zone in the second mining, or pillar-drawing, stage, caused by the breaking of the strata overlying the coal and the liberation of explosive gas thereby. This explosive gas, being lighter than air, accumulates in high places, such as the cavities and crevices caused by breaks in the strata or by falls of the mine roof. When the gas is present in sufficient quantities, it floods into the adjacent open workings.

The danger zones in some mines are to be found in the large open spaces resulting from the non-extraction of pillars. Such open spaces, when not properly ventilated, act like the backwater of a stream. In such open areas the fine coal dust that is carried in the mine air settles on the sides, timbering and floor, just as flood water runs into backwater sections, leaving a deposit of fine mud behind.

Where Danger Zone Lies

This dust is raised in the mine atmosphere whenever the passing of cars, the falling of roof, the explosion of gas or of powder, or some other rapid movement causes an inrush of air. In all mines material may fall from the sides or the roof and endanger the workmen.

In our mines we draw a line horizontally along the sides of all hauling, traveling and air ways and along the face of each working place, 3 ft. from the bottom. We consider all space above this line as a danger zone.

The mining laws of most mining states require that all abandoned, or temporarily abandoned, open spaces in the mine shall be made safe by adequate ventilation. This brings up the question: What is proper ventilation?

Table I—Ventilation Required for Certain Rooms

Type of Room	Number of Times Air Should Be Removed per Hour
Public waiting rooms	4
Public toilet rooms	10
Small convention halls	4
General offices	3
Public dining rooms	4
Banquet halls	5
Hotel kitchens	4 to 6
Textile mills	4

According to Allen and Walker's "Heating and Ventilation," page 181, rooms should be ventilated as in Table I.

Do open spaces in mines require as much or more ventilation than these classes of buildings? If they only require as much, the presence of open spaces in mines becomes a serious matter. An estimate has been made of the open space in a mine producing 3,500 tons daily with the result as in Table II.

Table II—Open Space in a Mine of 3,500 Tons Capacity

	Length in Feet	Area of Open Workings, Cu.Ft.
Headings	101,700	6,857,631
Aircourses	94,800	9,297,984
Heading crosscuts	49,285	4,229,638
Rooms	28,300	4,163,496
Machine room	8,900	1,091,140
Room crosscuts	11,280	968,049
Drainage heading	14,800	1,814,480
Total	309,065	28,422,418

From Table II it can be readily calculated that the open space in the mine instanced is about 8,000 cu.ft. for each ton of daily capacity. This ratio of volume of mine space to daily coal output is possibly as low as in any mine operated by the room-and-pillar system with the type of mining machinery now in general use. The average for the country would be about 20,000 cu.ft. of mine space per ton of daily capacity.

Air Required per Ton of Coal

If this mine was ventilated as well as Table I would indicate for general office buildings, 576,000 cu.ft. of air should be circulated through it each 24 hours per ton of coal produced. If this mine was ventilated as well as convention halls should be, it would need 768,000 cu.ft. of air each 24 hours per ton produced. If it was ventilated as well as a banquet hall, it would need 960,000 cu.ft. per 24 hours per ton produced.

Some large mines produce as much as 10,000 tons of coal per day. One ton of coal in the solid seam occupies about 25 cu.ft. of space; therefore, each day's mining produces 250,000 cu.ft. of open space,

Second part of paper on "An Experiment in Combined Cutting, Mining and Loading in Coal Mines," read March 11, in New York City at a meeting to discuss coal loading sponsored by the Materials Handling Division of the American Society of Mechanical Engineers and the National Coal Association. First part, which deals with the action of the mine roof, appeared April 22, pp. 570-571.

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plus what additional cubic feet of rock and refuse may fall or be taken down and have to be removed.

Allowing 200 days for a year, at the end of the first year there will be 50,000,000 cu.ft. of open space in such a mine; and if in ten years no pillars are drawn and the open spaces are not filled by water or other means, there will be 500,000,000 cu.ft. of open space in such a mine.

I have developed this subject of mine ventilation for the purpose of showing you the magnitude of the problem of properly ventilating large mines by replacing all the air from their vast spaces three, four, or five times per hour, as required in office buildings, assembly rooms and banquet halls, respectively.

Fill Excavations by Falls

One other example, showing the problem from another angle: In June, 1915, two shafts reached the coal seam at a depth of 600 ft. Since that time the mine has been developed, and 1,710,257 tons of coal has been mined and shipped, and, in addition, this mine has hoisted and stored on the mountainside a large quantity of rock and refuse. Therefore the space excavated in the mine is approximately 45,000,000 cu.ft.

As no pillars have been drawn so as to cause the roof to fall and as the space from which the coal and rock has been mined has not been filled, this excavated space is standing full of air. To ventilate this mine, 200,000 cu.ft. of air per minute enters one of these shafts and goes out at the other. The chemical analysis of the exhausted air shows that it contains 0.9 per cent of methane.

Concentration Safer

This methane is transpired from the coal surrounding the spaces from which the coal shipped was mined. When it first issues from the coal it is pure, but when it comes in contact with the mine air it diffuses and mixes with the mine atmosphere and pollutes it to the extent that all the air coming from the mine contains 0.9 per cent of methane. In diffusion it has passed through all percentages of gas and air from pure methane to the mixture of methane and air which is exhausted from the mine.

This mine produces about 2,500,000 cu.ft. of pure methane every 24 hours and at all times about 400,000 cu.ft. of pure methane, mixed with air, occupy the spaces in the mine. This mine has about 130 working places, is equipped with the usual mining machines, and produces about 2,000 tons of coal every 24 hours, or about 15 tons of coal per working place in that same period.

Caves Save Power

Not only does this mine harbor large quantities of methane, but it also stores away part of the gases resulting from the use of about 700 lb. of explosive every 24 hours. It is receiving less than one-tenth of the air required to ventilate general office buildings properly, and for lack of an adequate supply of air is dangerous.

It is possible to increase the air entering this mine 50 per cent, but only at a great expense, as the velocity of the air current in the shafts is now 1,500 ft. per minute, and the power required to produce more air will increase as the cube of the velocity. Therefore, to provide 50 per cent more air will require over three times the power. To meet general-office air requirements over a thousand times the present power would be required.

To safely increase the production from this mine, operations should be concentrated and the extracted areas completely caved. The production from each working place should be from 300 to 400 tons per day instead of 15 tons, as at present. The ventilation would then be a small problem and the mine would be a safer place for the workmen.

Relative Hazard of Electric Circuits in Signaling

Exhaustive studies, extending over many years, into the ignition of methane by small electric currents such as are used in signals made under the direction of R. V. Wheeler for the Safety in Mines Research Board, of Great Britain, have resulted in the following conclusions: The igniting current for a given mixture of methane and air varies directly with the volatility of the metal at the spark gap, being lower than the boiling point of the metal.

Gold Arc Less Hazardous

Thus if the contact is between cadmium points which boil at 778 deg. C. the igniting current is 0.22 amp. at 120 volts, whereas if the contact is between gold points which boil at 2,530 deg. C. the igniting current is 0.5 amp. at the same voltage. Copper, which boils at 2,310 deg. C., gives a value of 0.49 amp. for the igniting point, the boiling point of copper being lower than that of gold and higher than that of cadmium.

The volatilization of the metal causes a variation in the duration of the flash resulting from a break in the circuit. Thus in the standard mixture of 8.5 per cent methane, the break flash lasted 0.00321 sec. with cadmium and only 0.00070 sec. with gold which volatilizes in a far lower degree. These results were obtained with a potential of 120-volts and with currents of 0.23 and 0.50 amp. respectively.

Other conditions remaining constant the igniting current for a given mixture of methane and air is lower the more rapid the break in the circuit. The smaller the area of contact at the moment of break, the lower is the igniting current required for a given mixture of methane and air under otherwise identical electric circumstances.

No simple universal law connects the value of the igniting current with the inductance of the circuit, but the relationship varies with the mechanical conditions under which the sparks are produced. Under one particular set of conditions, the energy required in the circuit before a break would produce an igniting spark was nearly constant. In general, particularly with highly self-inductive circuits, the igniting power of the flash produced on breaking the circuit is affected far more by the strength of current in the circuit than by the impressed voltage, if the value of the latter is comparatively low. With the higher values of the impressed voltage, however, currents of lower amperage will ignite the gas mixture.

Kind of Current Unimportant

The character of the current supply, whether continuous or alternating, does not materially affect the current strength at which methane mixtures are ignited by breaks in the circuit.

These results are recorded in Bulletin No. 20 entitled "The Electric Ignition of Firedamp: Alternating and Continuous Currents Compared," obtainable from His Majesty's Stationery Office, Adastral House, Kingsway, London, England, price 1/- (25c.).

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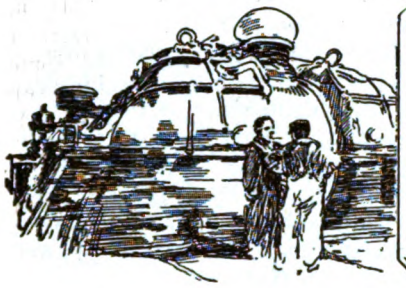
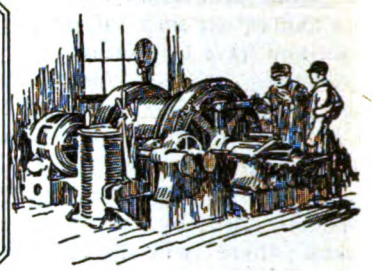


Practical Pointers For Electrical And Mechanical Men



Hillman Coal & Coke Co. Introduces Automatic Electric Gate

By J. A. Malady
Electrical Engineer,
Hillman Coal & Coke Co.,
Pittsburgh, Pa.

Where cages, instead of skips, are used in the main shaft, and when this shaft is used for handling men and materials, the gate at the surface landing must be opened and closed many times a day. Doing this by hand not only causes delays but is not a safe manner of operation, for the gate may be opened or left open when the cage is not at the surface landing. Furthermore, such practice does not comply with Art. VIII of the Pennsylvania mine law. Automatic, air- or steam-operated gates are rather common, but few installations of successful electrically operated gates are seen about the coal mines.

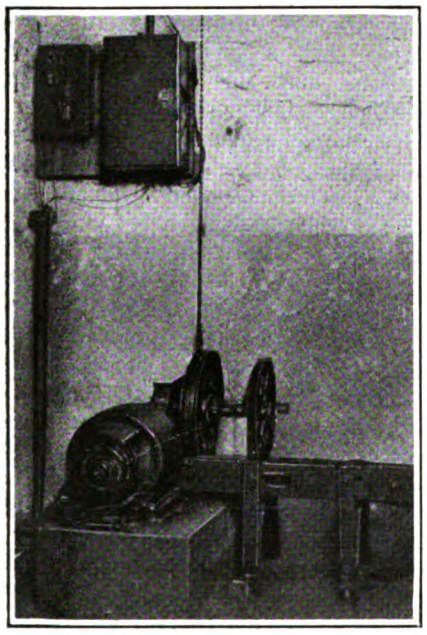


Fig. 1—Worm-Driven Gate Hoist

The relay on the wall near the starting switch is adjusted to a few seconds time delay so that when the cage passes the surface landing at normal, or even at reduced speed, the gate will not open.

At the No. 1 shaft of the Isabella mine of the Hillman Coal & Coke Co., near Brownsville, Pa., an electrical device has been used for about two years to open the gate automatically. The necessity for improvising this equipment arose when the old steam hoist was replaced by one operated by electricity. Formerly, the gate, which was of the rising type, was actuated by a steam cylinder. After the old hoist was removed steam was no longer available, nor was compressed air.

An air compressor might have been installed, however, but this obvious though expensive solution did not suit the purpose because there was a danger that the moisture in the air cylinder would freeze. The company knew of no completely successful automatic electric gate-opening equipment which had been placed on the market, so it built one of its own.

Fig. 1 is an illustration of the gate hoist, starting switch and time-delay relay which is being used at No. 1 shaft. This equipment is installed in one corner of the room in which the main hoist is located. The other end of the rope, one end of which is seen attached to the drum, is connected to the rising gate at the shaft. The small worm-driven hoist is of the type commonly used for dumbwaiter service. The motor is reversible and, at its limits of travel when opening and closing the gate, is stopped by a spring-reset limit switch.

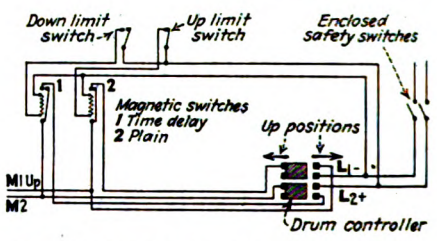


Fig. 3—Wiring and Control Details

The time delay is the brains of the whole arrangement because it decides whether the gate is to be opened at the ground landing for men or left closed for the coal that has to pass to a higher point in the shaft.

Fig. 2 is an illustration of the thread bar and its supporting stand, which is connected to the end of the

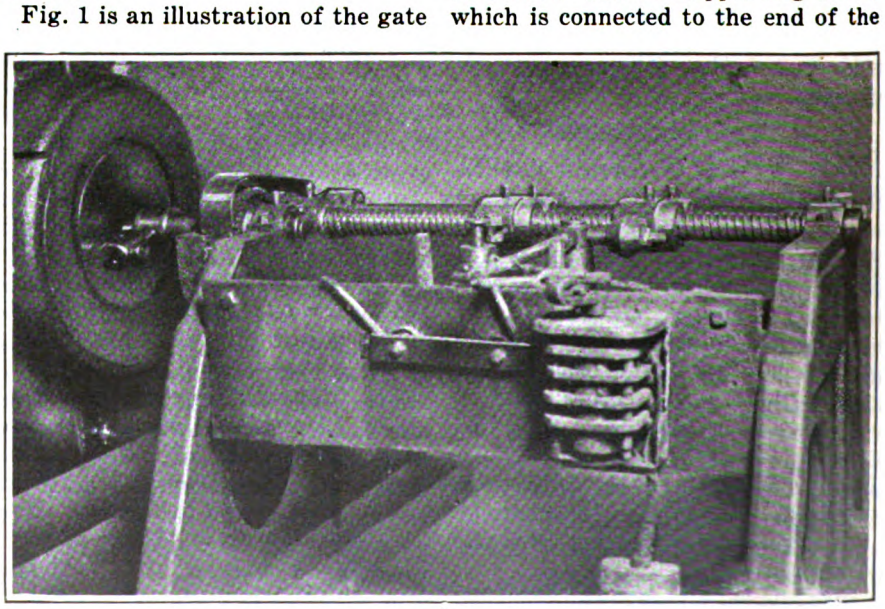


Fig. 2—Thread Bar Which Operates Gate Control

The controller which was added to this device is turned to the gate-opening position whenever the cage passes or stops at the surface landing. This controller is simply a reversing switch and normally remains in the position in which it should be for opening the gate.

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shaft of the new electric hoist. The controller, with its cover removed, so that this illustration could be made, is mounted on a stand and is essentially a drum-type reversing switch. The cylinder of this controller normally stands in a position which will operate the small motor in the proper direction to lower the gate. When the main hoist is operated the sliding nut on the thread bar moves an arm which turns the

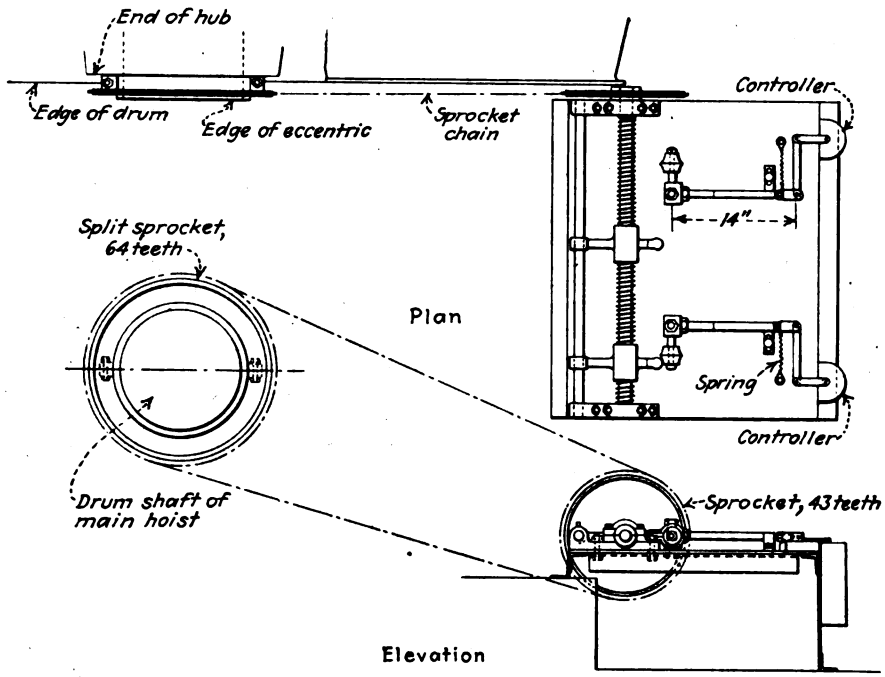

Fig. 4—Mechanism by Which Electrical Control Is Actuated

It gets into action at the proper time to open or close the gates, is governed by the position of the cages in the shaft and is positive in its operation.

controller to the gate-opening position when the cage is at the surface landing.

Here is where the time-delay relay, Fig. 1, which is the brain of the device, plays its important part. If the cages do not stop at the landing, as when hoisting coal, the relay does not have time to close during the short time that the reversing switch has been held in the gate-opening position by the passing nut on the thread bar, and hence the gate does not open. If, however, the cage is stopped at the landing, the relay in about one second closes and the motor quickly raises the gate to the desired height, which is controlled by the setting of the limit switch. When the cage is moved a few inches either way from the landing the motor quickly lowers the gate.

The Hillman Coal & Coke Co. recently installed two additional gates at other mines and has replaced the thread bar and reversing controller by a light contact-making device connected to the dial indicator of the main hoist. These gates operate with entire satisfaction.

Never Confine Transformers In Too Small a Space

In comment on the short article appearing in the "Practical Pointer" section of *Coal Age*, April 22, relative to the placing of transformers in a tank on a steel truck, I would suggest that such an arrangement has the excellent feature that it makes the station portable, but there is danger in too completely inclosing transformers.

I have in mind a vault in which the transformers reached a high temperature and an explosion resulted. Just what happened is a matter of conjecture. Possibly the oil was vaporized until the coils were exposed and, in consequence, the wire reached a red heat or burned in two, igniting the oil vapor. Perhaps it was one of the lead-in wires that was thus burned. However, it is needless to say that a dense oily vapor and electric flashes are a potent combination from which malignant action may be at any time anticipated. An overheated transformer may give off a large quantity of smoke, yet no flame will be emitted. As a result no fire will sever the safety rope, and the men in the mine may be suffocated by smoke.

At the 1924 summer meeting of the Rocky Mountain Coal Mining Institute we endeavored to overheat a 10 kva. transformer until something happened, but the results were not carried to a conclusion and the crowd left before the climax. However, during the demonstration the transformer gave off a large quantity of smoke for about one hour that would have been serious had the experiment been made in a mine. About one-fourth of the oil was vaporized, and had there been a spark above the oil level, I believe the oil vapor would have been ignited.

I have given serious thought to the system of installing transformers in mines that I am about to describe: Set the transformer between the intake and return airways wherever possible, so that smoke may be diverted to the return if some one is fortunate enough to be present to open the door in the return at the time of the burnout. Place an automatic oil circuit breaker on the primary side of the transformer. Provide a thermal relay to open the oil circuit breaker when the temperature of the transformer reaches 75 deg. C.

NEARLY A CATASTROPHE

The fact that we had placed an electrical installation between the intake and return served us well on one occasion. A synchronous motor that was pretty well filled with coal dust lost its exciting current, gradually overheated and took fire. A dense smoke was emitted that would have passed thirty or forty men but for the presence of mind of some one who opened the door to the return. The motor was still running when this was done. The overload device had failed to work. Wherever possible we eliminate transformers and carry the high voltage (2,200 volts) directly to the motors.

The article by J. H. Edwards on page 561 of the issue of April 22, on the regulation of peak loads by floating storage batteries on the line, shows that W. F. Hossfield, the chief electrician of the By-Products-Pocahontas Co., had every detail in mind when planning the installation. This is the first plant of its kind at a coal mine, at least within my knowledge. The saving is remarkable and should appeal to many mine managers whose contract for power provides for a high demand charge.

D. C. MCKEEHAN,
Electrical Engineer.
Union Pacific Coal Co.,
Rock Springs, Wyo.

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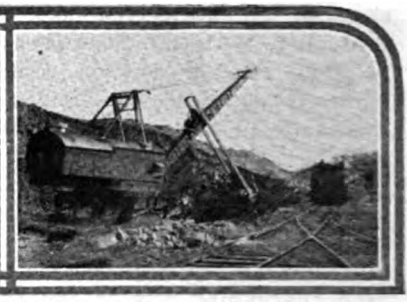
News Of the Industry



British Coal Operators and Miners Consider Peace Proposal as Tie-Up Of Industry Enters Second Week

A peace plan for the settlement of the British industrial strike which it was hoped would prove acceptable to both the government and the trades union leaders was under consideration Monday night, though no decision had been reached at 1.30 a.m., Tuesday. The peace proposal was made by Sir Alfred Mond, prominently identified with the coal mining industry, who with Sir Herbert Samuel, chairman of the Royal Coal Commission, presented the plan to the executive committee of the Miners' Federation. Lord Londonderry and David Davis, leading mine owners, took a prominent part in the negotiations, which lasted until Tuesday morning, to be resumed later in the day.

A compromise is said to have been suggested whereby the miners would take a 10-per cent wage cut if guaranteed that the industry would be reorganized at the same time and if some form of government assistance would be forthcoming during the negotiations. A group of large moderate mine owners are reported to have been conferring with Sir Alfred Mond on a scheme to place the industry on a more efficient basis. This would include closing the poorer mines and an arrangement whereby only mines near the sea coast would produce coal for export.

Moderates Want Peace

It is uncertain how much chance these peace moves have of success, but it is becoming increasingly evident that moderates both in the government and the General Council of the Trades Union Congress are anxious to end the struggle. David Lloyd George intimated that a majority of the Baldwin Cabinet do not feel that a sweeping victory over the unions is worth the price of economic collapse and inextinguishable class hatred.

The strike's second week began with neither party to the national conflict showing any disposition to retreat from the positions taken when the national walkout started. The number of volunteers to man transport and other essential services is increasing. More trains are running. On Saturday the government began moving foodstuffs from the London docks under the protection of armed convoys, after refusing the offer of the unions to pass food trains and trucks provided with government permits.

Late last week "the second line of defense" of the strikers was called into action. Workers in the gas and electric plants began to desert their posts. Their places were taken by men from the armed forces of the nation. At Liverpool the millers, butchers and building trades workers were called out. Sporadic disorders have been reported from different parts of Great Britain, but, on the whole, there has been little violence.

Interest in the general situation naturally has overshadowed the controversy between the miners and the coal operators which led to the strike. No attempt apparently has been made to operate the mines, but the temper of the men in some of the districts, particularly in Wales, is said to be ugly.

Coal Issue Comes to Surface

The coal issues, however, were again brought to the fore in a radio address by Premier Stanley Baldwin on Saturday night. In that address the Premier again defined the government's position and reiterated its refusal to be a party to a resumption of negotiations between the operators and the miners until the general strike order had been unconditionally rescinded. The general strike, he declared, was an attempt "to disrupt the life of the nation and to starve it into submission."

The stoppage in the coal industry, said Mr. Baldwin, "followed a nine months' inquiry and negotiations. I did my utmost to secure an agreement upon the basis of the Commission's report, and when the time comes, as I hope it may soon, to discuss the terms upon which the coal industry is to be carried on I shall continue my efforts to see that in any settlement justice is done both to the miners and the owners.

"I wish to make it clear that the government is not fighting to lower the standard of living of the miners or any other class of workers. My whole desire is to maintain the living of every worker and I am ready to press the employers to make any sacrifice to this end consistent with keeping industry in its proper working order.

"There are many people who say: 'I do not hold with the general strike, but I feel a good deal of sympathy with the miners.' So do I, but if Parliament had voted millions to aid the mining industry and had received the report of a very able commission, what else could it do than try to bring about a settlement on a basis on which the industry could be carried on? The government is prepared now, as it has always been, to accept the report and the whole report if the other parties will do so."



Keystone View Co.

Stanley Baldwin

On the shoulders of the Prime Minister rests the chief burden during the general strike. For more than a month he put forth his utmost efforts to bring the coal operators and miners to an agreement in order to prevent a tie-up.

Coal a Sore Spot Since War

The labor situation in the British coal industry has been more or less in the public eye since the close of the World War. The immediate dispute between the miners and the owners is a revival of the controversy which threatened a strike last summer. At that time the operators posted notices that wages would be reduced on Aug. 1. The government intervened and promised a subsidy to reimburse the owners whenever the returns from the industry were insufficient to pay the standard wages and profits. This subsidy, which expired April 30, cost the British government over £20,000,000. Without it, declared the Royal Commission appointed to inquire into the situation, 73 per cent of the coal mined in the last quarter of 1925 was produced at a loss.

This Commission, whose report was expected to determine the future course of the industry, submitted its findings early in March. The Commission rejected the miners' proposal—indorsed by the majority of the Sankey commission appointed during the régime of Lloyd George—that the mines be nationalized. It did, however, recommend national ownership of mineral rights. At the present time approximately 88 per cent of the mining operations work on a royalty basis. These royalties,

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under the Commission's recommendations, would accrue to the state.

In its consideration of the industry as a whole the Commission recommended amalgamation of existing mines, which could be made compulsory where necessary in the public good. A closer integration of the mining with the larger consuming industries also was proposed. Greater engineering research both in mining and in combustion technique was urged. Government analysis and standards, particularly in the export trade, were suggested. The Commission also favored the adoption of larger railway cars and greater concentration of ownership to replace the present highly scattered private ownership of equipment. Co-operative selling agencies and municipal coal yards received the approval of the Commission.

Labor Aspects Stressed

On the labor aspects of the problem the Commission held:

(1) The principle upon which recent agreements have been based is sound, but amendments should be made in the method of ascertaining the proceeds upon which wages are fixed, particularly in setting prices on coal sold to associated industries or selling agencies.

(2) The standard working day, which averages 7½ hours underground, should not be altered, but the multiple shift system should be extended.

(3) Joint pit committees should be established generally.

(4) Methods of payment of men not employed at the face should be revised where possible to give them a direct interest in output.

(5) The introduction of a family allowance system is desirable.

(6) Profit-sharing schemes, providing for the distribution to the workmen of shares in the operating companies, should be generally adopted and should be made obligatory by statute.

(7) Proper provision for housing should be a condition of the lease for all new collieries.

(8) The general establishment of pithead baths is necessary.

(9) When prosperity returns to the industry, annual holidays with pay should be established.

"We cannot," concluded the Commission, "approve the proposal of the Mining Association that the gap between costs and proceeds should be bridged by an increase of an hour in the working day, reductions in the miners' wages, some economies in other costs, and a large diminution in railway rates to be effected by lowering the wages of railwaymen.

"If the present hours are to be retained, we think a revision of the 'minimum percentage addition to standard rates of wages' fixed in 1924 at a time of temporary prosperity, is indispensable. A disaster is impending over the industry, and the immediate reduction in working costs that can be effected in this way, and in this way alone, is essential to save it. The minimum percentage is not a 'minimum wage' in the usual sense of that term. The wages of the lowest paid men will be safeguarded by a continuation of the system of subsistence allowances. The reductions that we contemplate will still leave the mine owners without adequate profits in any of the wage-agreement districts, and without any profits in most districts. If trade improves and prices rise, a profit will be earned. If prices do not rise, an adequate profit must be sought in the improved methods, which should in any case be adopted.

"We consider it essential that there should be, as there always has been hitherto, considerable variation in the rates of wages in the several districts. But we are strongly of the opinion that national wage agreements should continue. Such agreements are entered into in all the other British industries of importance.

"We recommend that the representatives of the employers and employed should meet together, first nationally, and then in the districts, in order to arrive at a settlement by the procedure we have previously suggested.

"By a revision of the minimum percentage coal mining would be saved from an immediate collapse, but it seems inevitable that a number of collieries would still have to be closed.

"The subsidy should never be repeated."

The report of the Commission was pleasing to neither miners nor operators. The government, however, announced that it would accept it. Attemps to get the miners and owners together, however, failed. When the owners posted notices of wage reductions, the Miners' Federation declared for a strike. Allied labor organizations asserted that the employers were planning a general assault upon wages and made common cause with the miners.

There have been rumors that miners in other countries would refuse to load coal for Great Britain during the strike. Workers in Germany, the second largest exporter of coal, have been cool to this proposal. In France 60 per cent of the production is not under union domination. Belgian workers have expressed sympathy with the British strikers, but the direct issue of shipping coal to Great Britain has not come to a head. Dock workers at Hamburg have attempted to interfere with the movement of coal and the New South Wales unions are endeavoring to prevent British ships from taking on extra bunker supplies. Antwerp longshoremen also are trying to check the clearance of coal cargoes.

While a number of labor organizations in the United States have expressed sympathy with the British strikers the chances of interference with any export movement are remote. The bulk of the coal that would move in export channels from this country would come from the non-union fields. Moreover, neither the United Mine Workers nor the various railway unions have shown any disposition to engage in sympathetic strikes nor to concern themselves with international labor disputes.

Lewis Denies Union Seeks Scale Modification

A report that field agents of the United Mine Workers had been instructed by international union officials to work up sentiment among union miners to demand modification of the Jacksonville agreement is denied by John L. Lewis, international president.

In a letter last week to B. W. Elkins, of West Frankfort, Ill., Mr. Lewis characterized the report that union representatives were agitating for modification as a means of getting a number of idle coal mines in operation and thus giving wider employment as without foundation.

"The officers of the United Mine Workers are opposed to any modification of the existing wage rates set forth in the agreement in the Central Competitive Field or elsewhere in the mining industry," Mr. Lewis said.



Keystone View Co.

Mine Workers Joining the Strikers

Two miners and their horse leaving a coal mine at Pontypridd, in the South Wales mining field, when the British strike was called.

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Will Settle British Tie-Up Without Disastrous Results, Is Belief in Washington

By Paul Wooton
Washington Correspondent of *Coal Age*

Since the British people have been called upon to meet crises rather frequently for more than 1,000 years, observers in Washington expect this one to be met without most of the dire possibilities that are being emphasized in the newspapers. The investing class, the merchant, the professional group, executives, farmers, small trades people and unorganized wage earners constitute the great bulk of the population even in Great Britain, where the unions include a larger proportion of the people than in any other country.

The general strike will arouse the emotions and the instincts of this majority who recognize that it is a threat at the government which is their representative. Once thoroughly aroused this majority is expected to lend whatever aid the authorities may need to teach the unions that no minority group is as strong as the government.

Even those who hope and expect the British Government to win a 100-per-cent victory think the English authorities have done anything but distinguish themselves in the handling of the situation. It is thought something could have been done to put a real share of the burden on the royalty owners and to require the operators to pool their profits. Certainly a way could have been found to close the high-cost mines. Had the £100,000,000 paid out as a subsidy been used to contract with high-cost producers, 30 per cent of the mines could have been closed and the industry trimmed down to the market. There would have been enough left to pay the dole to the workmen who would have lost employment in the process. Had exports been reduced 40,000,000 tons the industry could have increased prices to the point where higher wages could have been paid to fewer men.

Showdown Thought Inevitable

A very general conclusion is that the whole affair reflects on the ability of both the responsible officials and the labor leaders.

There are some, however, who think this shutdown had to come. While it is unfortunate that it had to come at a time when the British are ill-prepared to meet it, they feel that this ordeal was necessary before the British could regain their industrial position.

In so far as coal is concerned the industry is in an advanced stage of degeneration. It takes 1,100,000 men to produce 300,000,000 tons of coal, whereas in this country 650,000 men produce 500,000,000 tons.

The very low output per man per day—not much over one gross ton per shift—is due partly to natural difficulties and partly to lack of machinery, but an important element is the attitude of the British miner toward the job. It has been brought home to the coal miner through generations of experience that if the piece-rate earnings increase the employer will seek to reduce the piece rate, so that deliberate restriction of output has become one of the means of bargaining. Even when it is not deliberate the established pace has become habitual. A Washington contractor, for instance, has an apartment house under construction in London. He finds the per yard cost of plastering—an operation into which machinery does not enter—is no lower in London, despite the fact that the workmen receive less than half the wage paid in Washington. This applies to most other operations on the building. It is this attitude toward maximum productivity which is at the root of many of Britannia's industrial troubles.

Men Should Gain by Good Work

The principal problem to be worked out in the settlement of this strike and in the reorganization of coal production in the British Isles is to find some way that the men may profit if they do their best.

Mechanization of the mines is one step that must be taken, all agree, but this and other reorganization cannot be done successfully if the men are forced back into the pits in a sullen humor.

Fundamental changes have been going on which have shrunk the market for British coal. Electrification on the Continent, the distribution of reparation coal and the increased use of oil have made for a situation requiring co-operation and intensive effort which cannot be met with sweated and discontented labor. The government is going to put down the general strike with greater ease than is supposed, but a greater task is to devise a plan that will rehabilitate the industries of the United Kingdom so that the losses and the suffering caused by this strike may not go for naught.

To try to get the mine workers to accept a wage of $7.50 per week is just as vicious as labor's plans to increase employment by reduction of hours and by the "Ca'canny" method. There must be less preaching of Bolshevistic doctrines and more preaching of sound economics. While few in Washington think the strike is likely to encompass Great Britain's ruin, there is a widely held opinion that it can be made her salvation if capital, labor and public will grasp the opportunity to put a new fundation under their industrial structure.

Has a Familiar Ring

Conditions in the bituminous coal industry would not be relieved by a modification of the Jacksonville wage scale, William Green, president of the American Federation of Labor, said at Pittsburgh recently.

"The bituminous industry is sick, overdeveloped, overorganized and overmanned," he said, "and the capacity to produce is so far in excess of the normal demand that some of the mines must necessarily be idle. If they were operating they would only need to function on part time to meet the requirements of the trade."

Union Seeks Injunction to Restrain Open-Shop Work

Injunction proceedings have been brought in the Monongalia County (West Virginia) Circuit Court by the United Mine Workers against the Cleveland-Morgantown Coal Co., the Connellsville By-Product Coal Co., the Arkwright Coal Co. and the Pursglove Coal Co., operating eight mines in the county. The hearing has been set for May 20. This is the first time in the history of the union that it has sought to achieve its aims through an appeal to the courts, it is asserted, and the outcome is awaited with more than the usual interest.

In its petition the union seeks to restrain the four companies named from operating under any other wage agreement than that entered into by the Monongahela Coal Association and the United Mine Workers on March 28, 1924, and which does not expire until March 31, 1927. The petition also asks the court to restrain the defendant companies from employing any but union labor, except as provided for in the agreement dated March 28, 1924, and to stop eviction suits brought against former employees of the companies who did not return to work when the mines were recently opened on a non-union basis.

According to Eugene H. Long, Walter R. Haggerty and U. A. Knapp, counsel for the miners, notices of the injunction proceedings were served upon Edgar B. Stewart and Frank P. Weaver, of Morgantown, as attorneys for the coal companies. Both Stewart and Weaver deny that they are retained by the coal companies as attorneys of record, but that they are sometimes called in to act in special cases.

On these grounds the hearing, which was set for May 7, was postponed until May 20, Judge I. Grant Lazelle ruling that improper service had been made.

According to authoritative statements from coal company officials, the injunctions will be opposed on the ground that none of the companies named, all operating in the Scotts Run field, signed the agreement dated March 28, 1924, as individuals, but that it was signed by the Monongahela Coal Association, by Samuel Pursglove, president.

It is pointed out that the agreement, while binding on the Monongahela Coal Association during its existence, is now void because the association is defunct, it having ceased to function soon after the agreement was entered into.

Plan New Outlet from Harlan

Coal men from various sections, with the mining and operating end largely in evidence, attended a meeting of the Interstate Commerce Commission held in Lexington, Ky., May 3-6 to hear testimony as to the necessity of the Louisville & Nashville Ry. constructing a branch line from Haggins, Va., to Chad, Ky., to tap the Harlan field. This line a cut-off, would give the L. & N. an outlet to Charleston and to Hampton Roads for Harlan coals over the Carolina, Clinchfield & Ohio and connecting lines. After hearing all evidence the I. C. C. commissioners took the testimony under advisement.

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Attacks on Anthracite Based on Old Prejudices and Misconceptions, Says Merritt; Others to Be Heard

Washington, D. C., May 11.—What the anthracite industry thinks of further legislative action on coal and how that industry proposes to discharge its public obligations will be told to the House committee on interstate and foreign commerce on Thursday. At that time, according to the present plans, Walter Gordon Merritt, counsel for the Anthracite Operators' Conference, will complete the testimony begun a week ago. He had hoped to do that today, but when the anthracite people appeared in the committee rooms this morning they were informed that the hearings would be adjourned until Thursday.

Unless there is another last-minute shift in the committee schedules, however, Dr. George Otis Smith, director, U. S. Geological Survey, and a member of the Hammond Coal Commission, will go on the stand tomorrow. Other government officials familiar with coal also probably will be heard. In addition, the committee has promised to hear Ira Cochran, commissioner, American Wholesale Coal Association, and Edgar Wallace, legislative agent, American Federation of Labor, but no specific time has been set.

Senate Favorable to Copeland Bill

On the Senate side the committee on education and labor has taken favorable action on the revamped Copeland bill. This bill gives the Bureau of Mines the broadest kind of fact-finding powers, including the right "to copy any book, account, record, paper or correspondence relating to any matter the bureau is authorized to investigate."

Title II of the bill authorizes the President to create mediation boards and makes it the duty of employers and employees in the coal industry "to exert every reasonable effort" to make and maintain agreements and to settle all disputes in connection therewith "in order to prevent unreasonable restraints upon or interruptions of interstate commerce." Title III covers emergency distribution and operation. It re-enacts the Federal Fuel Distributor law, but practically makes it obligatory for the Interstate Commerce Commission to follow the recommendations of the Federal Fuel Distributor. The second section of this title empowers the President in times of emergency to take over and operate directly or by lease any and all coal properties which the chief executive deems desirable or necessary.

Ill-advised action by Congress, Mr. Merritt warned the committee in opening his case on May 4, might encourage the development of a situation as serious as that now confronting Great Britain. Most of the attacks made upon the anthracite industry are based upon old prejudices and misunderstanding of the facts. If hard coal has failed to measure up to accepted commercial standards, how is it, he asked, that no one doing business with the industry has appeared to complain?

Ninety per cent of the complaints received by Congress, Representative Wyant (Pennsylvania) interrupted, come from the domestic consumers. Retailers, suggested Congressman Newton (Minnesota), may be silent because they fear complaint would jeopardize their coal supply. This suggestion the witness vigorously repudiated. The householder, he conceded, is objecting because his coal costs more.

The dominant problem in the industry, asserted Mr. Merritt, is labor relationships. Far from being the oppressed toiler intimated by some of the preceding witnesses, the anthracite mine worker enjoys greater protection from oppression, tyranny and abuse than any other toiler. He is a member of the strongest union in the country. Since 1903, when the Board of Conciliation was established, he has had a tribunal to which he could take any grievance, however trivial it might be, arising during the life of a contract.

Says Labor Oppresses Capital

If oppression exists, it is the oppression of capital by labor. The operators, Mr. Merrit pointed out, quoting from the report of the U. S. Coal Commission, are inadequately organized to protect their rights under wage agreements with the United Mine Workers.

"The operators," he said, "have made the mistake of continuous concessions in the face of illegal strikes and the threat to strike instead of insisting that disputes be referred to the conciliation board." These evils the industry must itself cure by promoting better industrial relationships. Progress along that line, however, has not been encouraging. To grant the check-off, he told Congressman Huddleston (Alabama), would afford no permanent solution to the button strike.

Answering the Alabaman's insinuation that the recent strike was a plot upon the part of the operators to destroy the union, Mr. Merritt retorted that "the operators' record for twenty years has been one of sympathy, tolerance and co-operation with the United Mine Workers." Later he emphasized the employers' repeated offers to arbitrate as proof that the "union-busting" accusation was groundless.

Wages, he explained, absorb 75 per cent of the revenue received by the mines from the sale of coal. The annual wage bill of the industry approximates $320,000,000 and the average wage is over $2,000. Contract miners taking full advantage of the opportunities for employment can make $3,000. The average wage for all industries is $1,300. Since 1914 anthracite wages have increased 192 per cent, as compared with an increase of 141 per cent on the railroads, 129 per cent for manufacturing industries and 111 per cent for the building trades.

Sketching the background of the wage disputes since 1920, the witness suggested that the strike habit had grown upon the union, which once proclaimed the virtues of arbitration, because victories in small things had whetted the organization's desire to resort to direct action, and political interference had hampered sound settlements. It was a perversion of terms, however, to say that the operators were insisting upon compulsory arbitration. There may be a six months' strike before an agreement is written under economic pressure, but such an agreement does not mean involuntary servitude for the miners. So, too, a fight to bring about the acceptance of arbitration does not mean compulsory arbitration.



Walter Gordon Merritt

Mr. Merritt did not deny that, if the operators were in the saddle, their attitude toward arbitration might be different—as it was in 1902. But capital is more easily reached by government pressure because property is a hostage to society. Capital yielded to President Roosevelt in 1902—labor declined to yield to President Harding in 1922. The operators now stand committed to arbitration. They are willing to let the public decide. They might even be willing to arbitrate prices if the public would underwrite an agreement to take the coal at the prices fixed.

"It would be a travesty on justice to say you will take the mines away from the operators and strip them of their rights when the operators are ready to submit to the President, and do nothing to the group that refuses. I am not asking or urging the regulation of the union. But why take our mines away to do something which we already are willing to do?"

Mr. Merritt denied that there was any monopoly in anthracite in the legal sense. If there was monopoly it was in the sense that the supply was limited. There might be, he told Congressman Newton, bankers in New York who owned a substantial interest in two or more producing companies, but the operating companies, he declared, were independent in operation, in management and in their price-fixing policies. The largest producer in the region shipped 15 per cent of the anthracite sold, as compared with 20 per cent for the largest copper-producing company, 50 per cent in iron ore and pig iron and 16 per cent in zinc. The anthracite industry enjoys no special privileges, has

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no tariff to shield it from competition and exercises no powers of eminent domain.

Nor can regulation be supported on the theory that the anthracite industry is a public utility. If the government were to fix mine prices, it would be compelled to double the aggregate profit of the industry to avoid confiscation. Even if the constitutional barriers set out in the *Wolff case*, 262 U. S. 522, could be hurdled, insurmountable legal and practical difficulties would remain. Anthracite is distributed to more than 20,000 communities and the sale to the household consumer in those communities is a purely intrastate transaction which cannot be reached by Congress: *Missouri vs. Kansas Gas Co.*, 265 U. S. 298.

The key to an understanding of the price situation is the percentage of steam sizes produced. Taking the extreme cases, this will vary from 15 to 20 per cent in the northern field to 50 per cent in the southern. These sizes are sold at an average annual loss of $75,000,000. This loss must be absorbed in the prices on domestic sizes. Therefore, a wage increase that the northern field might bear would destroy the market of the southern district. To support this argument, Mr. Merritt submitted the accompanying table, showing the results of the yield from 100 tons of average anthracite sold at the average prices reported for 1924 by the Geological Survey.

In addition, Mr. Merritt submitted exhibits showing how the consumer dollar paid for stove coal in Boston, New York and Philadelphia was divided on the basis of 1924 wholesale and retail prices. The f.o.b. mine price used was $8.75. This was made up of an allocated labor cost of $6.09; supplies, $1.38; general expenses, 76c., and an operator's margin of 52c. In arriving at these figures that portion of the cost of production of the steam sizes not covered in the realizations received was allocated to the profit-paying larger domestic sizes on a percentage and value basis. The exhibits showed retail gross margins per long ton of $4.67 at Boston, $4.21 at New York and $3.80 at Washington.

Valuations Vary Widely

Estimates of the valuation of the anthracite properties, the witness pointed out in his testimony on May 5 and 6, differ widely. Congressman Jacobstein had offered $400,000,000; engineers employed by the Coal Commission had valued the plants and operated lands at $843,500,000 and the reserve acreage at $146,400,000; book values, as determined in co-operation with the Department of the Treasury, approximated $640,000,000. For taxation purposes within the state, Pennsylvania tax authorities had claimed from $700,000,000 to $1,000,000,000. These tax valuations, some of which are in litigation, in many cases represent estimates which are substantially less than the tax authorities maintain is the full value of the properties.

The aggregate net earnings of the industry in 1924, as revealed in the report of the Treasury Department to the Senate under the La Follette resolution (*Coal Age*, Feb. 11, 1926, p. 238), were equivalent to a return of 4.86 per cent on the Jacobstein valuation, 3.65 per cent on the $640,000,000 estimate and 2.25 per cent on the engineers' valuation. Mr. Huddleston questioned the weight of these estimates in the absence of an explanation of what constituted net earnings. The witness referred him to the regulations of the Bureau of Internal Revenue and to the practices of accountants.



Roderick Stephens

Vice-president of the Stephens Fuel Co., New York City, represented the retailers in the House committee hearings.

At another point in the hearing the gentleman from Alabama wanted to know why the operators had failed to reduce prices on April 1. Mr. Merritt replied that they could not afford it, in view of the heavy strike losses, and that in recent years this reduction had been found inadequate to accelerate buying. The total reduction, he continued, would have been only $6,000,000. He thought this a small price for the public to pay for the fight that had been waged in their behalf by the operators.

Mr. Merritt derided the accusation of Congressman Jacobstein that the low-cost mines could drive the high-cost operations out of business by speeding up production. Most of the reserves, he pointed out, were held by the high-cost mines. To develop the mines in the northern field to take care of all the demand would mean doubling breaker capacity and higher development and amortization charges because of the more rapid exhaustion of the coal. These things, it was contended, would so increase costs at the low-cost mines that the differential would vanish and the public would gain nothing.

High-cost mines controlled the price situation, said the witness; not because the low-cost mines "want to hold an umbrella over their competitiors" but because of economic law. That law is that the price of the entire supply of a commodity will be regulated by the cost of producing that portion of the necessary supply which is produced at the greatest expense. But the low-cost mines, continued Mr. Merritt, did not take full advantage of this law, because their prices were less than those of the high-cost mines.

"No government agency," asserted the witness in his discussion of proposals for emergency operation, "played any part in the settlement of the last anthracite strike." The administration's policy of non-interference, however, has been most helpful. The operators, he said, had been willing to have the President intervene, but the President probably feared that he would be rebuffed by the United Mine Workers, as was President Harding in 1922.

Mr. Merritt did not wax enthusiastic over the reputed merits of publicity as a corrective agency. In 1922, for example, it had been agreed that the operators and miners write their next contract in the light of the findings of the Coal Commission, but the recommendations of that body were thrust aside in the framing of the 1923 agreement. The present British situation cannot be charged to a lack of facts. With the action of the committee on the Watson-Parker bill, it seemed inconsistent to seek to impose upon the coal industry a tribunal comparable to that the committee proposed to abolish in the railroad world.

"The government," interrupted Congressman Cooper (Ohio), who presided on May 6 in the absence of Chairman Parker, "always makes a mess of it when it attempts to interfere with the natural processes of capital and labor."

Unlike some of the earlier witnesses, Mr. Merritt in his testimony last week did not emphasize constitutional barriers to compulsory fact-finding. His opposition, he stated, was subject to qualifications. He believed that a way might be found by which Congress could compel the production of all the information it desired. He would not agree, however, that Congress might tie up fact-finding with a licensing scheme. Where there was nothing immoral or deleterious in the commerce itself, Congress, it was his opinion, could not impose restrictions upon the right to engage in interstate commerce.

Average Realizations and Costs on Anthracite

(From Exhibit Submitted to House Committee by Walter Gordon Merritt)

Sizes	Tons	Mine Price	Realization	Average Cost per Ton	Gain or *Loss* per Ton	Total Gain or *Loss*
Lump and broken	2.7	$7.91	$21.36	$6.25	$1.66	$4.38
Egg	14.3	8.45	120.83	6.25	2.20	31.46
Stove	21.8	8.74	190.53	6.25	2.49	54.28
Nut	26.3	8.58	225.65	6.25	2.33	61.28
Pea	8.2	5.59	45.84	6.25	*.66*	*5.41*
Buckwheat	12.3	2.93	36.04	6.25	*3.32*	*40.84*
Rice	6.7	1.93	12.93	6.25	*4.32*	*28.94*
Barley	6.7	1.28	8.58	6.25	*4.97*	*33.30*
Other sizes	1.0	1.45	1.45	6.25	*4.80*	*4.80*
Totals and averages	100.0	6.63	663.21	6.25	.38	38.21

Figures in italics indicate losses.

(The average cost, $6.25, includes approximately $4.62 for direct labor costs, $1.05 for supplies and 58c. for overhead.)

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Lewis Refuses to Consider Wage Cut in Southwest, Correspondence Reveals

Failure of an attempt to obtain a readjustment of wages in the coal fields of Kansas, Missouri, Arkansas and Oklahoma is revealed in correspondence between officials of the Southwestern Interstate Coal Operators' Association and John L. Lewis, president of the United Mine Workers, made public May 7 by W. L. A. Johnson, general commissioner of the association, Kansas City, Mo. Mr. Johnson's release of the complete correspondence followed announcement by officials of District 14 (Kansas) of Mr. Lewis' refusal to accede to the operators' request for an investigation to determine the possibility of an early reconsideration of the terms of the present contract, which expires April 30, 1927.

The operators' letter, signed by Mr. Johnson and George J. L. Wulff, of St. Louis, president of the association, declared competition with fields having lower production costs and with mines which, operating open shop, are paying less than the 1924 wage scale, necessitated an immediate reconsideration of the contract. The letter, dated April 23, was addressed to Mr. Lewis, Matt Walters, president of District 14, United Mine Workers; William Dalrymple, president of District 21, and Arch Helm, president of District 25.

The operators' letter reveals that production in the Southwest fell from 20,136,365 tons in 1920 to 10,959,000 tons in 1925. Of the 10,959,000 tons produced in the four southwest states in the latter year, the operators' letter said, "only 5,586,183 tons was produced by association members, employing union men, the remaining 49 per cent being produced by non-association, non-union and so-called co-operative mines, operating mostly under less than the 1924 scale.

Few Union Mines Working

"In Arkansas and Oklahoma, one-half our association territory, less than a half dozen mines are operating with union men, and these only a day now and then, the market having been taken over by open-shop and so-called co-operative mines, working for less than the 1924 scale.

"In the last few months, competition from West Virginia, Kentucky, Alabama, Colorado and New Mexico has made serious inroads in the southwestern markets," the letter continued.

Declining a reconsideration of the contract at this time, Mr. Lewis, wrote in part on May 1:

"The conditions in the coal industry of which you complain largely exist in all other bituminous producing districts, including the non-union territory. Certain factors, more or less local in nature, have operated to the disadvantage of the industry in the Southwest. The demoralizing effect of such influences cannot be properly charged to the wage rates set forth in the Southwestern agreement. It is obvious to the members of your association that the United Mine Workers could not agree to a modification of the existing rates in the Southwest without agreeing to similar modifications in the wage structure throughout the entire United States. It is equally obvious that a general lowering of wage levels throughout the industry would not place the southwestern districts in any more advantageous position than they now occupy."

Lewis Orders Expulsion of Communists from Union

John L. Lewis, international president of the United Mine Workers, has issued a warning, through a letter to district presidents, against members of the organization joining the Communists or any affiliated organizations. The penalty is expulsion from the union. His action is the result of the authorization of such procedure by the international board at its last meeting.

Mr. Lewis's letter in part follows:

"Much evidence has been adduced to indicate that the activities of the officers, agents and members of the various Communist organizations constitute an unwarranted attempt to pervert the policies and change the laws of the United Mine Workers and to set up within the mine workers a dual organization. In view of these facts, the board of directors has authorized the following statement:

"'That it be the ruling of the board that the Communist party and all its affiliated organizations be declared dual to the United Mine Workers, and that membership in such organizations lays a member of the Mine Workers' union liable to expulsion under the laws of the United Mine Workers, Art. 14, Sec. 2.'

"Your district is hereby authoritatively notified of this action in order that the machinery of our union may be utilized for its protection when necessary."

Berwind-White Co. Wins Suit Against Government

A jury in U. S. District Court at Philadelphia on May 3 brought in a verdict of $1,015,560 against the government in favor of the Berwind-White Coal Mining Co. for coal sequestered for Navy use under Presidential order. After the Navy Department had taken thousands of tons of fuel from the company under executive orders of the late President Wilson the government and the company were unable to agree upon a "fair compensation," the Fuel Board fixing the amount of $740,851, while the company claimed $1,591,580.

Under the special war legislation the government paid the Berwind-White company $555,638, or 75 per cent of the $740,851, and the company sued for the difference between the amount paid and the amount claimed. So many complexities were involved in the suit that both sides agreed to submit the matter to E. L. Carpenter, coal expert, on whose testimony the award was made.

Open-Shop Operation Starts At Gilbert-Davis Plant

Open-shop operations have been begun at the large plant of the Gilbert-Davis Coal Co. in the Scotts Run field of West Virginia. This is the last large company with mines active that operated under an agreement with the union in West Virginia. Three cars of coal were loaded under the new conditions by the company on May 5, following the posting of notices at the mine on May 1 to the effect that on that date a 15 per cent wage reduction would become effective.

There was to have been a conference between officials of the Gilbert-Davis company and officials of the United Mine Workers before any definite action was taken. The parley was not held, however, according to an official of the union as the company posted notices of the wage reduction several days before the date set for the conference.

Progress is being made by the two other companies in the Scotts Run field —the Cleveland-Morgantown Coal Co. and the Connellsville By-Product Coal Co., controlled by the Pursglove and Paisley interests, respectively—in loading coal, these companies having recently ceased to operate their mines under an agreement with the union. By the middle of last week the Cleveland-Morgantown company was loading coal at the rate of three cars a day, with the Connellsville By-Product company loading a somewhat smaller tonnage. Union tonnage in the Scotts Run section has now dropped to nothing.

Would Deny Virginian Lease To Norfolk & Western

Examiner Davis, of the Interstate Commerce Commission, has recommended in Finance Docket 4973 that the Commission should deny the application of the Norfolk & Western Ry. for a lease of the Virginian Ry., on the ground, as he explains, that it has not been shown to be in the public interest. The examiner takes the position that under the provisions of paragraph 2, Section 5, of the Interstate Commerce Act, the burden is upon the N. & W. to establish the fact that the proposed lease would be in the public interest. He feels that the N. & W. has failed to sustain this burden and therefore the Commission should enter an order denying the application.

The Chesapeake & Ohio Ry. opposed the application of the N. & W., and while the C. & O. has not yet attempted to lease the Virginian Ry. itself, it made considerable capital out of the fact that in the general consolidation plan set up by Professor Ripley the Virginian is assigned to the C. & O.

Amend Mine Leasing Act

An act amending the General Federal Land Leasing Act of 1920 to limit the extent of leases and permits in states of holdings of coal, phosphate and sodium was signed early last week by President Coolidge. Under it no lease for any of the minerals cited can be held in one state for more than 2,560 acres.

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News Items From Field and Trade



ALABAMA

The Stith Coal Co. is putting in a new slope, to cost $250,000, at its mines near Aldridge, which will be completed by September. The output of this company now is 800 tons daily. The new slope will increase the output to 2,000 tons daily.

To Increase Output.—The Alabama By-Product Corp., which recently resumed operations at its Ruby Mine, in Wilker County, is reported to be making preparations to increase the ouput there from around 800 to 2,000 tons per day. This opening is on the Mt. Carmel, or upper bench of the Mary Lee seam and is located on the Southern Ry. near Cordova.

"Teach Others."—During May, the slogan of the Alabama chapters of the Joseph A. Holmes Safety Association is "And Teach Others," adopted from a safety essay written by Alex Mitchell, a negro convict at Aldrich Mines. This essay was the prize winner in a safety essay contest held at Aldrich in March, 1926. The Alabama Mining Institute is distributing copies of the essay to all mining men in Alabama, and it will be discussed at all meetings of the Joseph A. Holmes safety chapters throughout the district.

ALASKA

A coal lease on public lands in the Matanuska field, requiring an investment of $143,000, has been awarded by the Interior Department to the Alaska-Matanuska Coal Co. It covers 1,440 acres. During the first five years of the lease the company will pay the government a royalty of 2c. per ton, mine-run, on coal produced.

ILLINOIS

The St. Clair County Board of Supervisors now has four applications for the office of county mine inspector, which will be filled at the board's reorganization meeting. The four are J. L. Nevener, Harry S. Maitland and Peter Nool, of Belleville, and Fred W. Collins, of East St. Louis. Collins now holds the position.

To Sell Willis Properties.—A decree for the sale of the properties of the Willis Coal & Mining Co. was granted Conrad Raab and C. H. Krause, receivers for the company, by Judge Walter C. Lindley in the federal court at East St. Louis on May 3. The sale will include four large coal mines, 14,000 acres of coal and 3,000 acres of surface lands in Perry and Randolph Counties, Illinois, having a value of about $800,000.

A. B. Lewis, director of the Illinois Department of Mines and Minerals, has announced the following itinerary for the Illinois Miners Examining Board in May: Benton, 13th; Duquoin, 14th; Centralia, 15th; Staunton, 17th; Springfield, 18th; Taylorville, 19th; Danville, 20th; Farmington, 21st, and Peoria, 22d.

Judge Walter C. Lindley, presiding in the U. S. District Court at East St. Louis, on May 3 ordered the sale of the property and assets of the Willis Coal & Mining Co. in Randolph and Franklin counties. The properties are valued at $2,250,000. Conrad Reeb, president of the Southern Illinois National Bank, and C. H. Krause, St. Louis, Mo., receivers for the corporation, asked the order for the sale.

Mine No. 10 of the Indiana & Illinois Coal Corp., at Nokomis, probably will be reopened June 1, when the rebuilding of the tipple is expected to be completed. The structure recently was destroyed by fire, throwing about eight hundred miners out of work.

INDIANA

Articles of dissolution of the Western Indiana Mining Co., as agreed on at a special meeting of the stockholders in Terre Haute, last February, have been filed. G. Ed Talley was president and John C. Templeton secretary of the corporation. The document cites that all debts and obligation of the corporation have been paid and the surplus distributed among the stockholders.

KENTUCKY

The Dudley Coal Co., operating mines at Carbon Glow, on Rockhouse Creek, near Blackey, is building a number of additional miners' homes and making other improvements.

Benjamin Ford, Cincinnati, president of the Ford-Elkhorn Coal Mining Co., Robinson Creek, and president of the Ford-Elkhorn Coal Sales Co., filed a voluntary petition in bankruptcy recently in the U. S. District Court at Cincinnati, listing his liabilities at $130,586 and his assets at $36,348.

The Louisville retail firm of Cummings & Eglan, operating the C. & E. Coal Co., at Brook and Eastern Parkway, has quit business, and the yard has been taken over by the Black Creek Coal & Mining Co., of which Homer Blades is president. The latter company has been operating a yard at Brook and Bloom Streets, which has been abandoned in favor of the better new location.

News that Charles F. Heidrick and his associates has sold their interest in the Cumberland & Manchester R.R. to the Louisville & Nashville and that the line will be operated as a branch is interesting to seven or more large companies operating 44 mines in that section of southeastern Kentucky. The 10c. differential from the line will be done away with and the Jellico rate will apply, it is said. More extensions seem in order, judging from the engineering crews at work. This line would tap some of the large coal properties in the Clay County region owned by Henry Ford.

Operators Expand Retail Outlet.—The Liberty Coal & Coke Co., Louisville, operators with mines in the Pineville section of eastern Kentucky, now operating a retail yard in Louisville, at Eleventh and Maple Streets, has a deal on for leasing the Edward J. Hackett Coal Co. yard, at 2938 Portland Avenue, which would give the company an excellent distributing yard in the western section of the city.

Charles Pitman, of Harlan, has been indicted by the Grand Jury of Harlan County in connection with destruction of a tipple of the Verda Harlan Coal Co. He was released under bond of $5,000.

The Flat Top Mining Co., at Hazard, has taken over and started operation of the Eden Coal Co. mines, at Blackey, on Rockhouse Creek.

MINNESOTA

The Zion Coal Co., Henderson, of which Thomas Baskett is manager, will rebuild its tipple which was recently damaged by fire to extent of $20,000.

The Berwind Fuel Co. has moved its general offices in Minneapolis from the Plymouth Building, where they have been for a number of years, to the new Baker Building, just being completed.

The matter of a license fee for retail fuel dealers in Minneapolis has been up in the Council again. Now it is proposed to reduce the fee from $50, heretofore placed on all dealers, to $25. for the main office and a lesser fee for branches.

Head of Lakes Set for 50 Cargoes.—Fifty cargoes of coal are included in the season's opening movement to Duluth-Superior docks from Lake Erie ports. They were distributed as follows: North Western, 20; Inland, 11; Berwind, 3; Carnegie, 4; Pittsburgh, 2; Zenith, 2; Duluth, Missabe & Northern, 2; Northern, 2; Great Lakes, 2; Reiss, 1, and Philadelphia & Reading, 1.

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MISSOURI

Large increases in the tax valuation of steam-shovel mines in Barton County brought such vigorous protest from the owners that the board of equalization cut the increase but still left the figures much higher than last year. The Clemens plant, formerly assessed at $75,000, was raised to $106,000 and finally placed at $90,500. The Mulberry Coal Co. operation was raised from $35,000 to $60,000 and finally placed at $47,500. These are typical of the adjustments made on the valuations of the thirteen steam-shovel mines involved.

The Howard County Mining Co., which has 1,300 acres of coal land near Higbee underlaid with a bed averaging 3 ft. thick with 25 ft. of overburden, is reported to have closed a contract to put in a plant that will cost about $300,000 and produce the coal at the rate of about 500,000 tons per year. Contracts are said to have been closed with large consumers in Kansas City, Mo., covering a period of years.

The Watson coal mine on the Richmond-Henrietta Road, has been closed for repairs. The shaft at the mine has caved in making it impossible to run the cages in the shaft. The mine will resume operation as soon as the repairs are completed.

The mine of the Trenton Mining Co., at Trenton, has closed down. The company expects to resume operations by July 1 at the latest.

NEW YORK

The Tuttle-Burger Coal Co., Inc., on May 1 moved into new offices at 110 East 42d Street, New York City.

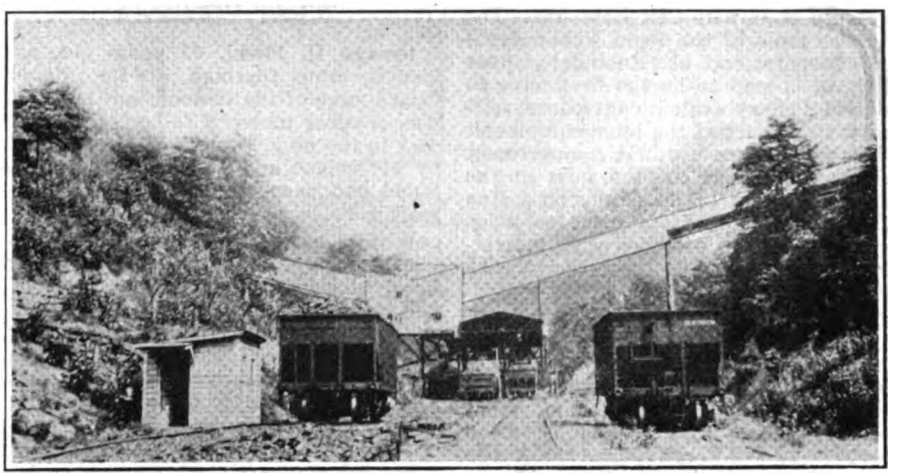
The Pittsburgh Coal Co. announces the removal of the office of its Eastern sales agent to 1 Broadway, New York City; telephone, Whitehall 5144.

The New York office of the Clinchfield Coal Corporation were removed April 29, to the Evening Post Building, 75 West Street.

A coke dry-quenching plant is under construction by the Rochester (N. Y.) Gas & Electric Corporation and it is stated that it will be the first of its kind in America, the system having been perfected by the brothers Sulzer of Switzerland. The cooling of coke is carried on in the new plant by circulating inert gases through it and the heat resulting will be used to generate steam. It is expected that 400 hp. will thus be obtained daily..

NORTH DAKOTA

The Supreme Court of North Dakota has handed down a decision affecting the discretion of the state board of administration in the matter of coal purchases. The Washburn Lignite Coal Co. went into court to compel the award of the entire purchase of coal for state institutions, alleging that as the lowest bidder it was entitled to the contract. The board distributed the business to several concerns, on the ground that heat units and commercial value as well as service of delivery and other factors justified it. The District Court upheld the award as within the discretion of the department of administration. Now the Supreme Court holds that "the board exercised its honest judgment, even though the method followed in determining the lowest bidder was not that contemplated by the statute."



Mine No. 5, Columbus Mining Co., Allais, Ky.

This mine, which is in the Hazard field, is designed for a maximum capacity of 3,500 tons per day. The coal comes to the tipple on button conveyors from the Flag Seam and the 5A Seam, on opposite sides of the valley. The mine is equipped with picking tables, loading booms, etc.

OHIO

A deed for 5,798 acres of Belmont County coal land from the Allen Coal Co. to the Monongahela & Ohio Co. has been filed at St. Clairsville. The consideration is not given other than the nominal sum of $100.

After an absence from the Cincinnati market of over a year the Chesapeake & Virginian Coal Co., of Lynchburg, Va., has reopened a branch office there in the Union Central Building, in charge of Cadwalader Jones.

It is reported that Zanesville and Crooksville capital has purchased the Fleming farm between Crooksville and New Lexington for the purpose of developing the coal deposits. A company will soon be organized to start development work.

The Lewis Hale Coal Co., started some time ago in Huntington, W. Va., now has a Cincinnati outlet, the company having opened an office at 605 Mercantile Library Building. N. A. Lewis, formerly in Cincinnati for the Federal Coal Co. and later with the Hooper Mankin Coal Co., of Huntington, is in charge.

The No. 7 mine of the Neffs Coal Co., located near Neffs, has been closed down for want of orders. The mine had been working at full time for months. The mine is located in the heart of Pittsburgh No. 8 field.

The Lorain Coal & Dock Co., of Columbus, is operating only two of its mines in Pittsburgh No. 8 field, and these are on part time, two having been closed down indefinitely several weeks ago. The mines that are operating are the Crescent and Blaine mines while Stanley and Lincoln mines have been closed.

PENNSYLVANIA

The Shannopin Coal Co., a subsidiary of the Jones & Laughlin Steel Corporation, has started the development of a new coal field consisting of several thousand acres located near Taylortown. The company plans to ship the field's production by water, the first such attempt, on a major scale, in that territory. The company's plans call for the opening of two mines, construction of a narrow-gage railroad from Taylortown to Poland, three miles distant, building of a dock at Poland, from which coal may be shipped on the Monongahela River and erection of 250 houses at Taylortown for miners.

Safe Timbering Explained.—Officials of the Hudson Coal Co. recently staged demonstration of the proper method of standing timber under dangerous roof. The demonstration took place at a dinner at the Eagles' Club, Wilkes-Barre, attended by 650 employees of the company's Pine Ridge mine. A model of a gangway was erected on the stage with one section of timber already in place. Two miners then proceeded to erect a new section of timber in the manner approved by the company, which provides the greatest degree of protection to the workers from falling roof. As the workmen went through the task of timbering the place, John Green and William May, officials of the company, explained how and why the timber was prepared and placed in that manner.

A bill in equity has been filed with the county court in Ebensburg, Cambria County, by W. A. Sheeler and J. D. Keiper against the Rowena Coal Co., asking the appointment of a receiver. The bill sets forth that the company own land and operations in Somerset County and has assets of $192,000 and liabilities of $147,516.92. The petitioners allege that the company has notes and obligations which it is unable to meet and that numerous wage claims have been filed. The petitioners are stockholders and the principal place of business of the Rowena concern is in Johnstown.

In a recent speech delivered at Wilkes-Barre Mayor Dan Hart of that city went after Governor Pinchot of Pennsylvania for the part he played in trying to settle the anthracite strike. Mr. Hart said that he had been told by a prominent anthracite operator the strike would have ended around Christmas but for the governor's intervention.

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Equip Mine with Self-Rescuers.—The Penelec mine of the Penn Public Service Corporation, at Robindale, near Seward, is said to be the first mine in central Pennsylvania to introduce self-rescuers as part of the mine equipment. The self-rescuers are in a compartment within easy reach of the men in the event of a fire or an explosion. Men who travel about from place to place in the mines are provided with individual rescuers, which they carry with them.

A loss of $75,000 was caused at North Avoca recently when fire destroyed the washery owned by the Hillside Coal & Iron Co. The washery had been in service ten years and gave employment to fifty men. Fire companies from Duryea and Old Forge helped the Avoca companies in fighting the flames, thereby preventing other buildings in the neighborhood from being damaged.

UTAH

A tract of public coal land in Sevier County will be offered for lease at public auction on June 1. The terms call for a 15c. royalty to the government and the expenditure of $1,000 in three years to bring the property to a minimum production of 550 tons. The lease will be awarded to the bidder offering the highest premium over the fixed terms.

The Columbia Steel Co. has plans under way for erecting more homes at its coal operation. It is stated that quite an extensive program will be carried out in order to meet the growing needs of the town.

VIRGINIA

As the result of a conference between Governor Byrd, Lee Moore, Auditor of Public Accounts; John M. Purcell, State Treasurer; members of the purchasing commission and Charles A. Osborne, purchasing agent, on the one hand and a committee of Virginia operators on the other, including C. B. Neel, secretary of the Virginia association; D. Terpstra and Dan Pierson, it has been announced that new specifications for fuel to be used by Virginia state institutions will be issued soon, which will permit Virginia operators to bid on requirements amounting to approximately 70,000 tons a year.

WASHINGTON

Snoqualmie Coke Plant Opens.—The California-Alaska Corp. opened the Snoqualmie coal mine and coke ovens, near Snoqualmie, late in April with ceremonies. Prof. Joseph Daniels, representing the University of Washington and the state development committee of the Seattle Chamber of Commerce, spoke on the significance of producing high grade metallurgical coke as the first step toward steel manufacture in the Northwest. Since taking over the project last July, the corporation has expended $100,000 in developing the mine and installing a coal cleaning plant. The property contains large beds of coking coal. A new 1,500-ft. tunnel makes possible 600 tons daily output. Fifty ovens can handle 100 tons and 100 ovens will be added within two years.

WEST VIRGINIA

George H. Shehl, 44 years old, assistant mine foreman at the Mount Claire mine of the Hutchinson Coal Co., was crushed under a fall of slate and rock in the mine May 7. He is survived by his widow and eight children. Mr. Shehl had been employed by the company for 11 years.

Within a few more weeks all electrical wiring will be removed from the Consolidation Coal Co.'s mines No. 86, at Carolina, and No. 87, at Idamay, if the present plans to equip all cutting machines as well as haulage motors with storage batteries are carried out. The change is partly a safety measure and also is in the nature of an experiment, it is said.

The Island Creek Coal Co., reports for the quarter ended March 31, 1926, net profit of $597,804 after depreciation, depletion and federal taxes, equivalent after allowing for dividend requirements on the $6 preferred stock to $4.40 a share earned on 118,801 outstanding shares of $100 par common stock.

Coal companies in which John Laing, of Charleston, is interested re-elected officers recently as follows: Wyatt Coal Co.—President, John Laing; vice-president, James Martin; secretary-treasurer, T. J. Robson; McAlphin Coal Co.—President, John Laing; vice-president, A. W. Laing; secretary-treasurer, T. J. Robson; Morrison Coal Co.—President, John Laing; vice-president, A. W. Laing; secretary-treasurer, T. J. Robson; Wyatt Coal Sales Co.—President, John Laing; vice-president and treasurer, T. J. Robson; secretary, O. H. Heiserman.

The state Department of Mines has announced that it will hold its annual foremen and firebosses' examinations as follows: Morgantown, Mechanical Hall, West Virginia University, July 26; Elkins, Central School Building, July 29; Welch, High School Building, Aug. 9; Williamson, High School Building, Aug. 12; Beckley, Junior High School Building, Aug. 16; Charleston, Central Junior High School Building, Aug. 19; Logan, High School Building, late in August; Wheeling, High School Building, Sept. 2. It requires two days to take the examinations and the date announced is when each examination begins in the particular town.

The Island Creek Coal Co. has acquired about 12,000 acres of coal land in the vicinity of Elk Creek, a tributary of Pigeon Creek, in Mingo County, and will undertake extensive development. Surveys are now being made for the necessary railroad sidings, town site and plant on which more than $1,000,000 will be expended. It is stated that $350,000 will be expended on a public road nine miles in length to connect the new town with Holden, general operating headquarters of the company. It will be possible to ship the coal out either on the Logan side over the Chesapeake & Ohio Ry. or over the Norfolk & Western Ry. by way of Pigeon Creek branch.

Lesser union officials in West Virginia are showing considerable dissatisfaction over a recent cut in wages, equal to a 50 per cent reduction in some instances, to permit an expansion of union endeavor in this field and the doubling of the organization force while conducting an intensive drive among the non-union miners. Organization work is being directed chiefly toward the negro miners in the Fairmont region now. Union heads announced at a recent mass meeting that practically every effort of the union is now being directed to that end.

The Coal River Collieries Co. is planning to remove its main offices to the Brotherhood of Locomotive Engineers' Building in Cleveland within the next 60 or 90 days, according to reports. The traffic and purchasing departments will be removed to Charleston.

Mines, Long Shut, Reopen.—The Melrose Coal Co.'s plant at Enterprise has resumed operations with a full complement of workers after being shut down two years. A new tipple and new machinery have been installed. The plant of the Winchester Coal Co. at the same place also has resumed operations after a long suspension.

A charter was granted late in April to the Gulf Roan Smokeless Coal Co., with headquarters in Clarksburg, W. Va. The concern, which has an authorized capital of $300,000, was organized to mine coal, manufacture coke and coal briquets. The incorporators are Levi W. Keaster, George G. Lynch, Walter Elliott, Mamie Lee Morris and Dennis S. McIntyre, all of Clarksburg.

CANADA

During the last few weeks there has been a great deal of staking of coal claims on the Mattagami River near Smoky Falls. It is understood that practically 100 square miles have been taken up. While it is commonly reported that there is no prospect of coal in Ontario, it has been known for many years that there were about 11,000,000 tons of low-grade lignite on the Mattagami River. It is stated that drilling operations have located a better grade of coal at a little greater depth, which is the cause of the excitement. The area is about 40 miles from the end of the T. & N. O. branch line north of Cochrane.

Hamilton May Have Big Coal Dock.—A project to establish dock facilities with a capacity of 1,000,000 tons of soft coal each season is under consideration by the harbor board of Hamilton, Ont., which has become an important center for the coke manufacturing industry. The cost is estimated at between $225,000 and $400,000.

Canadian Coal Output Declines.—Output of coal from Canadian mines during February was 13 per cent less than for the preceding month and 14 per cent less than the average for February in the past five years. The production was 1,068,184 in February, compared with 1,225,988 tons in January, and the five-year average of 1,305,367 tons. February imports totaled 825,503 tons, as against 968,475 tons in January and the five-year average for February of 1,169,603 tons. Anthracite was imported to the amount of 29,565 tons, which was 45,865 tons less than the January figure. Exports amounted to 35,517 tons in February as compared with 65,047 tons in January.

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Among the Coal Men

Joseph J. Walsh, Secretary of Mines of Pennsylvania, will be the chief speaker at the annual banquet of the Pennsylvania Coal Mining Institute, Johnstown, to be held on May 20. Four hundred mining men of Cambria and contiguous counties are expected to be present. Short addresses are scheduled to be given by Past President Charles Enzian, of Windber, and President-elect Archie Miller, who is expected to outline his schedule of meetings for the ensuing year.

D. A. Stout has been appointed chief engineer of mines of the Colorado Fuel & ron Co., having charge of engineering and exploration in connection with raw materials, with office at Pueblo, Colo. The office of manager of the fuel department has been abolished and **R. L. Hair** appointed general superintendent in charge of production, with headquarters at Pueblo.

Hugh Washburn, formerly with the Louisville office of the Southern Coal Co., of Memphis, until that concern withdrew from Louisville a few weeks ago, has gone with the Southwestern Fuel Co., under resident manager G. H. Sowards.

E. J. McGrew, coal-mine operator of Lexington, Mo., has been elected secretary of the Missouri State Highway Commission to fill the vacancy caused by the resignation of E. S. Austin, of Jefferson City, last May. The post pays $3,000 annually. McGrew has been an active good roads advocate for many years.

Noah H. Swayne, of Philadelphia, formerly president of the American Wholesale Coal Association, has accepted an invitation to act as toastmaster at the banquet in connection with the association's annual meeting, at Toledo, Ohio, June 7, 8 and 9.

The position of general superintendent of the Oliver & Snyder Steel Co. coal and coke plants Nos. 1, 2 and 3, near Uniontown, Pa., made vacant late last January by the death of John H. Lane, is being filled by **Charles H. Hinsey**, of Uniontown, Pa., formerly chief engineer and assistant general superintendent. Mr. Hinsey has been with the company for many years and is an old resident of Uniontown.

Will Huffman, general superintendent of the Fordson Coal Co. (Henry Ford interests) is suffering from a nervous breakdown at his home in Richmond, Va., according to reports. **Joseph Helms** is in charge of the plants in the Pond Creek field at Stone, Peg, Hardy and McVeigh, Ky.

In the statewide primary on May 4, **Oma Hart**, well-known coal operator of Boonville, Ind., was defeated for the Republican nomination for Sheriff of Warrick County.

J. W. Galloway was re-elected president of the Maryland Coal Co. of West Virginia and of the Maryland Coal Co. of Maryland at recent annual meetings of stockholders.

John A. Posey, of Rockport, Ind., who has invented a coal loading machine, received the nomination on May 4 for Prosecuting Attorney of Spencer and Perry Counties, Indiana, on the Republican ticket. Mr. Posey's father, the late Congressman Frank B. Posey, of Evansville, Ind., for many years before operated coal mines at Blackburn, Petersburg, Lincoln City and Yankeetown, Ind.



Alexander Howat

The former president of the Kansas miners' union, Alexander Howat, is in Scotland on his way to Russia to attend the Communist International convention to be held this spring, according to information from Pittsburg, Kan. Howat, accompanied by his wife, sailed from New York April 10. He plans to sit as a delegate in the convention, it was stated in what seemed to be an authoritative source. Howat's personal attorney has denied the report, however, stating that the deposed union official is simply accompanying his wife and father-in-law to the latter's old home in Scotland.

Van A. Bittner, chief international representative of the United Mine Workers in northern West Virginia, returned to the local offices at Fairmont May 3 after an absence due to illness. Bittner, who was suffering from an attack of tonsilitis, went to his home in Pittsburgh more than a week ago.

John Stafford, mining engineer and supervisor of state coal mines in Queensland, Australia, has been appointed Chief Inspector of Coal Mines of that state. Previous to entering the service of the Queensland Government as an inspector of mines, Mr. Stafford was for several years connected with the coal mines of the Ipswich district, Queensland, and occupied every position in a coal mine from trap boy to general manager.

J. W. Littlejohn, formerly superintendent of mines for the Utah Fuel Co. at Sunnyside, Utah, and more recently, with his brother, William Littlejohn, lessee of the company's property at Clear Creek, has disposed of his interests there and moved to California, where he will make his future home.

Reports in Scranton, Pa., are that **Frank Benjamin**, owner of the Benjamin Coal Co., of that region, will sell his interests in the Hotel Jermyn and devote his entire time to the coal industry and his banking interests. He also is a member of the Lackawanna County Bar.

John Laing, of Charleston, W. Va., who has been on a tour in the Mediterranean, has gone to Belgium to undergo treatment by a nerve specialist. Mr. Laing is president of the Wyatt, McAlpin and Morridon Coal companies and the Wyatt Coal Sales Co., in Charleston, W. Va.

R. L. Suender, only son of E. H. Suender, general manager of the Madeira, Hill & Co., Frackville, Pa., recently married Miss Elizabeth Beisel, of Pottsville, Pa. The younger Mr. Suender is employed as a mining and mechanical engineer at one of the Madeira, Hill & Co. properties at Pottsville.

Robert W. Hunter, of the Hunter Coal Co., mine operators of Providence, Ky., and also chairman of the Republican State Central Committee, has announced that he is moving his family to Louisville, where he will make his home. Mr. Hunter is interested in the automobile business and also in oil operations as well as coal.

J. W. Bunting, formerly with the Chesapeake & Ohio Coal & Coke Co. at Norfolk for a number of years and more recently a member of the staff of W. M. Stone & Co., shipping agents, has accepted a position with the General Coal Co., effective April 19. He is one of the best known coal men in tidewater Virginia.

Obituary

Dennison B. Smith, well known in the coal trade of the Twin Cities for more than 40 years, died last week at his home in Minneapolis, after a brief illness. He was born in 1854 in Toledo, Ohio, and went west as a young man, spending most of his life in Minneapolis. He had long been connected with the local dock trade, being with the M. A. Hanna Coal Co. for many years.

William H. Bergenroth, 68, coal-mine operator, died at his home in Troy, Ind., May 3. Early in life Mr. Bergenroth with his brothers operated a coal mine at Hawesville, Ky., going later to Troy to continue their coal operations. Mr. Bergenroth was operating a coal mine near Tell City at the time of his death.

James H. Mays, former Congressman from Utah, died at his Idaho ranch last week. Mr. Mays was stricken while sitting in his chair and died the next day. He held title to about 2,000 acres of coal land in Utah and had devoted considerable attention at times to the development of his holdings, which are located in Emery County. Mr. Mays was born in Tennessee in 1868 and went to Utah in 1902.

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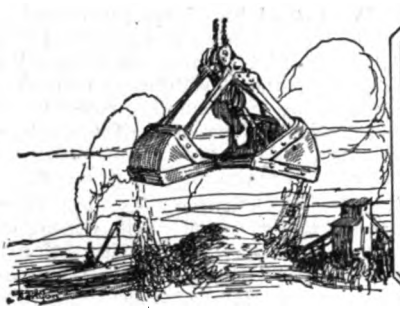
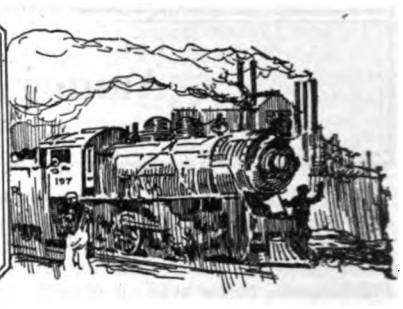


Production And the Market



British Strike Indirectly Affects Soft-Coal Trade On This Side; Lake Opening Raises Hope

The effects of the British strike upon the bituminous coal markets of the United States during the past week were indirect in character. There was an increase in inquiries from buyers who normally depend upon Great Britain for fuel and a sharp upturn in the asking prices on low-volatile West Virginia coal at Hampton Roads. This was reflected in a strengthening in prices for inland western delivery. But there was no feverish bidding along the Atlantic seaboard.

There has been a slight appreciation in quotations on central Pennsylvania coals, but no broad indications of the secondary reactions which would force up prices on American fuels generally because foreign demand was drawing upon production in this country. As a matter of fact, capacity has been so rapidly developed in the non-union fields in recent years that it probably would take much foreign buying pressure to duplicate—even on a small scale—the runaway market of 1920.

Opening of Lake Trade Welcomed

Another factor of encouragement in the present bituminous situation is the opening of the long-delayed lake shipping season. Several cargoes of bituminous and one of anthracite were discharged at Milwaukee in the past week and over fifty vessels had been loaded for the Head of the Lakes. Railroad facilities at the lower ports, however, are still congested and movement is controlled by the embargo situation. The question of prices continues a sore point with many producers.

During the week ended May 9 there were 343,553 tons of cargo bituminous and 34,714 tons of vessel fuel dumped at the lower ports. The total for the season to that date was 1,598,158 tons, as compared with 2,725,344 tons a year ago and 1,764,525 tons in 1924.

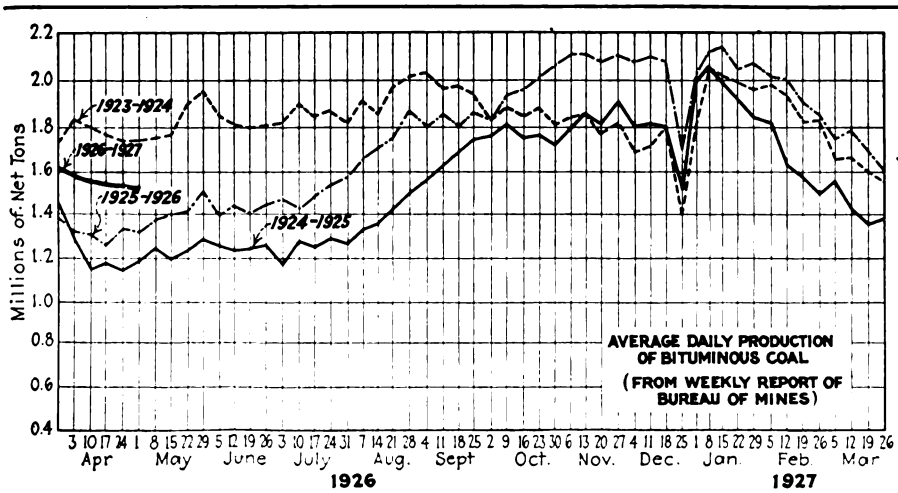
The efforts of the operators to trim output to demand are going steadily forward. During the week ended May 1, production was estimated by the Bureau of Mines at 9,137,000 net tons, as compared with 9,271,000 tons the week preceding. Even with this continued curtailment, the machinery of production is unbalanced because the demand for the different sizes is very uneven. This is particularly true in the Middle West, where "no bills" of domestic coal are the rule. Kentucky also is struggling with this problem and West Virginia is not wholly free.

Spot Prices Move Upward

Coal Age Index of spot bituminous prices has moved upward again. As of May 10 the index figure stood at 161 and the corresponding price was $1.95. The week preceding the figures were 159 and $1.92. The increase in the prices on low-volatile West Virginia coals was the major contributing factor to this advance. In the Middle West the price levels remained constant.

Notwithstanding the general complaint that the hard-coal consumer is backward in storing coal, anthracite production for the week ended May 1 totaled 2,098,000 net tons—a new high record for the year. How much of this production may be credited to a fear that prices would advance cannot, of course, be stated, it is a fact, however, that producers are meeting greater resistance in the sale of their product. Premiums, except on pea, have been shrinking for some time. The slaughter of values in steam sizes by those without facilities for storage goes merrily on.

The spot market in Connellsville coke is dull. Furnace ovens now are reducing their output faster than the merchant operations. Spot furnace coke is weaker.



Estimates of Production

(Net Tons)

	1925	1926
BITUMINOUS		
April 17	7,515,000	9,306,000
April 24 (a)	8,030,000	9,271,000
May 1 (b)	7,987,000	9,137,000
Daily average	1,331,000	1,523,000
Cal. yr. to date (c)	162,376,000	187,453,000
Daily av. to date	1,580,000	1,822,000
ANTHRACITE		
April 17	1,522,000	2,086,000
April 24	1,880,000	2,087,000
May 1	1,926,000	2,098,000
Cal. yr. to date (c)	29,387,000	19,574,000
BEEHIVE COKE		
April 24	189,000	228,000
May 1 (b)	169,000	221,000
Cal. yr. to date (c)	4,108,000	4,968,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

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Middle Western Markets Calm

A midsummer quiet has settled down upon the markets of the Middle West. Southern Illinois producers decided that May 1 was not a propitious day to advance domestic prices and other Illinois and Indiana operators followed their lead. On the steam side of the market, the undercurrent of strength is increasing. Unless the demand for coarse coal should show early improvement, advances in the prices on screenings are not unlikely. In fact, some mines are crushing mine-run to take care of steam obligations.

The British tie-up induced some high-volatile shippers to Chicago territory to talk higher prices, but buyers declined to be interested. The low-volatile shippers, however, have withdrawn quotations, asserting that they are booked up for the next few days. What little coal is seeping through is offered at $3@$3.25 for lump and egg and $2 for mine-run.

Cool weather has helped small-lot business in the medium grades in the local St. Louis market. There is little activity in the Illinois and Indiana mining districts. Under present conditions the stripping operations have the edge on the shaft mines. Outside of the Duquoin area there is little railroad tonnage moving. All districts report "no bills."

Kentucky Business Backward

The backwardness of the lake season is still embarrassing the Kentucky operators. Mines in both parts of the state have produced faster than the markets would absorb the tonnage. Nevertheless, the shippers seem to have the situation well in hand. Notwithstanding reports that there are hundreds of unbilled loads at the mines, offers of distress lots at terminal points are few and far between.

Spot quotations on western Kentucky screenings are slightly stronger; as high as $1.25 is asked in some quarters and very little tonnage can be had under $1.10. Prices on other sizes show no material change from those prevailing in recent weeks. Western Kentucky mine-run is $1.10@$1.40; lump, egg and nut, $1.35@$1.65; 6-in. block, $1.65@$1.85. Eastern Kentucky slack is $1@$1.10; mine-run, $1.35@$1.65; lump, egg and nut, $1.75@$2; 4-in. block, $1.85@$2.25, with occasional sales of Jellico and Straight Creek at $2.50.

Heavy Movement to Northwest Likely

Heavy movement to the docks this season is forecast by the fact that the vessel sheets a week ago showed 50 cargoes of bituminous had been marked up for the Head of the Lakes. Stocks on hand as of May 1 were estimated at 1,750,000 tons. No loading of hard coal was reported up to last Wednesday, but there are practically no stocks left on the docks and it is estimated that approximately 1,000,000 tons of anthracite will be shipped.

Shipments from the docks to con-

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	May 11 1925	April 26 1926	May 3 1926	May 10 1926†
Smokeless lump	Columbus	$2.85	$2.60	$2.60	$2.75@$3.00
Smokeless mine run	Columbus	1.85	1.90	1.90	1.90@ 2.10
Smokeless screenings	Columbus	1.45	1.20	1.20	1.15@ 1.35
Smokeless lump	Chicago	2.85	2.60	2.60	3.00@ 3.25
Smokeless mine run	Chicago	1.85	1.80	1.80	2.00
Smokeless lump	Cincinnati	3.00	2.75	2.85	3.00
Smokeless mine run	Cincinnati	2.00	1.85	1.80	1.75@ 1.90
Smokeless screenings	Cincinnati	1.50	1.35	1.35	1.25@ 1.50
*Smokeless mine run	Boston	4.25	4.10	4.30	4.50@ 4.75
Clearfield mine run	Boston	1.95	1.85	1.80	1.75@ 2.10
Cambria mine run	Boston	2.15	2.15	2.10	2.00@ 2.25
Somerset mine run	Boston	2.05	1.95	1.90	1.85@ 2.15
Pool 1 (Navy Standard)	New York	2.55	2.65	2.60	2.50@ 2.75
Pool 1 (Navy Standard)	Philadelphia	2.60	2.80	2.80	2.65@ 3.00
Pool 1 (Navy Standard)	Baltimore	1.95	1.95	1.95	1.90@ 2.00
Pool 9 (Super. Low Vol.)	New York	1.95	2.10	2.05	2.00@ 2.25
Pool 9 (Super. Low Vol.)	Philadelphia	2.00	2.35	2.35	2.20@ 2.50
Pool 9 (Super. Low Vol.)	Baltimore	1.85	1.75	1.75	1.70@ 1.80
Pool 10 (H.Gr.Low Vol.)	New York	1.85	1.85	1.85	1.70@ 2.00
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.70	2.05	2.05	1.90@ 2.25
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.70	1.60	1.60	1.55@ 1.65
Pool 11 (Low Vol.)	New York	1.50	1.60	1.60	1.50@ 1.75
Pool 11 (Low Vol.)	Philadelphia	1.55	1.70	1.70	1.55@ 1.85
Pool 11 (Low Vol.)	Baltimore	1.45	1.45	1.45	1.45@ 1.50
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.50	1.45	1.40	1.30@ 1.55
Pool 54-64 (Gas and St.)	Philadelphia	1.45	1.45	1.45	1.35@ 1.55
Pool 54-64 (Gas and St.)	Baltimore	1.50	1.25	1.25	1.25@ 1.30
Pittsburgh sc'd gas	Pittsburgh	2.40	2.30	2.30	2.25@ 2.40
Pittsburgh gas mine run	Pittsburgh	2.15	2.05	2.05	2.00@ 2.15
Pittsburgh mine run (St.)	Pittsburgh	1.95	1.95	1.80	1.75@ 1.90
Pittsburgh slack (Gas)	Pittsburgh	1.50	1.55	1.55	1.50@ 1.60
Kanawha lump	Columbus	2.10	2.05	2.05	1.85@ 2.25
Kanawha mine run	Columbus	1.40	1.55	1.55	1.40@ 1.75
Kanawha screenings	Columbus	1.20	1.05	1.00	.90@ 1.15
W. Va. lump	Cincinnati	2.05	1.80	1.85	1.75@ 2.00
W. Va. gas mine run	Cincinnati	1.45	1.50	1.50	1.50@ 1.65
W. Va. steam mine run	Cincinnati	1.30	1.40	1.40	1.35@ 1.50
W. Va. screenings	Cincinnati	1.15	1.00	1.00	.90@ 1.10
Hocking lump	Columbus	2.25	2.35	2.35	2.25@ 2.50
Hocking mine run	Columbus	1.40	1.55	1.55	1.40@ 1.75
Hocking screenings	Columbus	1.30	1.15	1.05	1.00@ 1.15
Pitts. No. 8 lump	Cleveland	2.25	2.20	2.20	*1.80@ 2.55*
Pitts. No. 8 mine run	Cleveland	1.90	1.80	1.80	1.80@ 1.85
Pitts. No. 8 screenings	Cleveland	1.45	1.40	1.40	*1.30@ 1.40*

Midwest	Market Quoted	May 11 1925	April 26 1926	May 3 1926	May 10 1926†
Franklin, Ill. lump	Chicago	$2.60	$2.60	$2.60	$2.60
Franklin, Ill. mine run	Chicago	2.35	2.40	2.40	2.35@ 2.50
Franklin, Ill. screenings	Chicago	2.10	1.90	1.90	1.85@ 2.00
Central, Ill. lump	Chicago	2.35	2.30	2.30	2.25@ 2.40
Central, Ill. mine run	Chicago	2.10	2.05	2.05	2.00@ 2.15
Central, Ill. screenings	Chicago	1.85	1.50	1.55	1.50@ 1.65
Ind. 4th Vein lump	Chicago	2.60	2.40	2.40	2.25@ 2.60
Ind. 4th Vein mine run	Chicago	2.35	2.15	2.15	2.10@ 2.25
Ind. 4th Vein screenings	Chicago	2.00	1.80	1.80	1.75@ 1.90
Ind. 5th Vein lump	Chicago	2.25	2.15	2.15	2.00@ 2.35
Ind. 5th Vein mine run	Chicago	1.95	1.93	1.95	1.85@ 2.10
Ind. 5th Vein screenings	Chicago	1.60	1.35	1.35	1.30@ 1.45
Mt. Olive lump	St. Louis	2.50	2.50	2.50	2.50
Mt. Olive mine run	St. Louis	2.25	2.15	2.15	2.15
Mt. Olive screenings	St. Louis	1.75	1.40	1.40	1.40
Standard lump	St. Louis	2.25	2.50	2.50	2.50
Standard mine run	St. Louis	1.80	1.80	1.80	1.75@ 1.85
Standard screenings	St. Louis	1.70	1.15	1.15	1.15@ 1.20
West Ky. block	Louisville	1.65	1.75	1.75	1.65@ 1.85
West Ky. mine run	Louisville	1.35	1.25	1.25	1.10@ 1.40
West Ky. screenings	Louisville	1.20	1.05	1.05	1.00@ 1.20
West Ky. block	Chicago	2.00	1.75	1.75	1.65@ 1.85
West Ky. mine run	Chicago	1.30	1.15	1.15	.80@ 1.50
South and Southwest					
Big Seam lump	Birmingham	2.40	2.00	2.15	1.90@ 2.40
Big Seam mine run	Birmingham	1.75	2.00	2.00	1.75@ 2.25
Big Seam (washed)	Birmingham	1.85	2.00	2.00	1.75@ 2.25
S. E. Ky. block	Chicago	2.25	2.25	2.40	2.10@ 2.75
S. E. Ky. mine run	Chicago	1.65	1.65	1.65	1.50@ 1.85
S. E. Ky. block	Louisville	2.20	2.00	2.05	1.85@ 2.25
S. E. Ky. mine run	Louisville	1.30	1.50	1.50	1.35@ 1.65
S. E. Ky. screenings	Louisville	1.20	1.05	1.05	1.00@ 1.10
S. E. Ky. block	Cincinnati	2.20	2.10	2.50	2.00@ 3.00
S. E. Ky. mine run	Cincinnati	1.35	1.55	1.50	1.35@ 1.75
S. E. Ky. screenings	Cincinnati	1.15	1.05	1.00	*.75@ 1.10*
Kansas lump	Kansas City	4.25	4.25	4.00	4.00
Kansas mine run	Kansas City	2.85	2.85	3.00	3.00
Kansas screenings	Kansas City	2.60	2.50	2.50	2.50

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**; declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	May 11, 1925 Independent	May 11, 1925 Company	May 3, 1926 Independent	May 3, 1926 Company	May 10, 1926† Independent	May 10, 1926† Company
Broken	New York	$2.34	.....	$8.05@$8.60	.....	$8.25@$9.25	.....	$8.25@$9.25
Broken	Philadelphia	2.39	.....	8.60	$9.25	9.00@ 9.25	$9.25	9.00@ 9.25
Egg	New York	2.34	$8.50@$8.85	8.35@ 8.60	9.00@ 9.50	8.75@ 9.25	9.00@ 9.50	8.75@ 9.25
Egg	Philadelphia	2.39	8.60@ 9.30	8.40@ 8.60	9.25@ 9.85	9.15@ 9.25	*9.25@ 9.75*	9.15@ 9.25
Egg	Chicago*	5.06	7.86@ 8.50	7.44@ 8.18	8.48	8.13	8.48	8.13
Stove	New York	2.34	8.75@ 9.25	8.85@ 9.10	9.25@ 9.75	9.25@ 9.50	9.25@ 9.75	9.25@ 9.50
Stove	Philadelphia	2.39	9.20@ 9.75	8.85@ 9.00	9.60@10.10	9.35@ 9.50	*9.60@10.00*	9.35@ 9.50
Stove	Chicago*	5.06	8.22@ 8.70	7.92@ 8.10	8.84	8.33@ 8.58	8.84	8.33@ 8.58
Chestnut	New York	2.34	8.50@ 8.75	8.35@ 8.60	9.25@ 9.50	8.75@ 9.15	9.25@ 9.50	8.75@ 9.15
Chestnut	Philadelphia	2.39	8.60@ 9.45	8.50@ 8.60	9.25@ 9.75	9.00@ 9.15	*9.25@ 9.50*	9.00@ 9.15
Chestnut	Chicago*	5.06	8.14@ 8.35	7.69@ 8.00	8.71	8.38@ 8.58	8.71	8.38@ 8.58
Pea	New York	2.22	5.00@ 5.50	5.00@ 5.60	6.50@ 7.25	6.00@ 6.25	6.50@ 7.25	6.00@ 6.25
Pea	Philadelphia	2.14	5.40@ 5.75	5.00@ 5.40	6.50@ 7.00	6.00@ 6.50	6.50@ 7.00	6.00@ 6.50
Pea	Chicago*	4.79	4.91@ 5.36	4.69@ 5.00	6.03	5.65@ 5.80	6.03	5.65@ 5.80
Buckwheat No. 1	New York	2.22	2.00@ 2.60	2.50	1.85@ 2.50	3.00@ 3.50	1.85@ 2.50	3.00@ 3.50
Buckwheat No. 1	Philadelphia	2.14	2.25@ 2.75	2.50	2.25@ 2.75	2.50@ 2.75	*2.00@ 2.50*	2.50@ 2.75
Rice	New York	2.22	1.75@ 2.10	2.00	1.50@ 2.25	2.00@ 2.25	*1.50@ 2.00*	2.00@ 2.25
Rice	Philadelphia	2.14	1.90@ 2.00	2.00	2.00@ 2.25	2.00@ 2.25	*1.75@ 2.25*	2.00@ 2.25
Barley	New York	2.22	1.40@ 1.60	1.50	1.00@ 1.50	1.50@ 1.75	1.00@ 1.50	1.50@ 1.75
Barley	Philadelphia	2.14	1.50	1.50	1.50@ 1.60	1.75	1.50@ 1.60	1.75
Birdseye	New York	2.22	1.40@ 1.60	1.60	1.00@ 1.50	2.00	.....	2.00

*Net tons, f.o.b. mines. †Advances over previous week shown in **heavy type**; declines in *italics*

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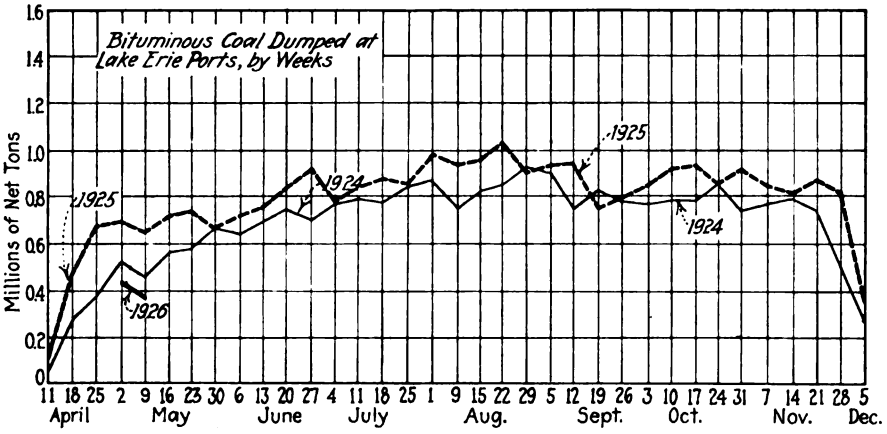


sumers over the Northwest are on a seasonable basis. Contracting for the year's supplies by the utilities and larger industrial plants is expected to begin in a substantial way before the end of the month. Further stiffening in the prices on smokeless lump is the only change in dock quotations.

Warm weather has killed any demand for domestic coal in the Twin Cities. Steam-coal buyers persist in their attitude of indifference toward contracting, but producers are not pressing them with offers of concessions. Prices in Illinois and western Kentucky coals are unchanged.

Arrivals of the first fleet from the lower ports kept docks at Milwaukee busy last week. Up to May 6 a total of 135,605 tons of bituminous and 5,000 tons of anthracite was received. Up to Map 6, 1925, bituminous receipts had totaled 227,313 tons, and anthracite, 153,208 tons. There have been some sharp revisions of retail prices. Pocahontas declined $3, and coke, $2.10.

Kansas Fields Mark Time

Little coal is moving in the Southwest. Many mines are down and those working are averaging only a few days a week. This condition prevails not only in Kansas but also in Oklahoma and Arkansas. Paris (Ark.) semi-anthracite lump is quoted at $5.50 for May, $6 for June and $6.50 for July. McAlester lump is $5.60; nut, $4.60, and screenings, $2.50. Lump and nut from the Wilburton mines are 75c. less, with slack $2.50. Henryetta is asking $3.50 for lump, $3.25 for nut, $3 for mine-run and $2.25 for screenings.

Season and temperatures considered, Colorado mines are enjoying a fairly steady demand. Nut is the size most favored by the retailers. Activity in the sugar, steel and copper industries is absorbing all the steam tonnage available. Walsenburg and Canon City domestic lump is quoted at $4.50, mines; washed nut, $4.25, and chestnut. $3; Trinidad domestic lump and nut $2.85; Crested Butte bituminous lump, $4.50; nut, $4.25. Colorado domestic anthracite coals are $6.50@$8.

Dawson district (New Mexico) 6-in. lump and 6x3 egg are $3.20; nut, $3.10; pea, $2.85. Kemmerer and Rock Springs (Wyoming) lump, grate and nut are $3.50. The ruling price on Wyoming steam sizes is $1.25 in the Denver market, but slack is 50c. higher at Salt Lake City. Utah mines are not averaging over two days a week and buying is on a hand-to-mouth basis. Curtailed production is keeping the steam market strong.

Cincinnati More Buoyant

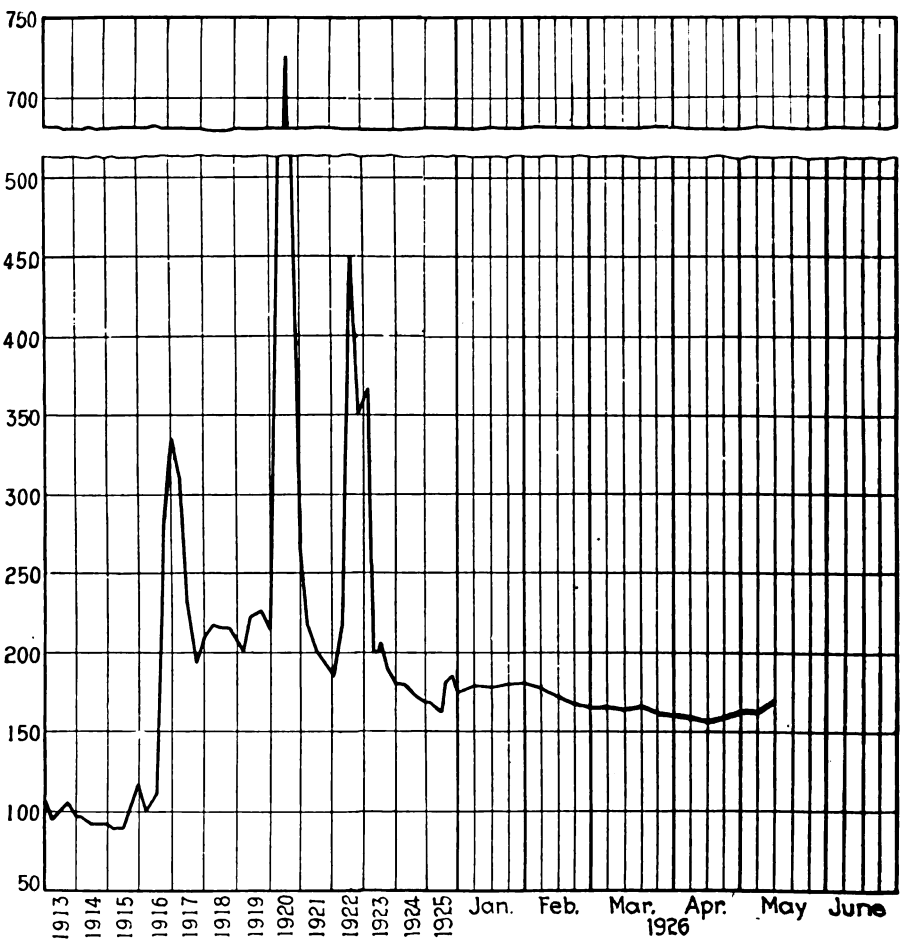
The Cincinnati market wears a livelier aspect. Trade interests now feel that the abbreviated lake season will be a blessing in disguise and they also are counting upon an increased demand as a result of the British strike. Low-volatile coals are stronger, particularly lump and egg, and there is little spot tonnage offering. Slack, however, still lags; quotations are $1.25 @$1.50, but little is going above the minimum figures.

There is a slight improvement in the demand for high-volatile domestic block and lump, but egg is erratic. Better grades of mine-run now command $1.50 and the average is about $1.40. Slack was strong until the B. & O. embargo lake shipments to Toledo. Some of the tonnage caught in the jam sold at 75@ 90c., but most of the coal is held for 90c.@$1.10.

The local retail trade at Cincinnati is unusually active for this season of the year. Coal movement through the Cincinnati gateways, according to the latest figures of the American Railway Association, is increasing, not only because of lake shipments but because general business also is expanding.

No Life in Ohio or Pennsylvania

As for weeks past, sluggishness characterizes the spot-coal markets in Ohio and Pennsylvania. In central and southern Ohio business has been awaiting the opening of the lake season. Lake buyers hold to $1.50, while sellers are hoping that the late start of ship-



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926				1925	1924
	May 10	May 3	April 26	April 19	May 11	May 12
Index	161	159	159	158	166	169
Weighted average price	$1.95	$1.92	$1.93	$1.92	$2.01	$2.05

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.

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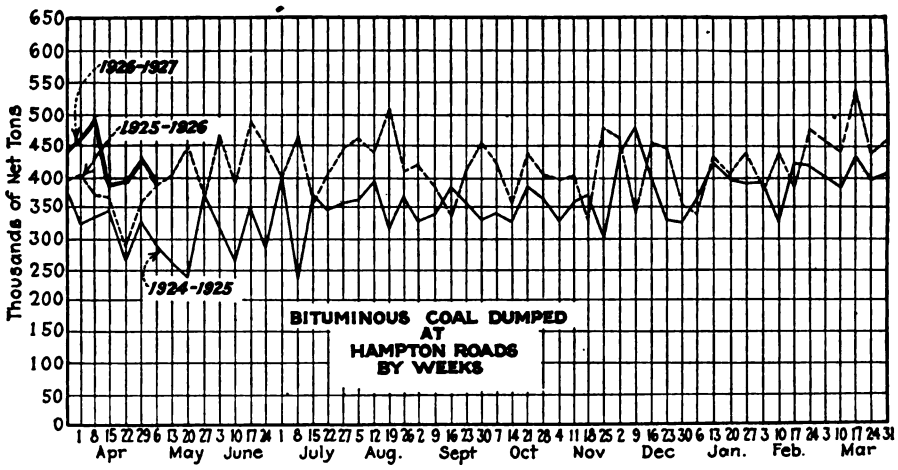


ping may mean higher prices. The number of loaded cars on the tracks to the Sandusky and Toledo piers runs into the thousands.

Central Ohio steam trade lags. Contracting is backward because spot prices are so depressed. Screenings, however, are firm, but mine-run is a drug on the market. Only a few storage orders have been placed by the retail distributors. Southern Ohio production is running between 15 and 18 per cent of normal.

If there was any change in the northern Ohio situation last week it was a change for the worse. Production is declining and prices are further depressed. Slack coal has dropped 5 to 10c. per ton. Retail trade at Cleveland is light. During the week ended May 1 the No. 8 field produced 189,000 tons, or approximately 27 per cent of capacity. Compared with the preceding week this was a loss of 31,000 tons. Lake Shipments up to May 3 exceeded 1,000,000 tons, but Ohio had a very small share in the business.

Pittsburgh in the Doldrums

There is no cheer in the reports from commercial operations in the Pittsburgh district. The Pittsburgh Coal Co. has sold some tonnage to the lakes. In general, however, mines operating on the 1917 scale find it no easy matter to move coal; the difficulties confronting the union operations are still greater. Prices are unchanged. Stripping mines willing to crush mine-run are holding prices on slack in check.

Central Pennsylvania is living on hopes. April production was only 55,965 cars, as compared with 82,648 in February and 70,245 cars in March. Some tentative inquiries have been received from foreign sources, but at best the central field looks for nothing but a reflected demand. Current quotations are: Pool 1, $2.50; pool 71, $2.20@$2.25; pool 9, $2@$2.15; pool 10, $1.85@$2; pool 11, $1.65@$1.75, and pool 18, $1.60. Compared with the preceding week, the general list is stronger.

No changes worthy of chronicling marked the Buffalo bituminous market last week. Demand, generally speaking, holds up, but prices yield no profit to the sellers. In the domestic trade a quiet struggle is going on between anthracite and coke. Lake movement of anthracite has started, with the clearance of 12,500 tons for Chicago and 10,200 tons for Duluth and Superior.

No Strike Reaction in New England

There has been no real reaction to the British strike in the New England market. Buying is very quiet and the volume of spot tonnage sold shows no appreciable gain. Prices on cars at Boston are somewhat firmer because of diminished receipts, but at other New England distributing points previous levels have been undisturbed.

Several of the shippers at Hampton Roads are holding out for $4.75 gross, but there are not many sales for New England delivery at that figure. Practically all the shippers have coal at the terminals and there are occasional reports of placements at prices more nearly approximating the average of a fortnight ago. On cars at Providence and Boston, Navy Standard commands $5.50@$5.75.

No change has developed in the all-rail market for central Pennsylvania coals. Quotations are on a minimum basis, governed by the cost of mining. In no direction is there more than a scattering demand for this fuel and shippers are canvassing the territory assiduously for orders.

British Strike Has Little Effect

The British strike to date has left only a faint impress upon the bituminous markets of the Atlantic seaboard. Pier prices advanced sharply at Hampton Roads last week, but quotations at New York were weaker on the whole and unchanged at Philadelphia. More bunker coal was taken on by vessels clearing from New York, but the number of clearances was less. There also has been an increase in the number of inquiries from foreign sources, but not many actual orders.

New York is still troubled with distress Pennsylvania coal and some lots have been sold as low as $1.75, mines. There has been no change in the nominal quotations on fresh-mined coal. Bargain hunters, however, are able to pick up odd lots at attractive figures.

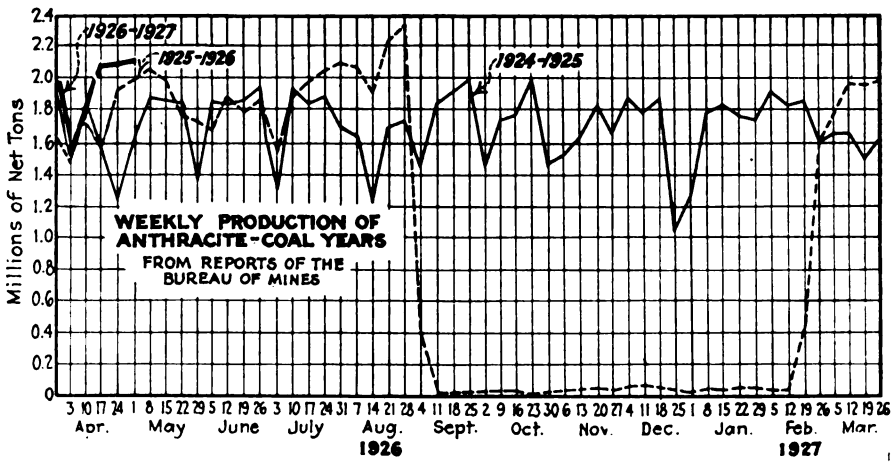
Philadelphia jogs along at an unhurried pace. Demand is fairly constant and prices show no appreciation. The optimists are hoping that industrial buying will expand as summer approaches. Little store is set by the British trouble. There are rumors that France may look to the United States for fuel, but these tales do not square with late reports from the Continent. Railroads pursue their much-criticized buying policy. At Baltimore, coal men are discussing foreign prospects, but the local situation is unchanged.

The situation at Birmingham is on all fours with that prevailing for several weeks past. Medium- and high-grade steam coals move readily in the contract and spot markets, but only restricted production prevents a surplus of the low-grade fuels. The rapid absorption of the better grades of domestic coal on season contracts has created a slightly stronger market for lower quality white-ash coals. Domestic coke demand is lifeless, but spot foundry is strong at $6@$6.50. Larger users, however, are covered by contracts at $5.50@$6.

More Anthracite Buying at New York

Anthracite consumers at New York are beginning to buy more freely, but activity still is somewhat subnormal. Independents must work hard to get 25 to 50c. above company circulars, but company tonnage is moving readily. Stove now leads in demand and is used to encourage the sale of egg and nut. Pea maintains its strength. There has been a slight improvement in barley, but the steam situation as a whole is sluggish.

The Philadelphia market is more backward and there have been numerous requests to delay shipment on orders already placed. This is credited to consumers' resentment at the failure of the producers to make the usual spring reductions. Nut has become heavy and some independents are using



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Car Loadings and Supply

	Cars Loaded — All Cars	Coal Cars
Week ended April 24, 1926	973,304	166,586
Preceding week	964,935	167,249
Week ended April 25, 1925	959,225	147,330

	Surplus Cars — All Cars	Coal Cars	Car Shortages All Cars	Coal Cars
April 23, 1926	286,203	126,953	.....	.....
April 16, 1926	284,396	130,152	.....	.....
April 22, 1925	344,198	173,455	.....	.....

pea as a bait to move the larger size. Steam coals are dragging. Large producers are putting coal in storage and smaller shippers are offering concessions to buyers. Barley probably is the strongest in demand, but even that is slipping. There is only a moderate demand for hard coal at Baltimore.

Connellsville in Lake Market

The Connellsville district has sold considerable coal for lake shipment on a mine-run basis of $1.50. This coal is screened at the mines and yields slack and lump in about equal proportions. The rate to the lakes is a few cents higher than from the Pittsburgh district.

There is practically no spot demand for furnace coke and very little for foundry. Miscellaneous buying is light. Spot foundry coke is $4@$4.50, but furnace grades have weakened to $3 flat.

Production during the week ended May 1, according to the Connellsville *Courier*, was 169,410 tons, an increase of 110 tons over the output for the preceding week. Merchant-oven production, 72,010 tons, was 1,910 tons greater, offsetting the loss of 1,800 tons in furnace-oven output. The total for the latter ovens was 97,400 tons.

Export Order Rapidly Loaded

The Western Maryland Ry. loaded a 5,000-ton cargo of coal for export on a vessel at Baltimore on May 6, 100 hours after the order had been placed at the mines at Fairmont, W. Va., by a New York broker. The 100 hours included the time required for mining the coal, loading it in cars, moving it approximately 350 miles to tide and reloading on the waiting vessel at the Port Covington pier of the railroad. The coal, destined for Italy, was moved in a train of 100 cars as far as Cumberland, Md., and then to Baltimore in a train of two sections.

New York Anthracite Prices For May, 1926

(Per Gross Ton, f.o.b. Mine)

	Broken	Egg	Stove	Chestnut	Pea
Hudson Coal Co.	$9.00	$9.00	$9.35	$9.00	$6.00
Phila. & Reading Coal & Iron Co.	9.15	9.15	9.40	9.15	6.25
D., L. & W. Coal Co.	8.25	8.75	9.25	8.75	6.00
Lehigh & Wilkes-Barre Coal Co.	8.25	8.75	9.25	8.75	6.00
Lehigh Valley Coal Sales Co.	8.50	9.00	9.35	9.00	6.00
Lehigh Coal & Navigation Co.	9.25	9.25	9.50	9.10	6.25+
M. A. Hanna	9.00	9.25	9.50+	9.25	6.50

Steam sizes: Buckwheat No. 1, $3@$3.50; rice, $2@$2.25; barley, $1.50@$1.75; birdseye, $2.

Open Navy Coal Bids May 20

Bids for supplying 166,000 tons of semi-bituminous steaming coal, for delivery at New York, Philadelphia, Hampton Roads and Charleston, S. C., during the fiscal year beginning July 1 next, will be opened by the Bureau of Supplies and Accounts, Navy Department, Washington, D. C., May 20.

On the same date the Bureau will open bids for the supply of 12,650 tons of anthracite for delivery, in varying amounts, to navy yards and stations in the East and on the Great Lakes during the coming fiscal year.

The Bureau also will open bids on May 20 for approximately 374,800 tons of bituminous coal for power-plant purposes, for delivery at the various yards and stations during the fiscal year. These three openings will cover practically all of the Navy's coal needs for the fiscal year 1927.

Railroad Contracts Placed

According to reports the Big Four railroad has let its contract for railroad fuel for the present coal year. It is said that $1.50@$1.60 is being paid for mine-run, and that operators in the Logan field and along the Norfolk & Western Ry. got some of the business. The bulk of the tonnage, according to reports, was placed in eastern Kentucky.

The Chesapeake & Ohio Ry. let its contracts for railroad fuel last week, according to a letter issued to coal operators, which indicates that the company's entire fuel requirements for the coal year will approximate 1,200,000 tons. The price paid was $1.65 and the company has directed the coal to be screened, according to its specifications.

Hard-Coal Stocks Low.—On April 1 Massachusetts coal dealers had 292,427 net tons of domestic anthracite on hand, compared with 725,037 tons on the same date a year ago. Receipts during the last coal year totaled 3,800,218 tons, as against 5,117,176 tons in the preceding year. Total deliveries of domestic anthracite during the year ended March 31 last were 4,233,344 tons, showing a pronounced decline from the preceding year's total of 5,115,717 tons.

Traffic News

Coke Rates from St. Louis to Missouri-Kansas Too High

Freight rates on coke from St. Louis, Mo., to Missouri River cities and to destinations in southwestern Missouri and southeastern Kansas are found unreasonable and unduly prejudicial as compared with the rates from Chicago, Ill., and Birmingham, Ala., to the same destinations, in a decision by the Interstate Commerce Commission dated April 14 issued on April 29.

The rates are held prejudicial to St. Louis to the extent that the difference between St. Louis rates and Chicago rates is less than 72c. and to the extent that the difference between St. Louis and Birmingham rates to the lower Missouri River cities is less than $2.04 per ton, and to the extent that the difference between St. Louis and Birmingham rates to destinations in southwest Missouri and southeast Kansas is less than $1.80.

The roads were ordered to effect new rates on or before July 14. From St. Louis to Missouri River points the new rates must not exceed $3.25 per net ton and to points in southwest Missouri and southeast Kansas not to exceed $3.49 per ton.

Rate Hearing Dates Changed

Further hearings in connection with the Interstate Commerce Commission's investigation of freight rates on anthracite to stations in upper New York, recently set for June 28 and July 14, at Syracuse, N. Y., have been re-assigned for June 14 at Syracuse before Examiner Koch.

Consideration of the establishment of permanent rates on bituminous coal and coke from mines in Virginia, West Virginia, Pennsylvania, Ohio and eastern Kentucky to points in the Middle Atlantic and New England States where no joint through all-rail rates are now in effect, which had been set for June 7 at New York, has been deferred until June 21 at Atlantic City, N. J., before Examiner Koch. The hearing will be devoted particularly to the rates and charges, including tidewater and trans-shipment rates and charges, for the interstate transportation of bituminous coal and coke and semi-anthracite.

The commission also has issued two supplemental orders broadening the scope of the anthracite rate investigation, as reopened, upon petition of the Central Pennsylvania Coal Producers' Association and upon request for joint rates from the upper Potomac fields in Maryland to Eastern destinations.

Orders Investigation Into Intrastate Rates

An investigation into the rates from Illinois mines to East St. Louis has been ordered by the Interstate Commerce Commission. The rates in question were fixed by the Illinois Commerce Commission on Feb. 8 and are lower than those established by the Interstate Commerce Commission on interstate traffic. The inquiry is instituted for the purpose of determining whether the Illinois rates unduly prefer intrastate traffic and unduly prejudice interstate business. No date for a hearing has been set.

Illinois Commission Order on Collinsville Rate Reversed

Judge David M. Brothers, in Circuit Court of Chicago, last week reversed on appeal an order of the Illinois Commerce Commission reducing the rate on coal from Collinsville to Chicago from $1.85 to $1.65 per ton. The Chicago Eastern Illinois Ry. appealed the case. The Lumaghi Coal Co., of Collinsville, located in the Danville district, which pays a rate of $1.85 per ton, obtained consent of the commission in 1923 to fix its technical location in the Springfield zone, which pays a rate of $1.65.

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Foreign Market And Export News

Great Rush to Move Coal In Week Preceding Strike; Welsh Docks Hard Pressed

The Welsh steam-coal business during the week preceding the general strike was almost entirely made up of small lots for bunkering or for completing small cargoes for dispatch before April 30, said the report from the London (England) correspondent of *Coal Age* under date of April 27. On paper most of the collieries were booked up until the middle of May and there was very little coal available for sale in small lots. The Welsh docks seldom have been so active and vessels were waiting to get away with their cargoes before any industrial trouble occurred. Sellers were able to obtain much higher prices, but so little coal was available that the prices realized did not affect the average for all sales to any appreciable extent.

Forward business was conspicuous by its absence since neither purchasers nor operators would enter into fresh deals until they had some idea of the outcome of the negotiations between Prime Minister Baldwin, the operators and the miners. Had these negotiations succeeded, May would have been a very slack month, as most home and foreign consumers would be existing on the large stocks already accumulated.

The Newcastle market was at a complete standstill and the operators would not quote for any sorts. The usual customers for North of England coal were getting all they needed from America and Germany.

Industrial Coals Active On French Market

Paris, France, April 27.—Production of industrial coals is moving without difficulty, but there is little demand for domestic sizes, either from the retail distributors or from the consumers.

Coal production is very active because of the conditions existing in the British coal industry and because of a decline in imports following further depreciation of the franc. Buying of industrial fuels is strong in anticipation of a possible shortage in British supplies, although large stocks are being accumulated in the Ruhr.

During the first seventeen days of the month the O. H. S. received 224,000 metric tons of coal, 157,000 tons of coke and 12,500 tons of lignite briquets from the Ruhr. Effective May 1, advances of from 5 to 7 fr. on industrial coals and 6 to 11 fr. on domestic sizes have been announced.

As a result of increased transportation charges and import duties, the price of indemnity coke has been fixed at approximately 171 fr., f.o.b. Sierck. Protests of French metallurgical interests have developed nothing but a notice that from June 1 to Aug. 31 the price will be increased still further.

French imports of coal, coke and briquets during March totaled 1,951,000 metric tons while O.R.C.A. coke receipts from April 1 to 20, inclusive, amounted to 179,000 metric tons, according to a cable to the Department of Commerce from Acting Commercial Attaché R. C. Miller, Paris.

Belgian Market Steady

Brussels, Belgium, April 29.—Aside from a slight improvement, due to threats of a British strike, no important change has taken place in the Belgian market. There was more French inquiry in the Borinage district and a decrease in British imports, but fluctuating exchange rates to a great degree offset these favorable factors. As a matter of fact, some collieries were compelled to further restrict production.

Effective May 1, it is announced that there will be general increases in the prices on German reparation fuels. Bituminous coals will be advanced 3 to 10 fr.; gas and semi-bituminous coals, 5 to 10 fr.; lean coals, 4 to 6 fr.; furnace coke, 17 fr.; lignite briquets, 5 fr. As a result of this announcement quotations on Belgian coals are firmer.

During March Belgium produced 2,132,180 metric tons of coal, 434,810 tons of coke and 190,770 tons of patent fuel. The prewar averages were 1,903,400, 293,580 and 217,220 tons, respectively.

United States Joins Importers Of German Coal

The German coal industry has made strenuous efforts during the last year to extend it radius of sales activity. These efforts have been rewarded in a moderate degree in a number of overseas markets like the Dutch Indies and South and Central America. In the figures on foreign business in January and February, 1926, however, the United States appears for the first time as an importer of German bituminous coal.

These imports amounted in January to 38,128 tons and in February to 48,474 tons. In the case of coke the German shipments to the United States are even more striking. Starting in January with 9,200 tons, shipments in February increased to 42,000 tons out of a total of 406,000 tons. In the February German export returns the United States figures as the third largest consumer of German coke; being surpassed only by Luxemburg and Alsace-Lorraine, which in Germany are not considered as foreign markets having long-standing relations of interchange of coke against steel products with the German interior.

Coal imports by Germany during January and February showed a continued decline.

Japanese Coal Firm at Shanghai

Shanghai, China, April 6.—At Shanghai the market for Japanese coal is firm. There is a strong demand from native dealers, especially for dust coal, due principally to the growing shortage of supplies from the various mines in China owing to the interference with the railways by military authorities.

For Kaiping coal military operations at and around Taku (near Tientsin) have further increased the difficulties of the traffic situation, though shipments continue at irregular intervals from Tongku. The shortage of certain grades has caused the cessation of household deliveries until more regular supplies are again received.

Export Clearances, Week Ended May 6

FROM HAMPTON ROADS

	Tons
For Jamaica:	
Nor. Str. Certo, for Kingston	3,194
Amer. Str. Levisa, for Kingston	2,630
For Canada:	
Br. Str. Emperor of Fredericton, for Montreal	2,470
For New Brunswick:	
Br. Schr. Cashier, for St. John	872
For Italy:	
Ital. Str. Vincenzo Florio, for Genoa	9,710
For Trinidad:	
Nor. Str. Fram, for Port of Spain	3,753
For Brazil:	
Br. Str. Vestalia, for Rio de Janeiro	7,313
Br. Str. Goldenway, for Pernambuco	4,222
Br. Str. Mombassa, for Rio de Janeiro	5,768
For Cuba:	
Nor. Str. Odland I, for Havana	1,954
For Martinique:	
Br. Str. Grelbank, for Fort de France	6,976

FROM BALTIMORE

	Tons
For Italy:	
Ital. Str. Girlia, for Venice	4,955
For British Columbia:	
Swed. Str. Frost, for Vancouver	1,574
For Algeria:	
Gr. Str. Penelope, for Algeria	800

Hampton Roads Coal Dumpings*

(In Gross Tons)

N. & W. Piers, Lamberts Pt.:	Apr. 29	May 6
Tons dumped for week	159,421	165,662
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	112,559	63,740
B. & O. Piers, Newport News:		
Tons dumped for week	113,812	123,987

*Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS

	May 1	May 8†
Pool 1, New York	$5.50@$5.75	$5.50@$5.75
Pool 9, New York	5.00@ 5.20	*4.95@ 5.20*
Pool 10, New York	4.75@ 5.00	*4.70@ 4.95*
Pool 11, New York	4.50@ 4.75	*4.40@ 4.70*
Pool 9, Philadelphia	5.10@ 5.40	5.10@ 5.40
Pool 10, Philadelphia	4.80@ 5.15	4.80@ 5.15
Pool 11, Philadelphia	4.25@ 4.50	4.25@ 4.50
Pool 1, Hamp. Roads	4.25	**4.75@ 5.00**
Pool 2, Hamp. Roads	4.15	**4.50@ 4.75**
Pool 3, Hamp. Roads	3.75	**4.00**
Pools 5-6-7, Hamp. Rds.	4.10@ 4.15	**4.50**

BUNKERS

	May 1	May 8†
Pool 1, New York	$5.75@$6.00	$5.75@$6.00
Pool 9, New York	5.25@ 5.45	*5.20@ 5.45*
Pool 10, New York	5.00@ 5.25	*4.95@ 5.20*
Pool 11, New York	4.75@ 5.00	*4.65@ 4.95*
Pool 9, Philadelphia	5.35@ 5.65	*5.35@ 5.65*
Pool 10, Philadelphia	5.05@ 5.40	5.05@ 5.40
Pool 11, Philadelphia	4.50@ 4.75	4.50@ 4.75
Pool 1, Hamp. Roads	4.35	**4.75@ 5.00**
Pool 2, Hamp. Roads	4.25	**4.50@ 4.75**
Pools 5-6-7, Hamp. Rds.	4.15	**4.50**

Current Quotations, British Coal, f.o.b. Port, Gross Tons

Quotations by Cable to *Coal Age*

Cardiff:	May 1	May 8†
Admiralty, large	27s.6d.	No
Steam smalls	18s.3d.	quotations
Newcastle:		on
Best steams	16s.3d.	account
Best gas	20s.	of
Best bunkers	17s.6d.	strike.

Advances over previous week shown in **heavy** type; declines in *italics*.

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Coming Meetings

National Retail Coal Merchants' Association. New Willard Hotel, Washington, D. C., May 17-19. Resident vice-president, Joseph E. O'Toole, Transportation Bldg., Washington, D. C.

Electric Power Club. Convention at The Homestead, Hot Springs, Va., May 24-27. Secretary, S. N. Clarkson, B. F. Keith Bldg., Cleveland, Ohio.

The American Mining Congress. Annual Exposition of Coal Mining Equipment, May 24-28, at Cincinnati, Ohio, with operating conference. Assistant secretary, E. R. Coombes, Washington, D. C.

International Geological Congress. Fourteenth congress, Madrid, Spain, May 24, 1926. Secretary, E. Dupuy de Lome, Plaza de los Mostenses, 2, Madrid, Spain.

Midwest Retail Coal Merchants Association. Annual meeting, May 25 and 26, at Kansas City, Mo. Secretary, James P. Andriano, St. Joseph, Mo.

Pennsylvania Retail Coal Merchants' Association. Annual meeting, York, Pa., May 27 and 28. Secretary, W. M. Bertolet, Reading, Pa.

Western Canada Fuel Association. Annual meeting at Winnipeg, Manitoba, Can., May 27 and 28. Secretary, W. H. Morrison, Winnipeg.

West Virginia Coal Mining Institute. Annual meeting, June 1-2, Bluefield, W. Va. Secretary, R. E. Sherwood, Charleston, W. Va.

American Wholesale Coal Association. Annual meeting at Toledo, Ohio, June 7-9. Treasurer, R. B. Starek, Union Fuel Bldg., Chicago, Ill.

Association of Iron & Steel Electrical Engineers. Exposition and convention at Hotel Sherman, Chicago, Ill., June 7-10. Secretary, J. F. Kelly, 1007 Empire Bldg., Pittsburgh, Pa.

Coal Operators' Association of 5th and 9th Districts of Illinois. Annual meeting, St. Louis, Mo., June 8. Secretary, O. L. Lumaghi, St. Louis, Mo.

Southwestern Interstate Coal Operator's Association. Annual meeting, Kansas City, Mo., June 8. Assistant Secretary, George Manuel, Kansas City, Mo.

National Coal Association, June 9-11, at Drake Hotel, Chicago, Ill. Executive secretary, Harry L. Gandy, Southern Bldg., Washington, D. C.

American Society for Testing Materials. Convention at Haddon Hall, Atlantic City, N. J., June 21-25. Secretary, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

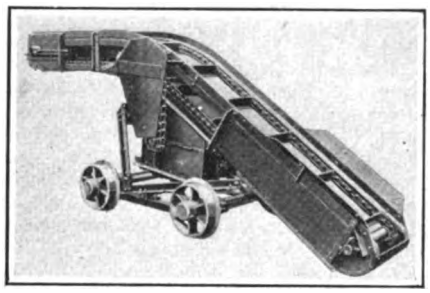
American Institute of Electrical Engineers. Annual convention, White Sulphur Springs, W. Va., June 21-25. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

Illinois Mining Institute. Annual summer meeting on steamer "Cape Girardeau," leaving St. Louis, Mo., June 24 and returning June 26. Secretary, Frank F. Tirre, Central National Bank Bldg., St. Louis, Mo.

New Equipment

Loader Shovels the Coal But the Machine Lifts It

Tests and experience alike have demonstrated that most of the work of loading a mine car is consumed in raising the coal over the side of the car. The accompanying illustration shows the new machine recently developed and placed on the market by the Chicago Automatic Conveyor Co., Old Colony Bldg., Chicago, Ill., for loading coal into cars underground. This machine does not supplant hand shoveling, but it does materially lessen the labor of loading coal by decreasing the height to which the workman must raise his shovel. Several of these machines are already in use and are said to be giving excellent results.



Low Lift Lessens Loading Labor

With one of these machines the loader at the face has to raise coal only a few inches, whereas without it he has to throw it clear over the side of the car.

This machine is built low so that it may be used in comparatively thin beds. It is mounted on a truck and can be readily moved from place to place. It is particularly adapted for use in entries and other narrow work.

Equipped with this new machine a miner is said to be able to handle with ease twice as much coal as he can load without its aid. It has a capacity of approximately 60 tons per hour, which is more than any two ordinary men can shovel even though they have to lift it only a few inches. If desired the machine can be built to move under its own power. This materially decreases the labor necessary to push it from place to place.

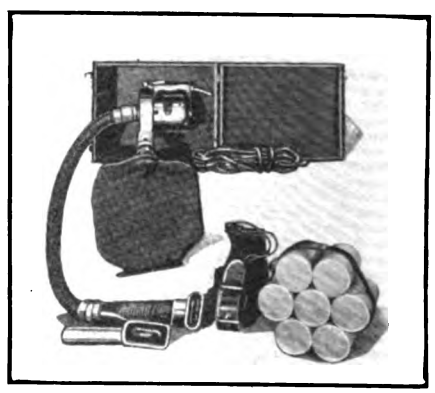
Samples Dust On Floor, Roof and Rib by Use of Vacuum

An interesting device for the more efficient collection of samples of coal dust and of mixtures of coal and rock dust has been developed by J. E. Jones, of the Old Ben Coal Corporation. This sampler has been perfected and placed on the market by the Mine Safety Appliances Co., of Pittsburgh, Pa. It is entirely distinct from this firm's rock-dust testing kit, which has been in use for some time.

Too much attention cannot be given to this phase of rock-dusting. It has been recognized that the coal operator has been prone to neglect taking samples properly or with adequate frequency. The method commonly in use at present consists of collecting all the coal and rock dust from a 6-in. strip or zone on the roof and ribs, and separately from the floor, by means of a brush and pan. One can readily appreciate the difficulty experienced in this process in catching or retaining all the dust. This is particularly true on the main intake haulageways, where the velocity of the air current is high. The very fine dust, or that possibly most efficient in the propagation of explosions, and therefore that which it is most desired to sample, is just the material that escapes and defies collection.

With this in mind, the new sampling outfit was designed on the vacuum principle. Instead of brushing, with the inevitable agitation of the mixture and consequent escape of the fine particles, the opposite extreme is attained. The finer particles are those most easily collected because the suction produced naturally picks up these more easily. The particles that will not participate in a coal-dust explosion—those over 20-mesh in size—are totally excluded from the sample by means of a screen placed over the orifice through which the dust is sucked.

The apparatus itself is simple. The suction is produced by a 4-in. fan operated by means of a small 250-volt direct-current motor. As is the nature of fans, a suction is produced in the center and a blowing effect at the tips of the vanes. An aluminum casting surrounding the fan provides for the entrance of the dust at the fan inlet and its collection at an exit on the periphery. The dust is gathered by a nozzle suitable for use upon either rough or smooth mine surfaces and passes through a collection hose into the fan. It then is forced into a small bag which is easily detached and the sample removed. Means are provided for connecting to the trolley wire as



Rock-Dust Sampling Outfit

This kit consists of the sampler proper, which much resembles a little vacuum carpet sweeper; a short length of suction hose, two collecting nozzles, a dust bag, a waist belt, suitable means for connecting the machine to the trolley, a carrying case and a variable number of tin cans for preserving the samples taken.

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Taking a Sample from Rib

This shows the sampler in operation. The black streak on the rib above the collection nozzle illustrates with what effectiveness the air suction removes the dust from the mine surfaces. Pieces larger than 20-mesh are automatically strained out of the sample and left behind.

well as for grounding to the rails. The whole apparatus weighs but 12 lb. and is easily carried on a belt without in any way interfering with the work of the sampler. Naturally this equipment is limited to use where power is available. Extension cable of reasonable length is provided.

The advantages of this new outfit as claimed by the builder are as follows: A more efficient and representative sample is obtained, as the fine particles are all collected. The process of sampling is made far less laborious, as screening of the sample is entirely obviated. Coning and quartering the sample down to a proper quantity (about ¼ lb.) is in most cases not necessary. Samples from the roof are taken with as great facility as from the ribs, something almost impossible by the brush-and-pan method.

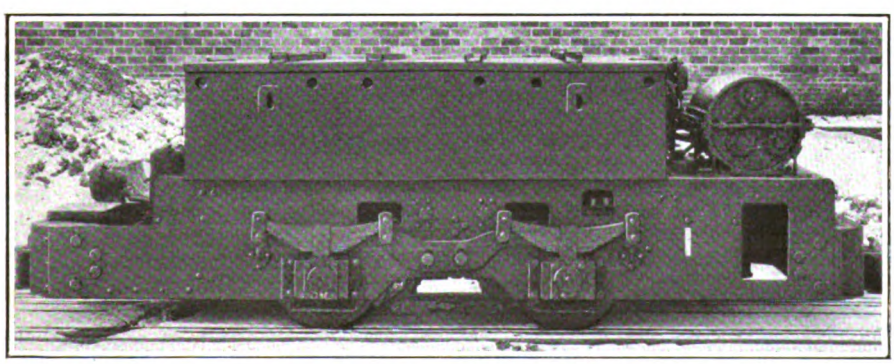
Approved Battery Locomotive For Use On Rough Roads

Government approval No. 1513 recently was granted by the U. S. Bureau of Mines to the General Electric Co., of Schenectady, N. Y., covering a permissible storage-battery locomotive for use in gaseous mines. This machine has a rated weight of 6 tons and is intended for gathering service. It is of outside-frame construction with its weight supported from the journal boxes on heavy semi-elliptical equalized springs. The motors are of the box-frame type, spring-suspended from the locomotive frame. The axles are driven through single reduction spur gearing.

The control equipment is of the progressive series-parallel, magnetic contactor type. It consists of three units; namely, master controller, contactor group and protective relays and a resistor. The master controller—small, compact and easily operated—is of the drum type and handles control current only on the main cylinder and full motor current on the reverse cylinder. Six solenoid-operated contactors are used to make or break connections in all power circuits when current is on.

Overload protection is provided by two relays, one placed in each side of the line. These are reset by a switch contained in the master controller, which also contains another switch for controlling the headlight circuits. The resistor is made up of cast grids inclosed in a permissible compartment.

The type of control on this locomotive is particularly advantageous because it operates reliably with a minimum of inspection, an important consideration with totally inclosed equipment.



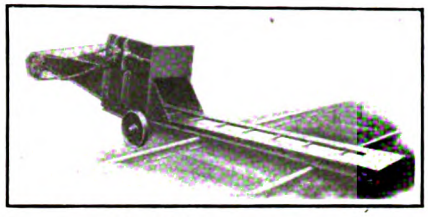
Permissible Storage-Battery Locomotive for Gassy Mines

This locomotive is fitted with outside frames and with equalized, spring-supported journal boxes. It is thus enabled to traverse uneven track with ease. The control is unusual and effective.

Unloads Hopper-Bottom Cars; Feeds Elevating Conveyor

The accompanying illustration shows the new car unloading machine recently developed and placed on the market by the Chicago Automatic Conveyor Co., Old Colony Bldg., Chicago, Ill. This machine is intended for the unloading of sand, gravel, crushed rock, coal or other granular materials from hopper-bottom cars and in such work does away with practically all shoveling. In use it is pushed under the car and across both rails and, with the aid of a second conveyor, if necessary, delivers the material from the opened gates to trucks, bins or to open storage.

Tests of this machine made under exacting conditions show that it will handle the contents of a 50-ton car in less than an hour and there is no reason why it could not be speeded up to handle twice this amount. The receiving end is only 3 in. high above the rails and consequently does not interfere in any way with the drop bottoms. Its sturdy construction will permit it to receive without injury any outrush of material even though the doors are opened wide.



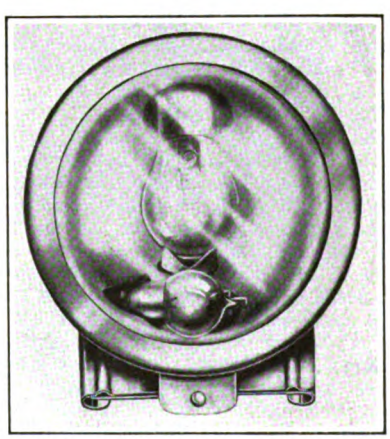
No Pit Necessary

This machine, or rather the receiving end of it, is so low that it can be pushed across the track under a car without in any way interfering with the action of the hopper doors. It delivers to a second conveyor, which can discharge either to a truck or to storage.

No pits and no spotting of cars are necessary. The discharge end is elevated to a height that will allow delivery to a second conveyor without any big lumps rolling backward. The machine is mounted on wheels and may thus be readily transported. The makers assert that it is both economical and flexible in operation and that it will do much to ease the labor and lessen the expense of unloading hopper-bottom railroad cars.

More Light for Dark Mines

It is now possible to obtain the safety inherent in the use of the electric cap lamp with the degree of illumination afforded by the open-flame lamp, for the Super-Wheat electric safety mine lamp made by the Koehler Mfg. Co., of Marlboro, Mass., which gives a beam of 15 candlepower has been approved by the U. S. Bureau of Mines.



Beam Gives 15 Candlepower

Like other lamps made by this manufacture this one is provided with two bulbs. One of these is intended for regular and the other for emergency use.

In size and appearance the bulb of this lamp is practically identical with that of an automobile headlight. It is gas filled, has a tungsten filament and possesses all the other advantages peculiar to this type of electric bulb. The light that the lamp emits is said to be far in excess of that given by former equipment. Lamps have hitherto been considered good if they gave a beam candlepower of 6, but the manufacturer declares that this lamp gives 15, as shown by test.

An emergency bulb is placed within the reflector with the main illuminator. This is of standard size, type and light-

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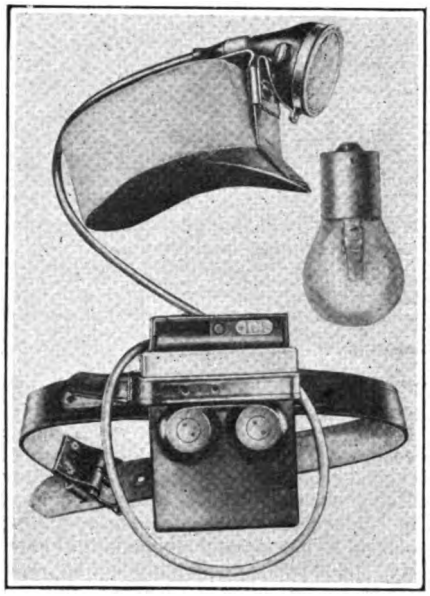


New Lamp Outfit Complete

The battery will supply current to the regular lamp for 13 to 15 hr. or to the emergency bulb for 24 hr. The total weight is normal for an outfit of this kind and repairs have been facilitated by the new design.

giving power. A switch on the headpiece makes it possible for the wearer to use either bulb desired. This is particularly advantageous in case of a bulb burn-out or an accident to the headpiece.

The battery was designed to supply current to the super-bulb for 12 hours. In practice, however, it will furnish current for from 13 to 15 hours. It will energize the emergency bulb, which gives a beam candlepower exceeding 6 for a period of 24 hours either continuously or intermittently.

The increase in illuminating power provided by this lamp has been obtained without any excessive increase in weight. In fact this new lamp is lighter than some now on the market. The average weight of the outfit complete is only 5 lb. 3½ oz. It is well balanced and can be worn for hours with comfort. Like all other lamps of this kind, it can be repaired and made as serviceable as new in the mine lamphouse by the regular mine lampman. Even this individual's work, however, has been lightened, for the filler plug holes are on the outside. All Wheat racks and other charging equipment now in use can be easily adapted to charging the new battery.

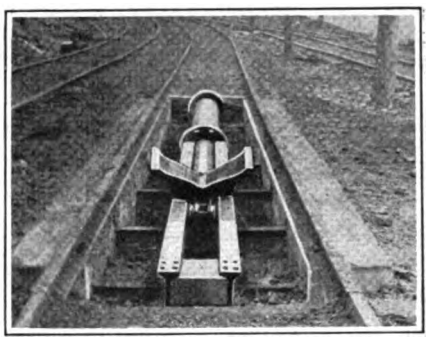
Feeds Heavy Trips with Ease

Cars may be fed to dumps that work intermittently by either electrically driven chains or by plungers or pistons working within cylinders. A new device of the latter type recently was placed on the market by the Car-Dumper & Equipment Co., of Chicago, Ill. This feeder is built and shipped as a unit that can be electrically welded or otherwise permanently fastened into a section of the track. The feeder shown in the accompanying illustration is in daily use at a mine in Pennsylvania, handling trips of as many as 100 cars at a time and feeding them to the dump at the rate of 10 to 11 per minute.

By a special construction of the carriage or cross-head embodying a fork that engages the car axles close beside the bearings, the bending stress imposed on these members is negligible. This permits the handling of heavy trips with the same action as is afforded by a double chain feeder, so far as engagement with the car is concerned.

In this feeder the main pushing cylinder works in one direction. The feeder plunger itself is hollow and acts as the return cylinder. This device operates under power in both directions, yet a minimum quantity of air is consumed in returning the device to the starting position. This represents a decided economy over the older types of air-actuated feeders. Another advantage claimed for this feeder is the fact that no finished parts are exposed at any time during the operation of the cylinder.

Naturally a device of this kind can-



Pneumatic Feeder in Place

In this instance the device is built into the concrete slabs supporting the rails instead of being welded to them. The forked crosshead engages the axles near the journal boxes, thus throwing but slight bending stress upon these car members even though heavy trips are moved.

not compete with an electric feeder which affords continuous movement of the trip. Where intermittent movement only is desired, however, as in feeding cars to a rotary or crossover dump or to hoisting cages, this device answers the purpose excellently.. Several installations have been made during the past year and all are reported as giving entire satisfaction.

Trade Literature

Capacitors. General Electric Co., Schenectady, N. Y. GEA-352. Pp. 10, 8x10½ in.; illustrated. Describes how much power can be obtained over the same line.

Waugh Products for Contracting, Quarrying, Mining and Other Industries. Denver Rock Drill Mfg. Co., Denver, Colo. Bulletin No. 150. Pp. 23; 6x9 in.; illustrated. The Waugh drill, drill steel sharpeners, comparascope, automatic air-line oilers, Leadville column hoists, electric scraping hoist, circulating fan are some of the products described in this bulletin.

The Crouse-Hinds Co., Syracuse, N. Y., has issued Bulletin No. 2083, 11 pp., 3½x6 in., illustrating and describing its **Short Range Imperial Floodlight Projectors.**

Mica Undercutting Machines, Types Nos. 2, 6 and 9. The Hullhorst Micro Tool Co., Toledo, Ohio. Pp. 7; 8½x11 in.; illustrated. Capacity, operation, costs, weight, etc., of these cutters are covered in this bulletin.

The Pittsburgh Vibratory Screen. The Pittsburgh Coal Washer Co., Pittsburgh, Pa. Bulletin 25. Pp. 10; 8½x11 in.; illustrated. Describes how, by vibrating the entire surface of the screen cloth, efficiency in finer separation of materials is obtained.

Keystone Expulsion Type Lightning Arresters. Electric Service Supplies Co., New York City. Bulletin No. 220. Pp. 22; 6x9 in.; illustrations.

Vizabledg Safstep. Irving Iron Works Co., Long Island City, N. Y. Folder illustrating and describing this all-steel, ever-wearing permanently non-slipping safety step.

The Maxim Industrial Silencer. Maxim Silencer Co., Hartford, Conn. Descriptive folder of this device for quieting air, steam and gas noises from exhausts, intakes or discharges.

Graybar Electric Co., New York City, successor to the Supply Dept. of the Western Electric Co., has issued a 1926 **Fan Catalog** covering fans for alternating- and direct-current circuits, including non-oscillating, oscillating, ceiling and ventilating (exhaust) fans. The booklet has 47 pp., 3x6 in.; illustrated.

De Laval Mine Pumps. De Laval Steam Turbine Co., Trenton, N. J. Pp. 20; 8½x11 in.; illustrated. Instructions are given for the design of piping and the calculation of friction head power required.

New Companies

The Wheeler Coal & Coke Co., of 8 East Broad St., Columbus, has been incorporated with a capital of $50,000 to mine coal in the Hocking Valley (Ohio) field and to do a general jobbing business. The incorporators are W. E. Wheeler, C. E. Wheeler, Etta A. Wheeler, Ralph E. Marburger and Edwin B. Pierce.

The Stramer Fuel Co., Charleston, W. Va., having a capitalization of $25,000, was recently chartered. The incorporators are George E. Merryman, H. N. Greenlie and Charles G. Peters, all of Charleston; F. A. Strabley and J. P. Bess, of Seacoal, W. Va. The operations will be at Coal Bloom and Seacoal, in Boone County, W. Va.

The Kanawha Block Coal Co., Wheeling, W. Va., has been organized with 200 shares of no-par value stock, with 20 shares subscribed and $500 paid in. The incorporators are John D. Thomas, Cecil H. Riggs, W. C. Gardner, H. O. Wells and J. Styche, all of Wheeling.

The Harrison Coal Co., Cincinnati, Ohio, has been chartered with an authorized capital of $10,000 to mine and sell coal. Operations will be in the Kentucky field. Incorporators are: Robert E. Harrison, Anna C. Burns, George J. Hagee, Robert K. Main and David V. Attig.

The Coke Oven Co. of Canada, Ltd., of Hamilton, Ont., has been incorporated by Charles H. Leggott, Ernest G. Hathway, and others, with a capital stock of $10,000, to produce coke and gas.

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CINCINNATI COAL MINING CONVENTION AND EXPOSITION NUMBER

MAY 22 1926

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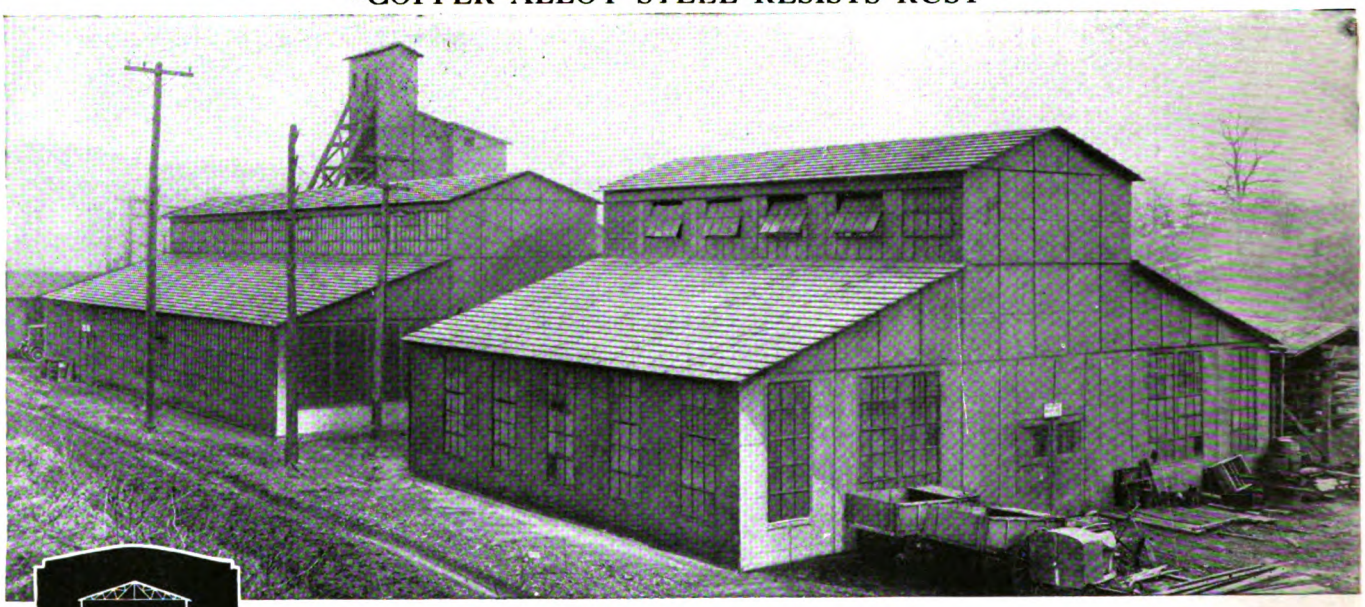

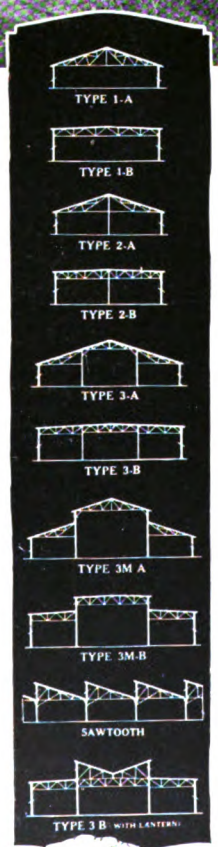

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

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Cincinnati Coal-Operating Officials' Convention and Mine Machinery Exposition 695

Mine in Scotts Run District Removes Pittsburgh Coal by Aid of Conveyors 701
BY ALPHONSE F. BROSKY.

Adapting Loading Machines to Mine Conditions 706
BY EDWARD BOTTOMLEY.

Preparing Coal for Sale in a Finical Market 713
BY FRANK H. KNEELAND.

Quantity of Explosive Employed One Factor Only of Many in Successful Blasting 719
BY C. W. NELSON.

Rock-Dusting Promptly Checks Coal-Dust Explosions 724
BY J. W. PAUL AND C. A. HERBERT.

Coal Industry Greatly Needs to Reorganize and Reconstruct Its Operating Methods 727
BY JOHN A. GARCIA.

Mine Inspectors' Institute of America Plans Safety Regulations 732

Consumers' Stocks of Soft Coal Total 40,000,000 Tons April 1 735

British Industry Nears Normal; Miners Still Out 737

Coal Hearings Ended; Parker Bill Provides for Fact-Finding, Mediation and Emergency Control 739

Economy in Use of Fuel Stressed by Railway Men 736
Railroad Fuel Costs Advance Slightly in March 736
More Railroads Seek Bids 738
Union Row Brings Suspension of District President 738
Denies Exclusive Right to Label Coal 738
Pittsburgh Non-Union Mines Have Another Recruit 738
Coal Absorbs *Coal Trade Journal* 738
Urge Self Government, Higher Efficiency and Less Waste in Business 741
Score Anthracite Preparation at Retailers' Convention 742

News Items from Field and Trade 743
Weekly Review and the Market 745
Foreign Market and Export News 749
New Equipment 750

Hope You Will Be There

At Cincinnati will be found all those who have elected to continue in the business of mining coal and who, therefore, are desirous of learning what must be done in order to bring their mines up to date. One cannot waste the time of men, or the power purchased or generated and still continue in the market. We have seen men so busy that they never had time to look at a watch or clock or to consult a timetable, and so they failed to arrive anywhere, at least in time to perform what they had on hand. Others will not take the time to consult maps, the compass or the policeman, and so they spend their time in traveling in the wrong direction. The man who will not attend conventions has nothing on these unwise persons.

In Regard to This Issue

By the way, the convention issue is, we feel, as notable as the convention itself. Mr. Brosky, by whom it was gathered together, labored to make it representative of all phases of mining. Space prevents giving reference to the good things which the issue contains, but when you have read the articles you will realize the depth and breadth of their interest.

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Advertising Index—Alphabetical, 172; Classified, 164-169-170; Consulting Engineers, 165; Searchlight Section, 166 and 167

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What's New

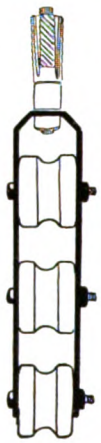


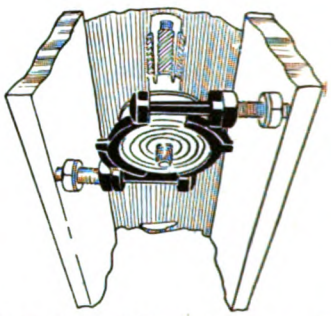
O-B Bulldog Cable Clamp

A cable sling with clamping jaw adapted to the old reliable Bulldog clamping principle. Cable gripped tightly, relieving strain on dead-end.

O-B 3-Spool Feeder Insulator

Provides support for three wires from one expansion bolt. Made also with three spools suspended side by side. Only one roof hole to drill!





O-B Guard Board Support

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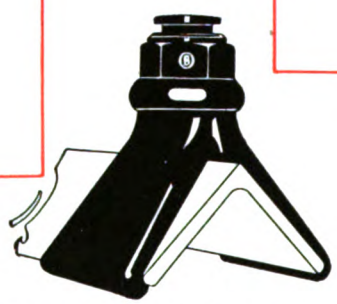
O-B AW-12 Copper Alloy Arc Weld Bond

Welded by copper alloy metallic-arc process. Open terminals catch, retain and support metal deposited by arc. Strands extend into weld, becoming integral part.



O-B Combination Trolley-Feeder Clamps

Combine trolley and feeder wire suspension on one set of insulated hangers. Two styles. "A" supports trolley from feeder as messenger, between hangers. Hangers hold feeder wire or cable in sling. "B" attaches direct to the hanger.



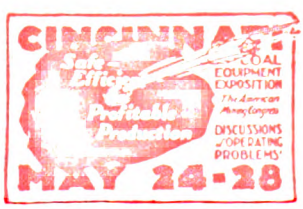
O-B Bulldog Angle Iron Clamp

Suspends inverted 2½ by 2½-inch angle iron used as a trolley. Again the old reliable Bulldog clamping principle.



O-B Cam Grip Splicer

Cam-shaped dogs, with milled teeth, bite into trolley wire. Cam, wedging action increases grip as tension increases. Set screws merely hold dogs in place.



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COAL AGE

McGRAW-HILL PUBLISHING COMPANY. INC.
JAMES H. McGRAW. *President*
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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 29 NEW YORK, MAY 20, 1926 Number 20

Cincinnati's Coal-Operating Officials' Convention And Mine Machinery Exposition

IN earlier days, conventions, when they met, discussed "How things are done" and even sometimes "How they used to be done," but today we are more interested to know "How they can and will be done," for we realize that they cannot continue as they are. The old formularies are giving place to new. Change is in the air. Every industry wears a new garb every time we look at it, and the business of getting out coal would be unlike all others if it did not change with the rest. And that it does change everyone will have to acknowledge if he glances back a few brief years.

No longer does the interest in past ways and means hold us back. No one now values experience solely because it is of long standing. A practice is no longer cherished because it is moldy with age. The coal industry realizes that a revolution in methods is on the way. One function of human hands and muscles after another has been taken over by machinery. Haulage, hoisting, and kerf-cutting are almost everywhere and entirely machine-performed operations. A few mules and horses remain and in some mines coal is still, at least nominally, undercut by hand. These are almost the sole reminders—other than loading and drilling—of a bygone age, and they are exceptions to a rule of progress that is almost universal in America, namely to let electricity do the work, more cheaply, more speedily, more cleanly and with less effort on the part of the workmen.

The change that has come to hoisting, haulage and kerf-cutting must come to loading and drilling along with the rest. Hand operations are not more burdensome than they are costly.

* * *

Time was when it was the raw-material industries that made the big engineering advances. It was mining that fostered pumping and ventilation, that gave us the steam engine, the fan, the locomotive, the cross-tie and the metal rail. That was a day when manufactured articles were of no great intricacy. Today mining finds a host of rivals, if they may be so termed—many of them more enterprising than itself. Why does not mining take counsel with these, choosing out men who have had contact with, and perhaps have originally come from, those industries. More outsiders should be absorbed into the staffs of coal companies to devote their peculiar talents to its specialized needs.

Because of these diversities of men and of experience one is sure to find in a big convention what cannot be found at home—peculiar geniuses who have unusual slants on certain problems, slants derived doubtless from their specialized experience and the exceptional circumstances at the manufacturing plants at which they have worked or at the mines which they have directed.

At the American Mining Congress' Annual convention of coal-operating officials in Cincinnati May 24-28 will be presented the opinions of the men who are foremost in promoting the new principles of mining. In the exposition will be seen the newest devices developed for the use of mining men, results of the expert ability that the manufacturers' staffs exhibit.

* * *

And, be it noted, the manufacturer has not been slow to get his men from all quarters and to get ideas from all sections and all industries. He has summoned specialists from every department of engineering that could be helpful to him in his endeavor. The larger manufacturers are interested in nearly all industries. Their products spread the country over, and they would be slow indeed if they did not seek to include in their personnel those skilled in the various industries in which their product enters as well as those who are experienced in the making of that product.

In these days when the mining manager has to cover so many lines of engineering and cannot do it with any degree of satisfaction except by absorbing the predigested knowledged of other men, a trip to a convention like that to be held at Cincinnati is absolutely necessary to keep him in touch with new developments.

In his isolation in the hills of the East and West and in the boundless prairies that lie between, he is liable to fail to realize the progress in other centers and to believe that what problems he is discussing day by day with his associates and cronies and what solutions he is finding in his intercourse with his fellows are all the problems and all the solutions he needs to recognize. But where he meets the full strong current of life among groups of mining men, he learns that there are other problems and other means of solution than those he has at any time considered.

* * *

Most of us believe we have problems enough without traveling anywhere to find more. Unfortunately Nature has a way of working her will with us without our realizing what problems really confront us. There was a coal-dust problem before we knew that coal dust would explode. There is now a loading-machine problem confronting the man who has no machines, but who has a cost-of-coal problem into which he should look carefully. He can do it only by considering what machines and conveyors can accomplish for him. So easy it is, if we live hidden in the hills or isolated by farms,

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or immured in cities where coal is sold, not mined, to believe that we are doing the best that opportunity affords, making petty decisions when larger ones can alone save the situation, meticulously counting the pennies while letting the double eagles slip by us. Here, in Cincinnati, is a chance to see the industry in a large way and to turn loss into profit.

A word regarding a few of those who will take part in the discussions will be of interest in showing their varied backgrounds and will explain why they have been chosen by the committee to discuss the subject assigned. Some of the outstanding men are omitted as their affiliations and record are well known.

C. W. NELSON, of South Brownsville, Pa., who will discuss cushioned blasting, graduated from Carnegie Institute of Technology in 1923 in mining engineering and was elected to a research fellowship in mining. He spent a year in research on efficiency in blasting coal. At the conclusion of these studies he received the degree of Master of Science in Mining Engineering at Carnegie Institute of Technology and then became explosives engineer for the Hillman Coal & Coke Co.

E. H. JOHNSON, who will discuss machine-loading failures and their reasons, was research fellow of the Carnegie Institute of Technology and joint author with F. E. Cash of the bulletin "Mechanical Loading in Coal Mines." He graduated from the Carnegie Institute of Technology in 1922 and received his master's degree in 1925. He is now engineer and sales manager of the Coloder Co., at Columbus, Ohio.

JOHN T. RYAN, who will speak on "sealing fires in gaseous mines," received the degree of bachelor of science in mining engineering from Pennsylvania State College in 1908. From 1908 to 1910 he did mining engineering work in Huntington, Pa. In the latter year he became superintendent of the Rocky Ridge Coal Mining Co., at Dudley, Pa., and superintendent and engineer of the Langdon Coal Co., at Hopewell, Pa. From 1911 to 1913 Mr. Ryan was successively rescue foreman, junior mining engineer and assistant mining engineer of the U. S. Bureau of Mines at Pittsburgh, Pa. In 1913 he accepted a position as mining engineer in charge of field work for the navy in Alaska. In 1914 he became assistant mining engineer of the Bureau of Mines at Urbana, Ill. In the same year he helped organize the Mine Safety Appliances Co., of Pittsburgh, Pa., of which firm he is now vice-president and general manager.

JAMES O. HANDY, of Pittsburgh, Pa., was the expert retained in 1925 in the water-pollution case of the Mountain Water Supply Co. (Pennsylvania R.R.). He will address the convention on mine-water purification. A graduate of the Massachusetts Institute of Technology, 1886, he aided in the design of the water-softening plant at Winnipeg, Man., Canada. He is director of the chemical and metallurgical investigations of the Pittsburgh Testing Laboratory.

H. L. STEVENSON, who will speak on "Stream Pollution" is a member of the American Society of Civil Engineers and chief engineer of the Pennsylvania Department of Health as well as being chief engineer and secretary of the Sanitary Water Board of Pennsylvania. He was formerly sanitary engineer and assistant director of the Department of Health, Emergency Fleet Corporation, U. S. Shipping Board. He was also at one time assistant engineer in charge, Sewage Disposal Division, City of Philadelphia.

B. L. LUBELSKY, who presents an article in this week's issue and discussion on blasting coal for mechanical loading at the convention, graduated in 1924 at the University of Illinois with the degree of bachelor of science in mining. In 1924 and '25 he was research fellow at Carnegie Institute of Technology and assisted in the preparation of Bulletin 19 on lump-coal production, being given the degree of master of science by Carnegie Institute of Technology. On Jan. 15 of this year he associated himself with the Pittsburgh Coal Co. as explosives engineer supervising safety, economy and efficiency in the use of explosives.

W. J. O'TOOLE, graduated as bachelor of arts at the Catholic University of America, in 1915. From 1915 to 1917 he was secretary and treasurer of three coal companies and from 1919 to 1922 sales manager of the Central Pocahontas Coal Co. From 1922 to 1924, he was American Minister to Paraguay. In the latter year he became general manager of the American Coal Cleaner Corporation.

ROBERT S. WALLACE, who speaks on mechanical loaders, is a native of Scotland, entered the mines as a trapper boy at the age of thirteen years. He came to the United States in 1903 and accepted a position as fireboss with the New River Smokeless Coal Co., where he was made mine foreman and later superintendent. After passing the West Virginia examination for mine inspector, he in 1909 accepted the position of chief mine inspector with the Pocahontas Fuel Co., Inc., with headquarters at Pocahontas. He is still at the same place but now as superintendent.

GLENN B. SOUTHWARD, consulting mining engineer, began his professional experience by inspecting coke in the summer of 1906 for the U. S. Coal and Coke Co., of Gary, W. Va. In 1907 he served as transitman for the Interstate Railroad Co., at Stonega, Va. In 1908 he graduated from the Ohio State University with the degree of engineer of mines. He was employed by the Stonega Coke and Coal Co., Stonega, Va., until 1911 when he went with the Log Mountain Coal Co., at Chenoa, Ky. as mining engineer. In 1912 he returned to the Stonega Coke and Coal Co., as assistant chief engineer with headquarters at Big Stone Gap, Va. From 1917 to 1925 he served as chief engineer with the West Virginia Coal and Coke Co., at Elkins, W. Va. Here he developed the V-system of mining. From 1925 until the present time he has been a consulting mining engineer of Elkins, W. Va.

CHARLES ENZIAN, who will discuss the advantages of rock dusting, has had a varied experience. A graduate of Lehigh University, he was for nine years a mining engineer with the Lehigh Valley Coal Co., with the U. S. Bureau of Mines for six years, and with the Philadelphia & Reading Coal & Iron Co., for five years. He was president and manager of the Liberty Coal Corporation of Kentucky for two years and for the past three and a half years he has been mining engineer for the Berwind-White Coal Mining Co., of Windber, Pa.

JOSIAH KEELY, who will speak on roof control, was born in a cabin near Charleston, W. Va. He was educated for the ministry, graduating from the University of West Virginia in 1896. After teaching for several years he took his master's degree in English at Harvard in 1904. He then engaged in educational work but resigned as principal of the Preparatory Branch of the West Virginia University in 1907 to accept a position in a mine office. After the only fight of his life (wherein he "licked" the local "badman"), he was

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promoted to the superintendency of the mine, having meanwhile taken a mining course in the International Correspondence Schools. He devoted his attention to the underground, and in a few months was promoted to assistant general superintendent of a company operating 44 mines. In 1913 he took charge of the Cabin Creek Consolidated Coal Co., of which he is now the president.

AMOS A. CULP, a consulting engineer for railway and mine trackage of Birmingham, Ala., who was, from 1919 to 1924, chief engineer of the railroad department of the Woodward Iron Co. and made the standards for that firm's underground trackage will deliver an address on the importance of good track. He has been connected with the Louisville & Nashville, the Southern, and the Pennsylvania railroads as well as the city of Philadelphia.

NIXON W. ELMER, a consulting material-handling engineer of Quincy, Mass., will present discussion on inside mine conveyors. He received a degree from Cornell in 1904. With a long experience in design and construction of conveying systems as a background, Mr. Elmer started, as a pioneer in the profession of a consulting material-handling engineer. In this capacity he has served such organizations as the Berwind-White Coal Mining Co. and the United States Smelting & Refining Co. (The United States Fuel Co.).

C. H. NESBIT who will discuss the volume of the air that should be sealed in with a mine fire, was a mining engineer in Indiana for six years and in Alabama for fifteen. For another fifteen years he has been chief mine inspector for the State of Alabama with headquarters at Birmingham.

WILLIAM J. GERMAN, who will discuss "Mechanical Loaders in Pillar Work," has spent several years in a study of the best methods of shooting down coal for loading out by machine. During the late war Mr. German served as a captain of engineers in France.



A. W. Dickinson



F. G. Wilcox



J. T. Ryan



C. W. Nelson



James Needham



E. H. Johnson

Some of Those Who Will Present Discussion

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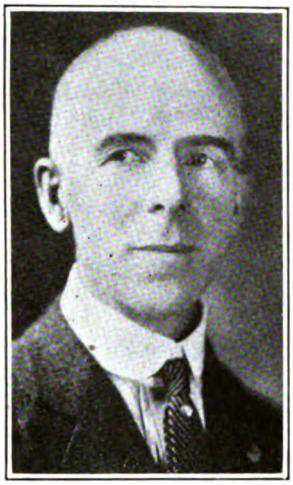
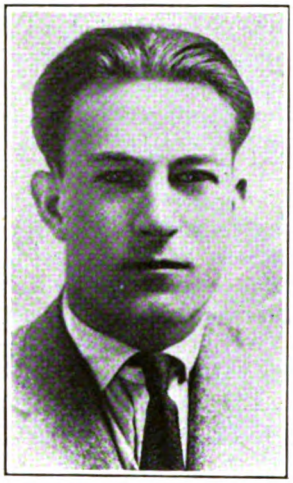


J. O. Handy



B. L. Lubelsky



W. J. O'Toole



R. S. Wallace



I. N. Bayless



Glenn Southward



Charles Enzian



Josiah Keely



A. A. Culp



N. W. Elmer



C. H. Nesbitt



W. J. German

Some of the Expert Engineers Who Will Discuss Certain Phases of Mining

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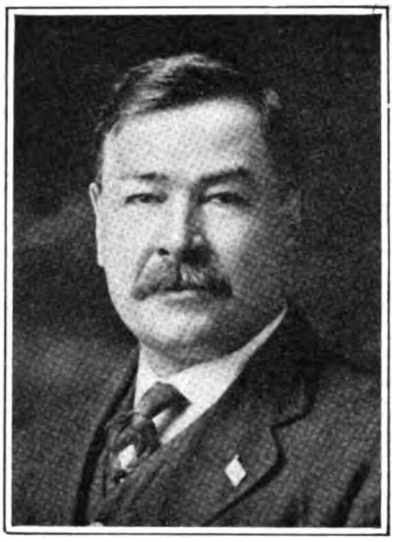
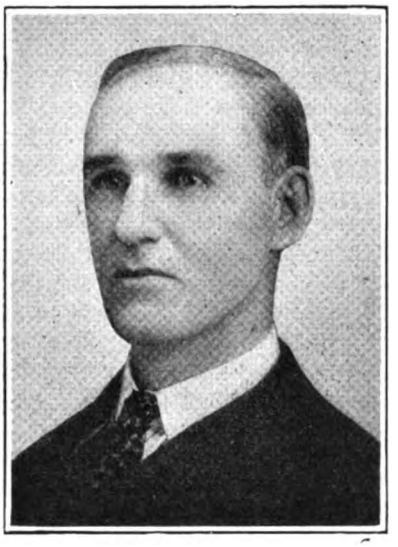
Convention's Distinguished Chairmen



H. N. Eavenson



J. J. Rutledge



Eugene McAuliffe



S. A. Taylor



J. E. Jones



W. L. Affelder



L. E. Young



R. L. Kingsland

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Operating Officials Who Will Address Cincinnati Convention And the Subjects They Will Discuss

TUESDAY, May 25, 10 a.m. to 12 noon
CHAIRMAN—SAMUEL A. TAYLOR

SUBJECT: MINE DRAINAGE

1. **"Relation of Mine Drainage to Stream Pollution."**
   By Andrew Crichton, cons. engr., Johnstown, Pa.
   Discussion—Howard N. Eavenson, Pittsburgh, Pa.
2. **"Mine Water Purification."**
   By Jas. O. Handy, director, Pittsburgh Testing Laboratory, Pittsburgh, Pa.
3. **"Restriction of Stream Pollution."**
   By Wm. L. Stevenson, ch. engr., State Health Dept., Harrisburg, Pa.

TUESDAY AFTERNOON, 1:30 to 3:30
CHAIRMAN—WILLIAM L. AFFELDER

SUBJECT: CUTTING AND BLASTING COAL

1. **"Recent Experience in Shearing and Blasting."**
   By L. E. Young, genl. mgr., Union Collieries Co., St. Louis, Mo.
   Discussion—I. N. Bayless, supt., Union Colliery Co., Dowell, Ill.
2. **"Blasting Coal for Mechanical Loading."**
   By B. L. Lubelsky, explosives engr., Pittsburgh Coal Co., Pittsburgh, Pa.
   Discussion—David Ingle, Oakland City, Ind.
3. **"Results from Cushion Blasting."**
   By C. W. Nelson, explosives engr., Hillman Coal and Coke Co., Pittsburgh, Pa.
   Discussion—John G. Bart, Union Collieries Co., Renton, Pa.
4. **"Cutting in Fire Clay Bottoms."**
   By W. J. Freeman, Fayette Realty & Development Co., Terre Haute, Ind.
   Discussion—John L. Clarkson, Clarkson Coal Mng. Co., Nashville, Ill.

WEDNESDAY, May 26, 10 a.m. to 12 noon
CHAIRMAN—EUGENE MCAULIFFE

SUBJECT: MECHANICAL LOADERS

1 **"Mechanical Loaders That Have Operated Successfully at the Face and Their Operating Costs."**
   By A. W. Dickinson, gen. supt., Union Pacific Coal Co., Rock Springs, Wyo.
   Discussion—Wm. J. O'Toole, Welch, W. Va.
2. **"Machine Loading Failures and Reasons Therefor."**
   By H. F. McCullough, engr., H. C. Frick Coke Co., Scottdale, Pa.
   Discussion—Edwin H. Johnson, Columbus, Ohio.
3. **"Best Methods of Adapting Present Mining Systems to Mechanical Loading."**
   By W. L. McCoy, mine inspector, Bertha Consumers Co., Rachel, W. Va.
   Discussion.
4. **"Getting Cars to and from Mechanical Loaders."**
   By Chas. Gottschalk, cons. engr., Evansville, Ind.
   Discussion—F. F. Jorgensen, cons. engr., Superior Coal Co., Gillespie, Ill.

WEDNESDAY AFTERNOON, 1:30 to 3:30
CHAIRMAN—JAMES ELWOOD JONES

SUBJECT: MECHANICAL LOADERS

1. **"Methods for Mining Thin, Flat Seams with Mechanical Equipment."**
   By J. F. K. Brown, chief engr., Hudson Coal Co., Scranton, Pa.
   Discussion—Fred G. Wilcox, West End Coal Co., Scranton, Pa.
2. **"Mechanical Loaders in Pillar Work."**
   By Robt. Wallace, supt., Pocahontas Fuel Co., Pocahontas, Va.
   Discussion—W. J. German, E. I. DuPont de Nemours & Co., Huntington, W. Va.
3. **"Mechanical Loading in Rooms and Entries."**
   By I. N. Bayless, supt., Union Colliery Co., Dowell, Ill.
   Discussion—Jas. Needham, gen. supt., St. Paul Coal Co., Chicago, Ill.
4. **"Mechanical Loading of Top and Bottom Rock in Entries."**
   By A. C. Hohnke, supt., Russell Coal Mng. Co., Clymer, Pa.
   Discussion—F. M. Fritchman, gen. mgr., B. R. & P. Coal Co., Indiana, Pa.

THURSDAY, May 27, 10 a.m. to 12 noon
CHAIRMAN—HOWARD N. EAVENSON

SUBJECT: UNDERGROUND CONVEYORS

1. **"Inside Mine Conveyors."**
   By Nixon W. Elmer, cons. engr., Quincy, Mass.
   Discussion—Glenn Southward, Coal Service Corp., 2 Rector St., New York City.
2. **"Room and Pillar Mining with Conveyors."**
   By R. A. Suppes, gen. supt., Knickerbocker Smokeless Coal Co., Johnstown, Pa.
   Discussion—S. W. Blakeslee, supt., Penn Coal & Coke Corp., Ehrenfeld, Pa.
3. **"Mining Plans for Different Types of Conveyors."**
   By Heber Denman, pres., Paris Purity Coal Co., Clarksville, Ark.
   Discussion—Clarence R. Claghorn, 715 Continental Bldg., Baltimore, Md.

THURSDAY AFTERNOON, 1:30 to 3:45
CHAIRMAN—J. J. RUTLEDGE

SUBJECT: ACCIDENT PREVENTION

1. **"Proven Advantages of Rock Dusting."**
   By Geo. B. Harrington, pres., C. W. & F. Coal Co., Chicago, Ill.
   Comments—J. E. Jones, safety engr., Old Ben Coal Corp., West Frankfort, Ill.; Chas. Enzian, chief engr., Berwind-White Coal Mng. Co., Windber, Pa.; T. E. Jenkins, v.-p., West Kentucky Coal Co., Sturgis, Ky.; George F. Osler, v.-p., Pittsburgh, Terminal Coal Co., Pittsburgh.
2. **"Sealing Fires in Gaseous Mines."**
   a. "Current Practice," by John T. Ryan, Pittsburgh, Pa.
   b. "Territory Required," by Chas. H. Nesbitt, Chief Inspector of Mines, Birmingham, Ala.
3. **"Fire Protection Underground."**
   By Wm. Z. Price, asst. supt., Buckeye Coal Co., Nemacolin, Pa.

FRIDAY, May 28, 10 a.m. to 12 noon
CHAIRMAN—L. E. YOUNG

SUBJECT: ROOF CONTROL AND MINING METHODS

1. **"Elements of Roof Control."**
   By H. F. McCullough, engr., H. C. Frick Coke Co., Scottdale, Pa.
   Discussion—R. Y. Williams, cons. engr., Bethlehem, Pa.
2. **"Roof Control on Long Faces."**
   By E. F. Woodson, gen. supt., Crowe Coal Co., Henrietta, Okla.
   Discussion—W. D. Brennan, gen. mgr., Phelps-Dodge Corp., Dawson, N. Mex.
3. **"Control of Roof in the Eagle Seam."**
   By Josiah Keely, pres., Cabin Creek Cons. Coal Co., Kayford, W. Va.
   Discussion—A. A. Gallagher, gen. mgr., Milburn By-Products Coal Co., Milburn, W. Va.
4. **"Recent Developments in Roof Control."**
   By Wm. C. Stratton, chief engr., U. S. Coal & Coke Co., Gary, W. Va.
   Discussion—Thos. H. Clagett, Bluefield, W. Va.

FRIDAY AFTERNOON, 1:30 to 3:30
CHAIRMAN—R. L. KINGSLAND

SUBJECT: UNDERGROUND TRANSPORTATION

1 **"Importance of Good Track for Safe, Efficient and Low Cost Haulage."**
   By A. A. Culp, cons. engr., Birmingham, Ala.
   Discussion—T. B. Dryer, asst. genl. supt., Sloss-Sheffield Steel & Iron Co., Birmingham, Ala.
2. **"Track Work, Details and Maintenance."**
   By Fred C. Hohn, cons. engr., 1429 Wyoming Ave., Scranton, Pa.
   Discussion—Thomas DeVenny, Portsmouth By-Product Coke Co., Edgarton, W. Va.
3. **"Selecting a Mine Car Design."**
   By Clarence E. Watts, mech. engr., Berwind-White Coal Mining Co., Windber, Pa.
   Discussion—W. D. Hockensmith, Penn, Pa.
4. **"Dispatching for Long Haulage."**
   By J. B. Hicks, Elec. Engr., Consolidation Coal Co., Fairmont, W. Va.
   Discussion—Thos. G. Fear, genl. mgr., Inland Collieries Co., Indianola, Pa.

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Mine in Scotts Run District Removes Pittsburgh Coal By Aid of Conveyors

Long-Face Operation—Seven Men Daily Take One Cut Which Yields 100 to 120 Tons—No Difficulty Yet Experienced in Controlling the Roof and Holding Typical Drawslate

By Alphonse F. Brosky
Assistant Editor, *Coal Age*,
Pittsburgh, Pa.



LONG FACES AND CONVEYORS have been in the foreground of discussion and experiment in recent months as means for reducing the expenditure of labor in the mining of coal, but doubt has been expressed as to the possibility of extracting the Pittsburgh seam in such a manner and with such assistance. The drawslate is so thick and so heavy and in places the sandstone above is so little disposed to break that experts are puzzled. Between the rock that breaks too easily and that which resists breakage too resolutely, the operator is perplexed. The former rock makes trouble by breaking as soon as the coal is removed even over a small span; the latter rock refuses to break even when the spans are large, and brings terrific pressures on the face, cribs and posts. Can these difficulties be met successfully?

The Connellsville By-Product Coal Co., which operates its No. 1 mine on Scotts Run, about three miles north of Morgantown, W. Va., hopes it has solved the problem but hesitates to declare that it has been successful till it has had more experience. It has extracted the coal over a large area with a substantial decrease in the labor force and it has obtained a large proportion of minable coal in the seam—practically all of it—but there is still the problem of its control of the roof. Is it solved? The company officials admit that they are not sure.

This, however, is certain: Every day seven men take one cut from a long face and thereby produce 100 to 120 tons, one-third of which is shot down onto the face conveyor.

As shown by Fig. 1, the 85-ft. faces are laid out in 300-ft. blocks, which are separated by pairs of 10-ft. rooms on 25-ft. centers. Faces are developed on the inby end of these blocks by a crosscut which is driven from one pair of rooms to the next. The face pillars and intervening room pillars thus developed may be said to be mined advancing; but in respect to the butt entries from which they are developed they may be said to be recovered retreating. The small pillars between pairs of rooms are recovered by pick work and the coal is loaded into mine cars by hand. A cutting machine is used wherever conditions favor.

The Pittsburgh seam, which is that worked in this mine, has in this section an average thickness of about 8 ft., of which only 6 ft. is taken. A bed of impure coal 6 in. thick is left in the bottom and that coal which lies above the 6-ft. breast of clean coal is left in the roof. The roof coal, high in ash and sulphur, is separated from the clean breast coal by a parting of bony shale. Above the seam are the customary drawslate and a cover 300 to 400 ft. thick. This roof coal, assisted by props and cribs, keeps in place the drawslate, which otherwise would require handling and gobbing, thus making it possible to mine the coal with economy on a long face, provided, as said before, the overlying cover can be controlled.

TWO MEN BY NIGHT AND FIVE BY DAY

A night crew of two men and a day crew of five men jointly complete the mining of one cut a day, performing all operations between and including those of cutting and loading. The only additional labor required is that employed at intervals in moving the conveyors from one face block to another. A plan is contemplated which, if adopted, would reduce by more than one-half the labor involved in moving the conveyors. In the proposed layout two rows of blocks would be developed end to end between double-heading butt entries. These rows would be separated by a single-heading butt entry which would serve as a haulage road while the first of the pair of end-to-end blocks would be mined.

When the two night men arrive at the place at the beginning of their shift they find the face cleaned up. Between the face and a row of cribs is a 7-ft. span of unsupported roof. The face conveyor, which is 28 in. wide, lies 1 to 1½ ft. in the clear of the line of cribs and about 3 ft. clear of the face.

The chief duties of the night crew are those of cutting and drilling. Whatever time remains after the face is cut is spent by these men in preparing the cut by loading out bugdust and moving the conveyor to a position abreast of the face. Whenever the face shows

The longface illustrated in the headpiece is snubbed so as to accommodate a conveyor which is placed under the cut. A single row of cribs is erected 7 ft. from the prepared face and 13 ft. from the back of the cut. Four men and a conveyor runner comprise the day shift. The night shift is composed of two men. These seven men produce as much as 120 tons a day from one 85-ft. cut.

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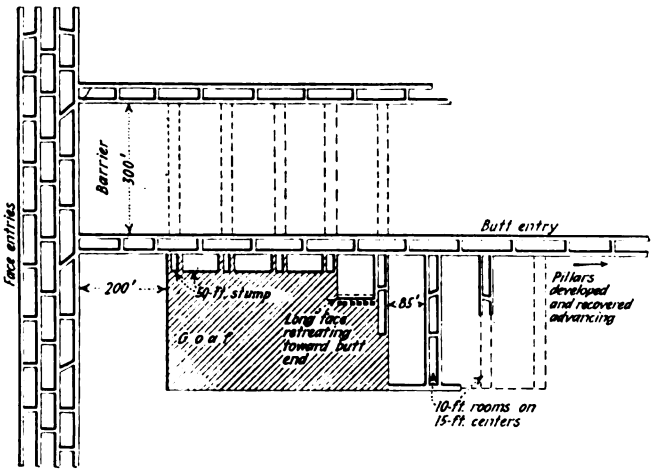

Fig. 1—Long-Face Layout Connellsville By-Product Coal Co.'s Mine

The faces are developed 85 ft. long on blocks which are 300 ft. long. These blocks are separated by pairs of 10-ft. rooms on 25-ft. centers. Panels thus constituted are mined advancing.

signs of taking more than ordinary weight, the shot-holes are drilled before the face is undercut. Generally the drilling is left until the end of the night shift or, if sufficient time is not available, until the beginning of the day shift. More will be said about the drilling later.

The face is undercut to a depth of 6 ft. by a longwall machine. A shortwall cutter of course, would require more clearance between the conveyor and the face than conditions would allow. The cut is started at the goaf end of the face so as to finish at the open end, outby of which point it is stored between cutting cycles. As shown in Fig. 3, a small rib, about 12 in. wide, is left on the goaf end of the face to hold back the loose material in the goaf, which otherwise would roll out beyond this end of the face. The cutting cycle of the 84-ft. kerf on the 85-ft. face requires 4 to 6 hours, of which only about 1 hour is consumed in actual cutting. As the coal is hard, bits must be changed frequently and the machine must as many times be pulled out and sumped in, which accounts for much of the lost time. Some time also is lost in moving the machine to the goaf end of the cut so that cutting may commence. The time required for this operation no doubt will be much reduced after the crew becomes more accustomed to longwall cutting.

BUGDUST LOADED BEFORE SHOOTING

Having completed the cut the men then load the bugdust onto the conveyor, which is kept running during this operation. The cut yields about 9 tons of dust, which is loaded in about 24 minutes. Next the conveyor is moved forward to a position about 1 ft. from the face. This operation requires about 1½ hours

Of the men who comprise the day shift, four work at the face and one works on the entry attending the conveyors and spotting the mine cars. The first job of the face men is that of snubbing the coal and loading what is loosened thereby onto the conveyor. This task is completed in 1 to 1½ hours. The appearance of the coal after snubbing is illustrated in the headpiece, and the face after the coal has been snubbed is shown in Fig. 2.

The snub cut is started from a point on the face 2 to 3 ft. above the floor and is slanted downward to the back of the kerf. It must be of such proportions as to accommodate the face conveyor, which is moved under it to a position shown in Fig. 6. The snubbing of this face is a simple operation, the roof pressure tending to loosen the coal along slips in the lower region of the cut. In fact the bar of the cutting machine sometimes is caught by the settlement of the roof. Snubbing, therefore, consists of little more than shoveling out that coal which lies below the most pronounced slips in the seam and which is released after the bugdust is loaded out.

Should the night men have difficulty in making their cut and therefore not find time to move the conveyor ahead to an advance position near the face, the day men leave the conveyor in the position shown in Fig. 2 while loading out the snub coal and afterward move it in one step from this position to that under the cut as shown in Fig. 6. In Fig. 4 are shown two daymen in the act of moving the conveyor forward and two other daymen drilling the coal.

The conveyor used on the face is the Jeffrey 44-B conveyor loader, and that laid to the entry is a 47-A portable conveyor, also of Jeffrey manufacture. The former is provided with hinged flights which turn up on end in the return run of the conveyor chain. This run is covered by hoods which in section are shaped like an inverted V. The conveyor bar is flexible so that any section may be made to assume a vertical or horizontal inclination with respect to an adjoining section.

UNEVEN FLOOR IS NO OBSTACLE

This flexibility in a vertical plane allows the conveyor to adapt itself to an uneven floor and permits the free use of lifting jacks in raising a portion of the conveyor at a time over any offset in the floor which may have been made by the cutting machine. The flexibility of the conveyor in the horizontal plane, of course, enables one or two men to move segments of the conveyor forward progressively without disconnecting any part. Some of these details also are shown in Fig. 4. The drive head of the conveyor is moved forward by means of the feed chain of the cutting machine, which for this purpose is held rigid by a jack as indicated in Fig. 7.

By means of a rope which is drawn by a ratchet

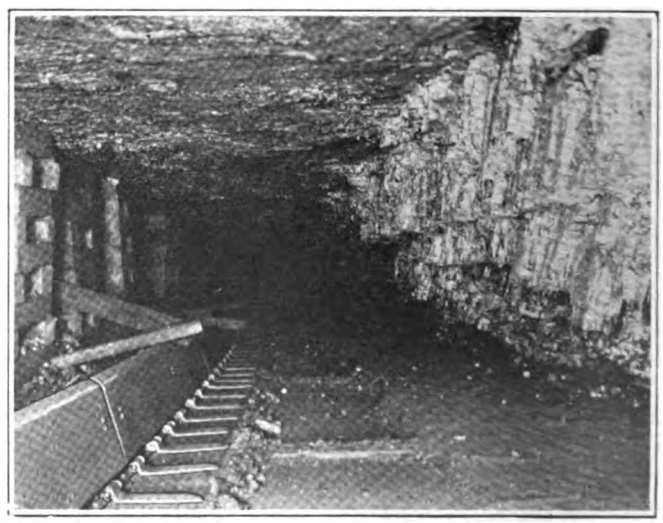

Fig. 2—Long Face After Face Has Been Snubbed

Before this snubbed face is shot, the conveyor is advanced to a position under the cut, after which the line of cribs is re-erected as close to the face as possible. Note the offsets in the floor due to the operation of the cutter.

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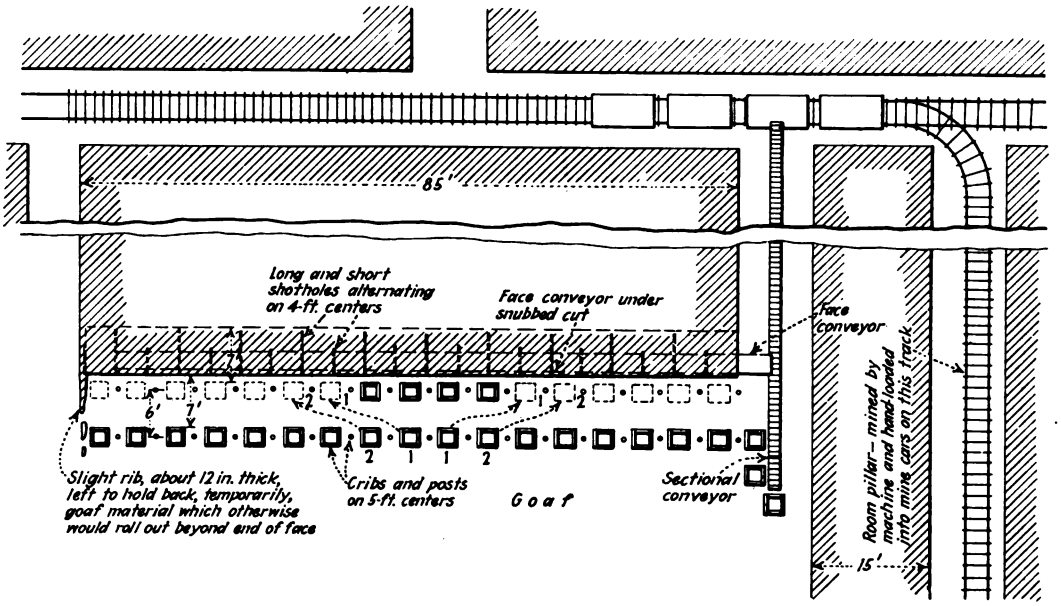

FIG. 3

Face Layout

The moving of cribs starts at the middle of the cut, where four cribs are erected near the face, after which those behind them are removed. This operation is extended to either side of these four cribs until the face limits are reached, only one crib at a time being erected, however.

device the segments of the conveyor are pulled progressively forward on skids. In Fig. 6 can be seen the end of a skid plate inserted under the conveyor and a block which when tightened by a ratchet winds up a wire rope attached to the front end of the skid. As the rope is wound the block and conveyor are drawn toward the front end of the skid, which is held in position by placing a small wedge of wood or a lump of coal under its rear end. Before the conveyor is moved it is lifted by a jack, so that the skids can be extended in front of it.

CONVEYOR IS LAID UNDER THE CUT

The conveyor is placed under the snub cut before the coal is shot chiefly because this arrangement allows the cribs to be moved to an advance position close to the face before the coal is shot. During the earlier work attempts were made to shoot the coal while the conveyor was still clear of the cut. When this was the practice the conveyor was gradually fed into the coal pile. This scheme did not give entire satisfaction at this mine. The steps in the bottom made by the cutting machine made it difficult to move the conveyor and the latter also tended to climb over, instead of working under, the smaller lumps of coal. Though these were all good reasons for moving the conveyor close to the face before shooting so that the coal could be shot down onto it they were none of them so important as the need to obtain space for the erection of cribs, thus shortening the time during which the span of insufficiently supported roof is allowed to stand. With the conveyor moved forward the cribs could be advanced before the coal was shot.

The shoveling of coal onto this conveyor is no great task, for the conveyor flights, and the pan under them, lie practically on the bottom. The face men in shoveling lift the coal but little. The kerf is easily cut; it saves explosive and produces more lumpy coal than could be obtained by solid shooting. At the same time it provides a means by which about one-third of the coal is shot onto and moved by the conveyor. What coal remains after shooting, again about one-third, is cleaned up in about 1 hour, including the time required for picking whatever coal, if any, has not been dislodged by the shots. Altogether, these men spend much less than half their time in actual shoveling and in that time is included the entire operation of snubbing, which, as has been stated, chiefly consists of removing with shovels any coal that the pressure of the roof has brought down.

As indicated in Fig. 3, the roof is supported by 30-in. square cribs set on 5-ft. centers in a single row and so located that they stand before the face is cut about 7 ft. clear of the solid coal. This distance is increased to about 13 ft. after the face is cut to a depth of 6 ft. The span of unsupported roof is maintained at 13 ft. only during the time required to prepare a cut for shooting. After the face is undercut, drilled and snubbed and the conveyor moved to an advance position under the cut, the cribs are moved to within 1 ft. of the face. Between adjacent cribs 6-in. round safety props are placed. These help to hold up the roof coal

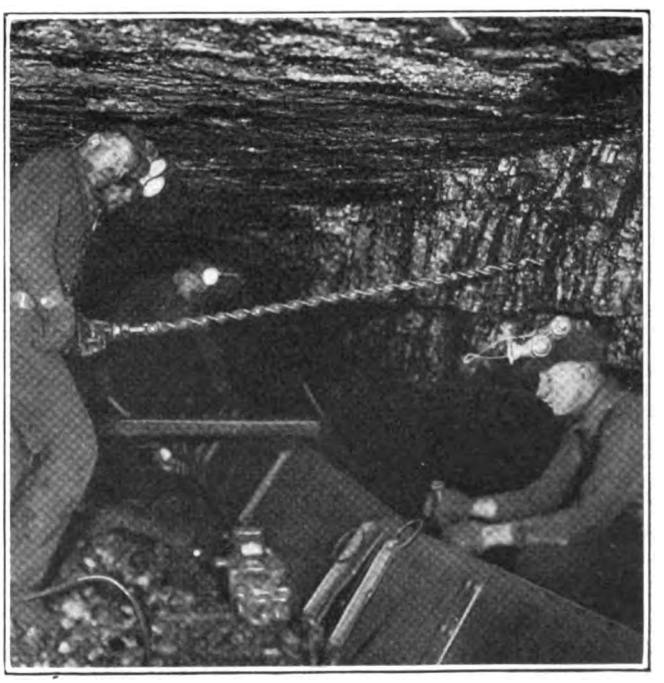

Fig. 4—Moving Conveyor and Drilling Face

Though the night shift of two men usually drill the shotholes, occasionally they are unable to do so, in which case two of the face men drill while the two other face men of the day shift move the conveyor as shown. The coal is drilled by electricity.

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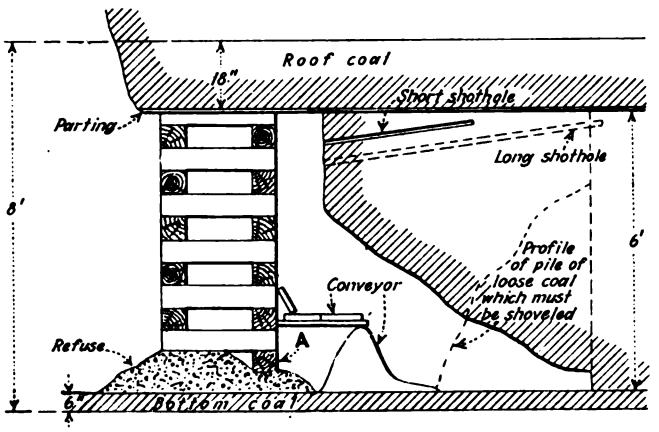

Fig. 5—Cross-Sectional View of Face

The locations of the conveyor, of the line of cribs prior to the shooting and of the shotholes are noted on the drawing. Boards resting on crosspieces between the hood of the conveyor and the cribs prevent coal from falling behind the conveyor when shooting.

and to hold back gob rock which otherwise would creep out between, and in front of, the cribs. They also facilitate the removal of the cribbing.

The crib line is advanced in stages—that is, before each crib is torn down another is erected between it and the face. Before the old line of cribs is dismantled a row of safety props on 5-ft. centers is set at a distance of about 27 in. from the face and between these are built the advance cribs. The re-building of cribs is started from the midpoint of the face and progresses toward the two ends. This job is accomplished by four men who work in pairs, one building and one tearing down cribs. As indicated in Fig. 3, four cribs are erected close to and in the middle of the face before the rear row is touched. Thereafter, crib after crib is torn down and re-erected in the sequence indicated in Fig. 3. By following this schedule the work is accomplished more speedily than it could be otherwise. The cribs are pulled down and re-erected in about 1½ hour.

They are built of 6x6x30-in. oak blocks on a bed of waste material and in the manner illustrated in Fig. 5. One man will build such a crib in about 9 minutes. By loosening with a shovel the refuse bed under the crib the trigger block *A* can be pulled out, after which the crib falls forward. The majority of the crib blocks are recovered, but when the safety props on either side do not support the roof sufficiently a few are lost. Occasionally the men find it expedient to set an extra post or two where the roof shows weakness, so as to enable them the more readily to recover the cribs. The safety props, of course, are not recovered. They crack and fall soon after the cribs on either side of them are removed, as shown in Fig. 9.

This company has found by actual experience that one row of cribs along the face is better than two. When two rows were used, more material and labor were involved and and the roof manifested a greater tendency to bend over the face and to bring an undue pressure on the coal. A single row of cribs, together with the top coal which is left, adequately holds the roof measures, and little or no gobbing of waste material is required. With each advance of one cut the laminated slates and coals in the roof are sheared over the rear ends of the cribs.

As already mentioned, the time chosen for putting in the drillholes depends entirely upon the condition of the face. When the face coal is more or less crushed the night men drill the coal before they cut it. When the face coal shows no signs of crushing, the night men cut the coal first. If, after the cut is cleaned out time yet remains, they also move the conveyor to within about 1 ft. of the face and lastly put in the drillholes. Otherwise they leave one or both these two duties to the day shift. It must be understood that the all-important job of the men on the night shift is that of cutting. Only occasionally do they meet with such difficulties as to preclude them from moving the conveyor or drilling the face.

In any event, whether the drilling is performed at

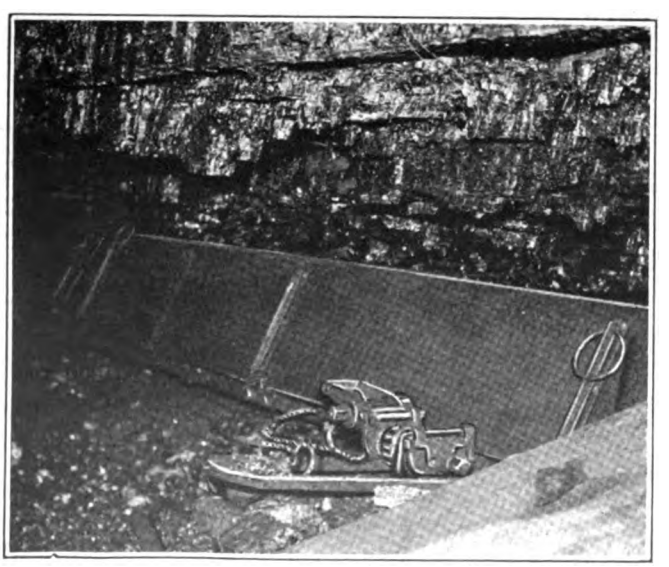

Fig. 6—Conveyor Under Cut Receives Falling Coal

The conveyor has hinged flights which turn up on end under the hood in the return run of the conveyor chain. The conveyor bar is flexible and is moved over skids through the agency of a wire rope wound on a ratchet device.

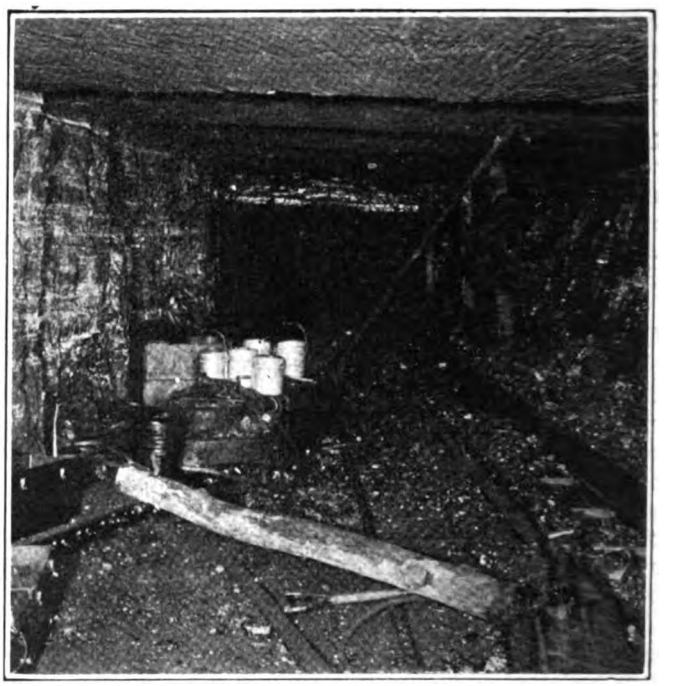

Fig. 7—Sectional Conveyor Into Which Coal Is Discharged by Face Conveyor

This sectional conveyor carries coal from the face to a trip of mine cars on the entry. When not in use the longwall cutter is stored clear of the face in the position shown on the left of the illustration. A pipe jack has been erected to hold the machine in place while its feed chain is being utilized to pull the drive section of the face conveyor toward the face.

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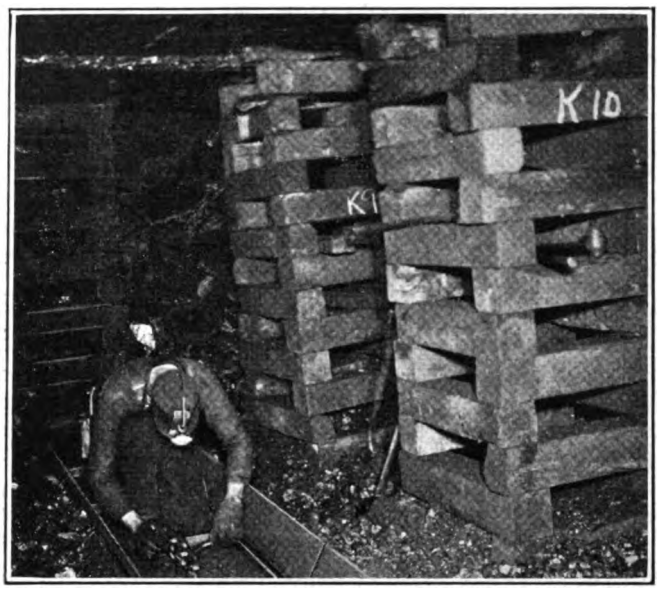

Fig. 8—Shortening Sectional Conveyor

This man is engaged in shortening the sectional conveyor which carries coal from the face to mine cars on the entry. This is done as often as two cuts are completed. The end of this conveyor meanwhile extends as much as 12 ft. into the goaf and is protected by cribs as shown.

the beginning or at the end of the night shift or at the beginning of the day shift, the holes are spaced at intervals of 4 ft., alternately 2½ and 6 ft. long, being put in electrically by two drills of the aforesaid lengths. The short holes are started about 8 in. and the long holes about 14 in. from the roof, both being slanted upward so as barely to reach the roof coal, which, as has been stated, is not removed. Although the long holes are each drilled in about 1 minute and the short holes in about 30 seconds, the drilling cycle sometimes requires about 2 hours, most of which time is consumed in sharpening the drills.

SHORT HOLES SHOT WITH ONE STICK

The short holes are charged with one stick of permissible powder and the long with two. This is done by the conveyor attendant while the face men are moving the conveyor. The shots are fired by a battery, one at a time, beginning from the open end of the face. Of the coal brought down by each shot, that which falls onto the conveyor is transported away from the face before the following shot is fired. As illustrated in Fig. 5, boards are placed under each shot, supported by crosspieces between the cribs and the top of the conveyor hood, so as to catch any coal which otherwise would fall over the conveyor. What coal lodges on this cover is easily shoveled onto the conveyor before the boards are advanced to a position under the next shot. The coal that remains is pulled forward by picks onto the conveyor. There is still a little coal that has to be shoveled. As this coal is easily loaded by hand and requires practically no lifting, no attempt is made to feed the conveyor forward under it. Were this done, the conveyor would have to be moved back again inasmuch as a clearance of at least 30 in. between the conveyor and the face is required for the longwall cutter.

The management of the mine feels satisfied that it has succeeded in producing a major fall extending for a considerable distance above the seam. Other falls of large proportions have occurred at intervals. Whether these falls have penetrated a bed of limestone 30 to 40 ft. thick which lies about 150 ft. above the Pittsburgh seam, being worked, and between it and the Sewickley seam above it, is not definitely known, but it seems likely that this stratum has been broken.

Though the company has not yet demonstrated the merits of this system to its entire satisfaction, because it questions whether the roof has been properly controlled, yet the degree of success thus far attained demonstrates that the system is based on principles which give promise. Already four 85-ft. faces on as many pillars of that width have been drawn for a distance of 250 ft. without loss of equipment of a minable coal. At times the faces have shown signs of heavy pressure, but never such as would compel the abandonment of a place. In most cases the face has been under more or less weight, but in this system this is considered a help rather than a deterrent to mining, as the coal thereby is recovered with greater facility and with less labor and explosive.

The success thus far attained is due to the efforts made to keep the length of the unsupported span of roof in front of the face at a minimum. The aid which the roof coal lends the cribs in holding the roof immediately over the seam no doubt is of considerable importance. The removal or breaking of practically

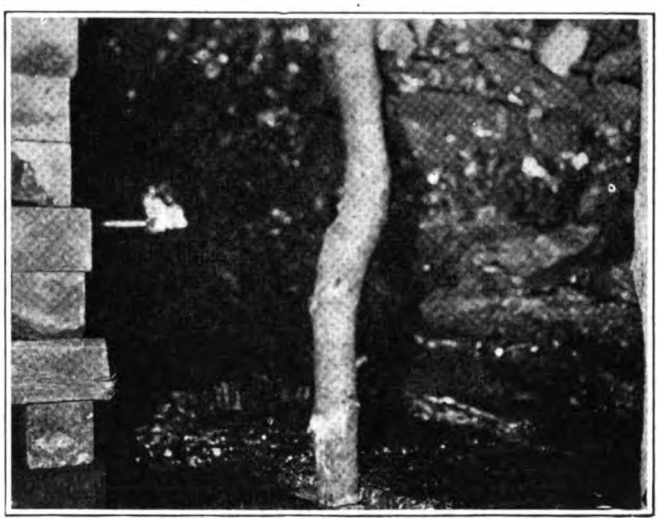

Fig. 9—Safety Prop After Removal of Cribs

These props, which are of about 6-in. diameter, are erected between adjacent cribs. They hold the roof long enough for the men to remove the cribs, but collapse soon afterward. The one in the center, being behind the crib line, is about ready to collapse.

all supports in the goaf, whether of coal or of timber, assists the operation by allowing roof breaks to occur frequently. There is reason to expect that a layout of this kind, in which a new break must be established in every panel, will work at least as well as the present typical room-and-pillar layout and at the same time bring about such economies as will reduce the cost of mining. By increasing the retreating distance of the long faces in a panel or by working simultaneously two or more adjoining panels, a longface layout similar to that described should hold greater possibilities than layouts of rooms and pillars, at least in the thinner seams.

I wish to acknowledge the assistance rendered me by Stephen Arkwright, general manager, and Wallace Dartnell, mining engineer, of the Connellsville By-Product Coal Co. in the preparation of this article.

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Adapting Loading Machines To Mine Conditions

Cars of Three-Ton Capacity or Over Should Be Supplied—More Cars Are Needed Because Locomotives and Loaders Do Not Co-ordinate

By Edward Bottomley

General Superintendent, Sheridan-Wyoming Coal Co., Sheridan, Wyo.

OF THE MANY TYPES of loaders now on the market several are proving successful in mining districts suited to their operation. Some of these five or six years ago seemed to be miserable failures from every standpoint, mechanically and otherwise. If it had been my misfortune to have used, or tried to use, one of these at that time, I should do it a great injustice if I were to discuss its shortcomings in that experimental stage. It would be just as unfair as to condemn the present-day automobile because we had experienced trouble in the operation of the same make of machine ten or twelve years ago.

Some loading machines will do good work in almost any seam of coal that is reasonably level, if the bed is 6 ft. or more thick, with a good roof and hard floor, or if the seam is pitching not over 5 or 6 per cent. But almost all the loading machines that have been built are only able to give good results where conditions are favorable. Because of the great variations in mining conditions, many different types of mechanical loaders will be needed. A machine that will do its work well in a bed 8 to 12 ft. will be of no use in one 5 or 6 ft. thick. A machine that will work in a level bed, or one having a pitch not exceeding 5 or 6 per cent, will be useless if the bed pitches 15 to 18 deg.

Most of the machines thus far built are too heavy, too bulky, too expensive, and they require too much room. Unless there is an unusually hard floor, these heavy machines will bury themselves in the clay unless sufficient bottom coal is left to provide a solid floor. This cannot always be done.

WILL NOT RUN WITHOUT FORETHOUGHT

Many operators think that all that is necessary is to buy loading machines, to pay for them and send them into the mine. Nothing could be further from the fact. Much preparatory work is required. If the mine cars do not hold 3 tons of coal or more, without chunking, the cars must be enlarged, if possible, to hold this weight when loaded with the machine, for the cars are merely rounded up and will hold no more than could be thrown on with a shovel without chunking. If the cars cannot have their capacity increased, then it is best to buy entire new bodies.

In panel entries, where one or two machines are operated, a parting that will hold not less than twenty-five cars should be made. This, of course, depends on many local factors, such as the size of the pit cars, the length of the panels and the number of rooms that are worked on a panel, etc. It is not advisable and hardly possible to work more than two machines in one panel entry, regardless of its length. It is well to concentrate machine work to a certain extent, but there is a limit to this and one can go too far with concentration.

Brief abstract of paper read before the Rocky Mountain Coal Mining Institute, at Denver, Colo.

When machines are loading coal they load fast, and if there are too many in one district, the coal cannot be taken away from them.

After the type of loading machine best suited for a mine has been decided, it must not be forgotten for a moment, that, no matter how much expenditure is put into a loader, no machine is a substitute for intelligence any more than intelligence is a substitute for a machine. A higher degree of intelligence is required to make a success of a mechanically operated mine, than of one which is operated by hand. Skilled men are not only required to operate the machine itself, but each man of the crew must be skilled in his particular part of the work and be ever ready and on the alert to do his part at the right time.

Shooting the coal for mechanical loading calls for the best skill available. Coal, like that in northern Wyoming, is difficult to shoot, if a fair percentage of lump is to be obtained and if at the same time the coal is to be brought down in good condition for machine loading. We found it necessary to drill twice as many holes in a room as were needed for hand loading.

MORE HOLES AND SLOWER POWDER

After some experimenting, we also found we could get better results by using a slower grade of powder and by drilling eight holes in a room, not using any more powder than when four holes were used to shoot a room for hand loading. With such shooting methods the coal as shot down is of more uniform size. The lumps are not too large for machines to handle and the coal is not badly shattered in the immediate vicinity of the shots as when fewer holes and larger quantities of powder are used in each hole. To expedite this work, all hand drills have been replaced with the electric drills, each crew having one.

As the work in a mechanically operated mine is naturally more concentrated than in a mine with hand loading, the haulage system sometimes, especially in a large and well extended mine, has to be entirely revised. More standing cars on the partings are required than for hand work, because when the machine is loading, it loads fast, and more cars must be provided to keep it supplied until the place in which the machine is working is cleaned up. With a good supply of standing cars on the partings, a machine is insured of steady loading when the loading is good, and the haulage locomotive is also insured of having trips at scheduled intervals.

PARTING CORRECTS LACK OF CO-ORDINATION

To illustrate this more clearly, if two loading machines are working in one entry, which is usually the custom at the Sheridan-Wyoming mines, the haulage locomotive that serves this section, will haul a trip of, say, twenty-five cars. It visits this parting every hour. Thus it will haul 200 cars daily, which is a maximum day's loading for both machines. When the machines are working under good conditions, they will each load at the rate of 20 cars an hour, and sometimes more. It is easy to see that without extra cars on the parting, when a machine was loading to full capacity, it would be compelled frequently to wait for cars. On the other hand, when the machines stop loading to move from room to room or are delayed from other causes, which occur frequently, the haulage locomotive will not have its 25-car trip when it makes its regular call.

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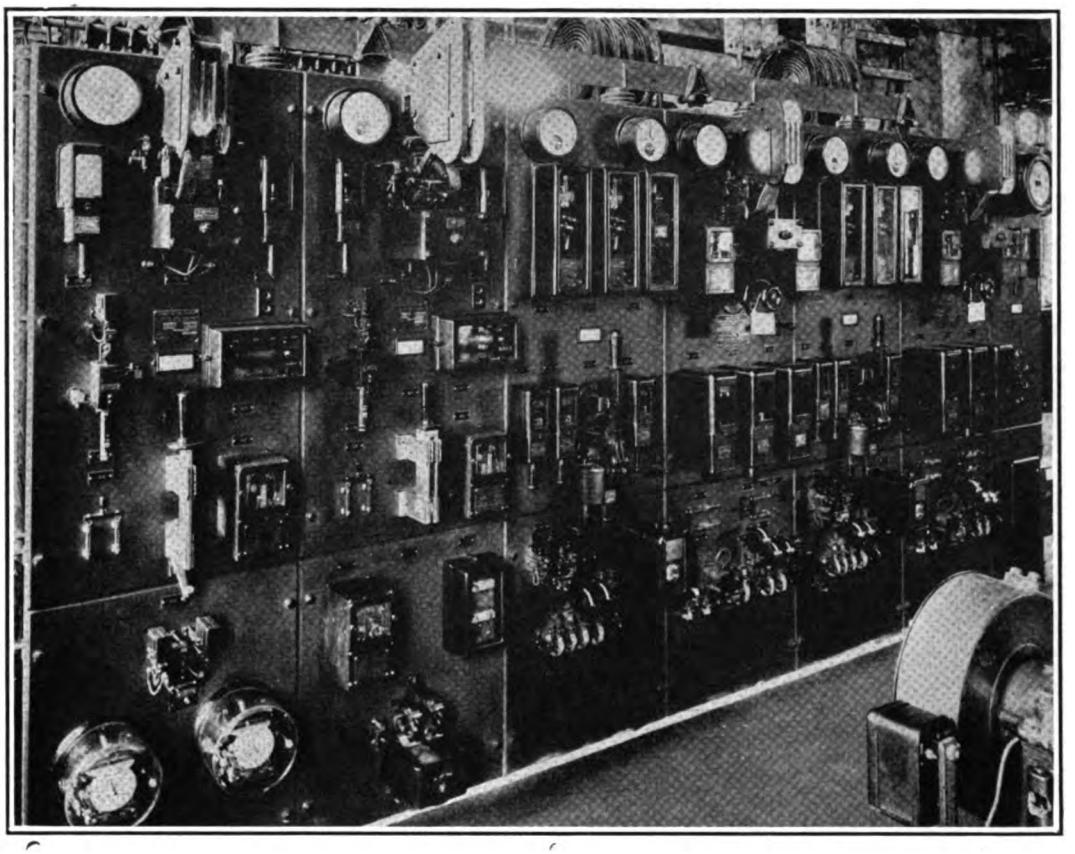

Pennsylvania Co. Puts Ten Substations And Five Fans Under Automatic Control, Making Striking Advances in Practice

Special Protective Features Added to Standard Equipment— Single-Phase Operation Slows Fan Instead of Stopping It— Large Savings and Protection Are Afforded by Automatic Control

By F. Fraser Williams
Power Department, Pennsylvania Coal & Coke Corporation, Cresson, Pa.

TO STREET-RAILWAY COMPANIES we owe the introduction of automatic substations. As soon, however, as this class of equipment had proved reliable, coal-mining companies became interested. Most of the mine installations have been made only when new substation units were needed to provide for the advance of the mine workings. There have been, however, a number of scattered instances in which existing hand-controlled units have been converted to full-automatic, but comparatively few cases of companies changing practically all their substations at one time.

The Pennsylvania Coal & Coke Corporation recently replaced the ordinary control with the full-automatic type in seven of their substations. These convert the 2,300-volt alternating-current purchased power into the 275-volt direct current used in the mines. This installation presents several new and interesting features.

Probably no one mining company has as much fully automatic controlled equipment as will be found at these mines. The switchboards are of two different makes, and each type has been supplemented by special equipment to provide more complete protection or to decrease the operating cost.

SUBSTATIONS IN MOSS CREEK DIVISION

In the three substations of the Moss Creek division the type of control installed is as shown in the headpiece of this article which illustrates the automatic control and metering equipment of a station which is set in operation by a push button and which contains two 150-kw. motor-generator sets. The panel at the

Headpiece shows the new control board in the Moss Creek substation. This handles two 150-kw. synchronous motor-generator sets and the metering and distribution to a neighboring substation. The two relays which balance the load between machines and which are standard with this make of equipment are to be seen in the lower section of the second panel from the left. Although the motor-generator sets in this substation had to be moved 50 ft., the change was made in 36 hours.

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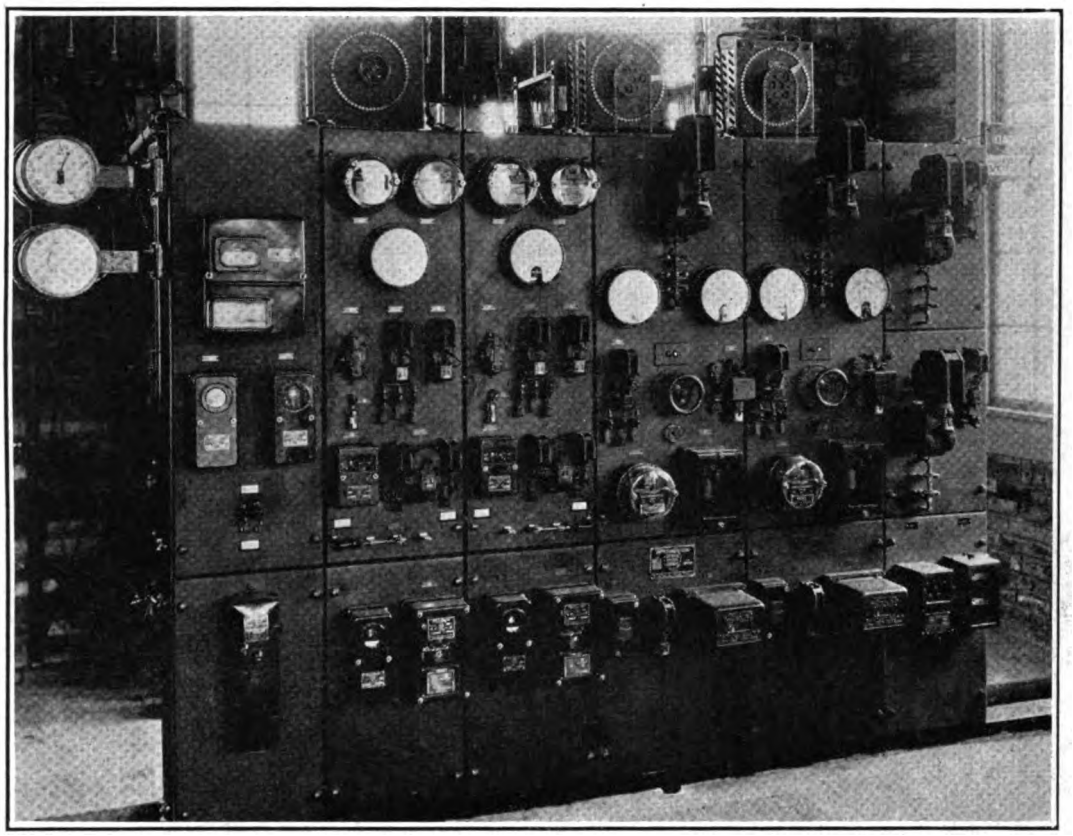

FIG. 1

Two-Unit Board, Arcadia Substation

One reason for the trim and neat appearance of this board is that the starting panels with their heavy contactors were placed in this instance to the rear of the main board (see Fig. 4). The local balance relays, which are not standard for this make of automatic two-unit control, are on the lowest section of the panel on the extreme right. A general view of this substation with its motor-generator sets is shown in Fig. 5.

extreme right controls, through a motor-driven oil switch, the 2,300-volt line feeding one of the other substations.

The substation so fed has its control set for continuous operation, so that it starts up whenever this oil switch is closed. The watthour and demand meters on this panel register the total power used by the installation. The two direct-current meters on the lower part of the panel at the left end of the board register the distribution of power by the two feeders which carry the current furnished by the two 150-kw. sets. Other meters handle the house service and other outside power distribution. Thus an accurate account is kept of the purposes to which the power is applied.

Though the standard protective devices are unusually complete in this control, it was still possible that the machines might overheat if operated single-phase. The thermal relays and the open-phase relay, it is true, tend to prevent this. The open-phase relay is of the voltage type, which, though it prevents any attempt to start in single-phase, will not operate if a phase should open while the machine is running, for the reason that generator action will produce a nearly constant three-phase voltage at the board.

LINE CURRENT 1¾ TIMES THAT IN COILS

Through current transformers the thermal relays are connected in the line and therefore these relays must be set to operate on the line current which is 1.732 times the current in the motor coils. Thus, if one phase should be opened while the load was of such value and constant enough that the line current of the motor did not exceed the value for which the overload relays were set but did exceed 58 per cent of this, the motor could dangerously overheat without any protective device coming into action.

The obvious remedy for this would have been to install a current phase-balance relay but, after due consideration, it was decided to use type C.T. temperature relays with this make of control. These relays which provide protection against overheating from any cause whatsoever, will be described as a part of the fan-motor control. They may be used, however, to protect any electrical apparatus on which a search coil can be placed.

The two feeder panels used in this installation are to be seen at the left of the headpiece of this article. They are of a standard type, designed so as to prevent the breaker closing on excessive overload. They are planned for either stub-end or multiple-feed service and are arranged so that an overload on the machine will drop out one feeder rather than open the machine breaker itself.

As this is an important substation, the work of changing over was speeded up so that it was accomplished in 36 hours. This also included moving the two motor-generator sets a distance of 50 ft. to their new positions.

In all of these installations everything possible is done before starting to make the change so that the power supply to the mine will be interrupted as little as possible. To begin with, the switchboards are, of course, set up and connected together in a suitable place. Bearing thermostats are installed on idle days or Sundays, and in one case the motor and generator field rheostats were moved to their new locations before the actual change was made. All this saves much time in changing over and in two unit stations, can be done, without any interruption, as one machine can usually be shut down in idle hours.

TAP TRANSFORMERS AHEAD OF SWITCHES

In all our installations the operating-control transformers are tapped ahead of the disconnecting switches of the machine. This permits making a thorough se-

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quence test of the apparatus without the annoyance and danger which might be caused either by starting the machine with each test or by opening the machine leads to prevent starting.

The type of operating equipment used for motor-generator set control at the Arcadia and Ehrenfeld mines is that shown in Figs. 1 and 2, and in the four panels at the left in Fig. 3. At Arcadia the starting panels with their oil switches were installed at the rear of the main board. These are shown in Fig. 4. This arrangement allows the other panels to be aligned in a neater and more satisfactory manner, as indicated by Fig. 1. A general view of the substation is given in Fig. 5. At Ehrenfeld sufficient space was lacking to place the panels in this manner, so the starting panel was placed in line with the others. Disconnecting switches are provided for each machine. In addition to the standard instrument equipment, an alternating-current voltmeter and field ammeters are installed at each place.

Full Protection Against Single Phase

This make of control, for single unit substations, gives full protection against single-phase operation. It includes both a voltage relay, which prevents any attempt to start with single or reverse phase, and also a current phase-balance relay which shuts down the station if a phase opens during operation and which locks out if the open circuit should occur between the machine and the line or in the machine itself. The only special features are overspeed protection and an arrangement whereby the motor field is connected to a discharge resistance while starting. This portion of the equipment is not standard with the maker for this class of control.

In Fig. 3 a combined recording-demand and watt-hour meter is to be seen on the third panel from the left and below it are the time controls, one of which starts and stops the motor-generator and the other controls the fan speed. The clock is arranged so as to shut the set down on Saturday evening as is usual at the end of each day but to delay the starting of it until Monday morning. Also. the clock setting can be changed to leave the station idle on any other day if desired. In the two-unit substations the time control is connected in series with the emergency starting relay, thus allowing the second machine to be set for action at a given time.

This make of equipment, as stated before, is entirely satisfactory in our single-unit sets but did not provide in the most economical manner for paralleling two machines. The general operating scheme in two-unit stations is for one machine to run during the idle hours and the other to come on when the load demands it. However, after starting, the shunt field will take some time to rise to its operating temperature, and the two machines will not divide the load correctly until this temperaure is reached.

To obviate this difficulty, the manufacturer of this equipment allows current to flow through the shunt field of the idle machine when only one unit is running. It is, of course, obvious that this consumes energy and therefore some loss. To prevent this the same type of paralleling equipment was installed here as at Moss Creek. The two relays which do the work can be seen mounted at the top of the lower panel next to the glass-covered meters, shown in the headpiece, and on the lower sections of the right-hand panels shown in Figs. 1 and 2. These relays are so arranged that if one machine takes more than its share of the load a portion of the shunt-field rheostat of the other machine is short-circuited causing it to pick up load until an equal division is attained.

Fans Are Automatically Controlled

In addition to the motor-generator sets there are, at five of the substations, mine ventilating fans which had to be automatically controlled if these substations were

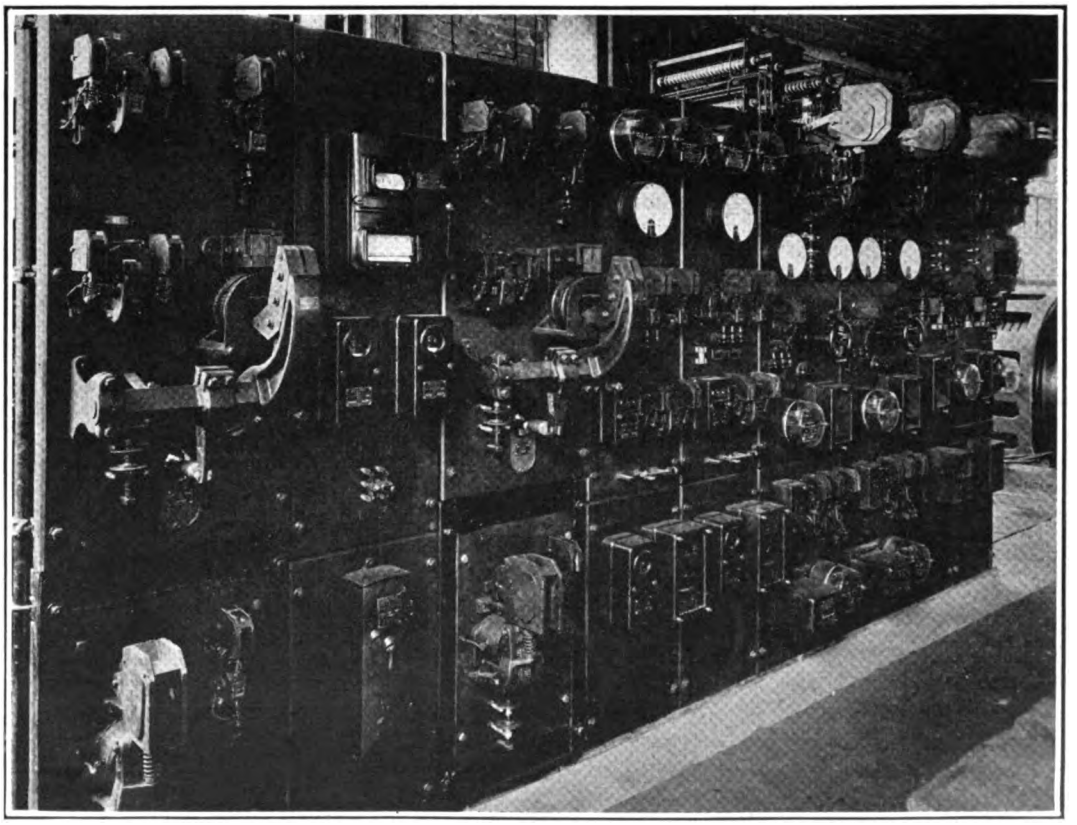

FIG. 2

Two-Unit Board, Ehrenfeld No. 4 Substation

Here, due to lack of floor space the starting panels had to be placed in line with the main board. The time control which regulates the starting and stopping of the substation units is mounted at the bottom on the second panel from the left. In addition to the standard instrument equipment, the boards are fitted with ammeters in the synchronous field circuits. As in the illustration of the Arcadia substation, the local balance relays are on the lowest section of the panel on the extreme right.

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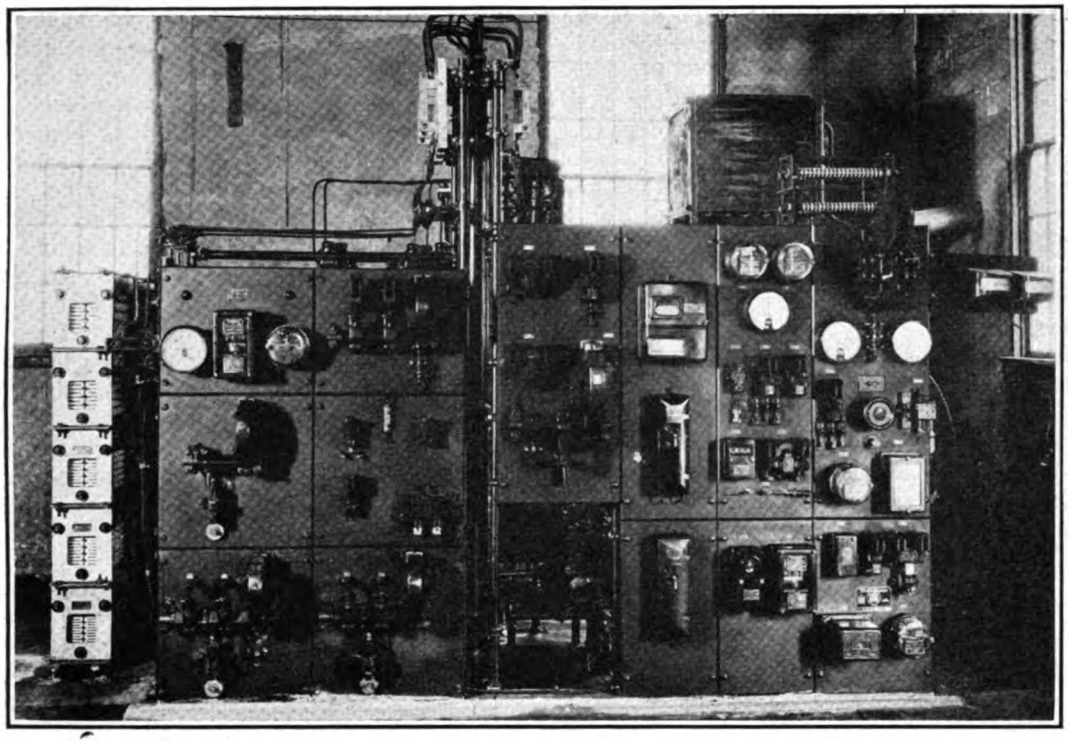

FIG. 3

Control for Fan and Motor-Generator, Ehrenfeld No. 1 Substation

The resistance and the two panels at the left belong to the fan, and the rest of the board to the substation unit. The fan motor is a 100-hp. unit and the motor-generator has a capacity of 300 kw. A contactor provides for the slowing of the fan to a point 42 per cent below the capacity of the motor regularly by a time control during idle periods and occasionally in emergencies by a relay in case the line "goes single-phase."

to operate without attendants. A typical automatic control board for these fans is shown at the left in Fig. 3. The resistance and the two 3-section panels belong to this equipment.

This controller differs in several ways from any that previously have been installed on mine fans in this country. It insures complete protection while providing the extreme in continuity of service. The motor starts by push-button or time control, resistance being cut out in the usual manner until the rotor is short-circuited and the motor attains full speed. During idle hours the time control causes resistance to be cut into the rotor circuit making the motor run at reduced speed. As the fan load varies approximately as the cube of the speed the power saving is large. The usual bearing, low-voltage, and overload protection is provided, and in addition the phase-balance relay, shown in the center of Fig. 6, is also connected in the motor circuit.

This latter, however, does not shut down the motor if a phase should open during operation. Instead it causes a resistance to be inserted in the rotor circuit sufficient to cause the speed to decrease to 70 per cent of normal. This drop in speed will reduce the load to a value less than the 58 per cent which a three-phase motor should safely carry when operating single-phase. The motor is allowed to continue at this speed unless it becomes overheated, in which case the type C. T. relay shown at the right in Fig. 6 stops the motor and locks it off the circuit.

Relay Based on Wheatstone Bridge

This type of relay, which is an interesting application of the principle of the Wheatstone bridge, was developed by the Westinghouse Electric & Manufacturing Co. as an indicating instrument but the electrical engineer of the Pennsylvania Coal & Coke Corporation, J. F. MacWilliams, was able to induce that company to develop it as a protective relay, the work being done with the assistance of W. J. Brennen of the Westinghouse company. Two search coils composed of wire having a high-temperature coefficient of resistance are wound around the motor stator and leads brought out as shown in Fig. 7. These coils are connected with two fixed resistances mounted in the relay case, in the same manner as the resistances of a Wheatstone bridge.

The actuating current is furnished by two current transformers connected in the motor lines, the secondaries of which are paralleled so that current will flow

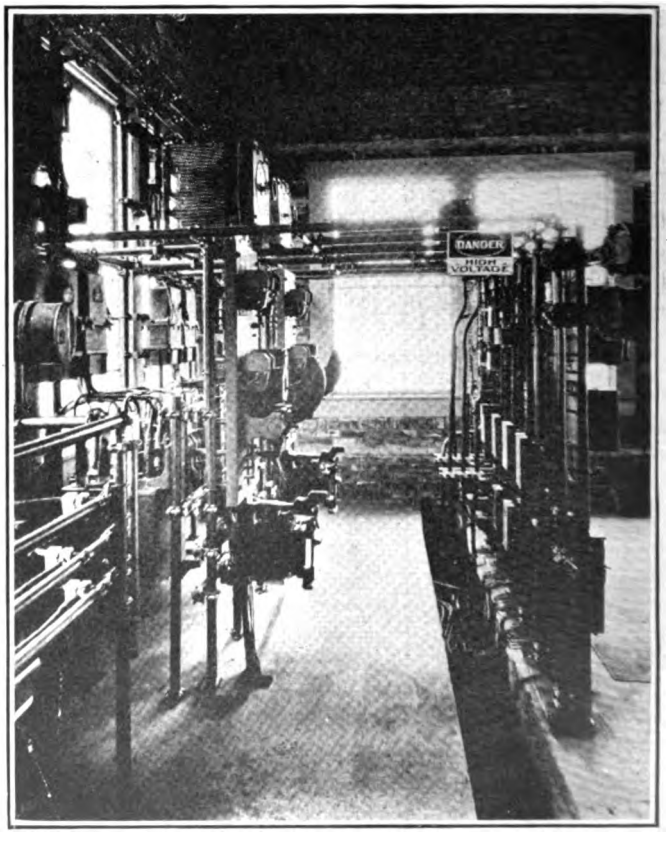

Fig. 4—Back of Main Board, Arcadia Substation

The starting panels are about midway between the board and walls. The auto-transformers are mounted on the wall almost above the oil switches. Wiring installation cost is greater in old buildings because ducts have to be cut in the floors and sometimes through foundations.

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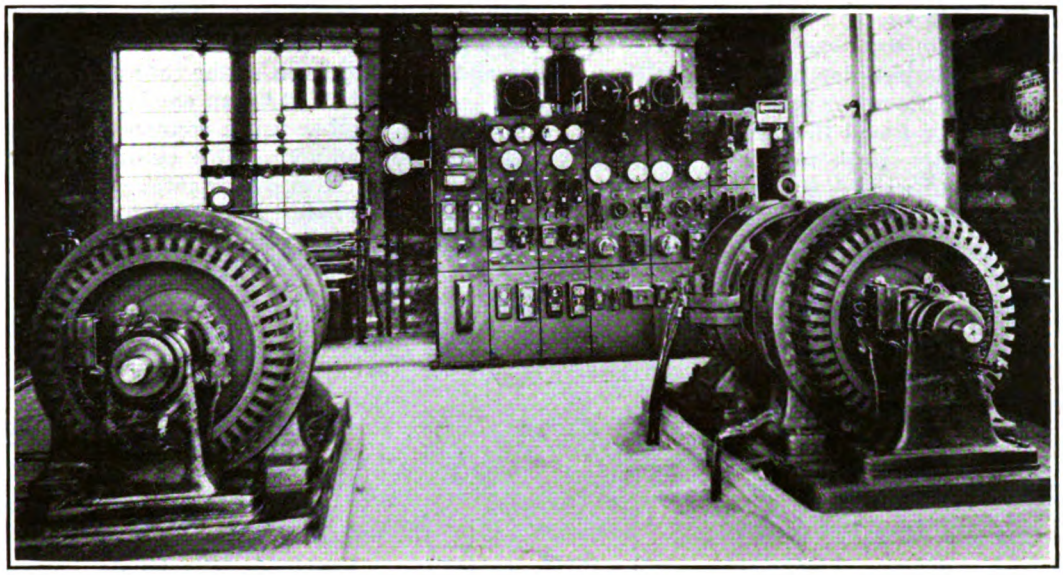
FIG. 5

Arcadia Substation

When making a change from manual to automatic control everything possible was done before the switch-over, in order to reduce the period of shutdown. Even the field rheostats were moved to their new locations beforehand. Ventilation of the motor-generator sets is by means of ducts from the outside to the centers of the machine foundations.



regardless of what motor phase is opened. The relay coil is connected across the resistances just as is the galvanometer of a Wheatstone bridge. As the resistance of the search coils increases rapidly with temperature, current will be forced through the relay coil should the motor become overheated. Increased load will cause more current to flow from the transformers and, proportionally, through the relay, its closing being dependent on both current and temperature, thus affording complete protection.

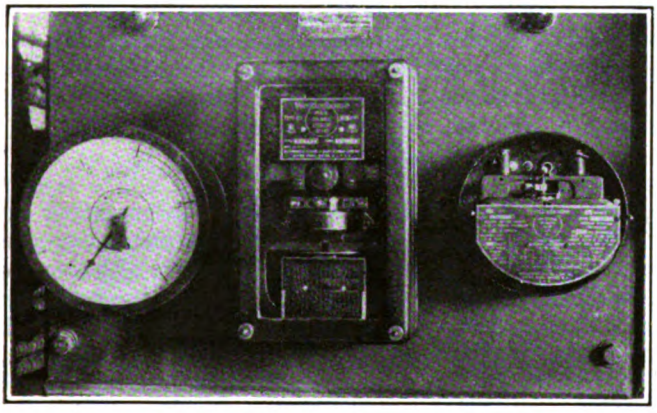


Fig. 6—Protective Relays, Fan Control Panels

The current-balance relay in the center will cause a contactor of the board to insert resistance in the motor circuit in case of an open circuit in one wire of the three-phase line. The type C.T. temperature overload relay, with the cover off to show the contact, is at the right. These fan installations represent a new application of the relay.

The problem of proper ventilation of automatic substations is one which, in many installations, seems to have received little attention. Where there is no attendant, windows or doors cannot be left open to cool the building. In these substations a ventilating duct is built through the floor from the machine foundation to the outside. This duct is slanted at an angle which prevents the entrance or accumulation of moisture. A ventilator in the roof allows the heated air to escape.

Equipment such as this affords a large saving, much of which cannot be shown in dollars and cents. The intangible advantages are: The absolute protection of the apparatus controlled, the greatest possible assurance of continuity of service, and a dependability which enables one at all times to predict with certainty the action of the equipment.

The money saved by automatic installations depends, of course, to some extent on local conditions, but is dependent chiefly on the number of operatives which the new equipment releases for other work. The cost of new equipment, for changing a single-unit substation to automatic control is about $4,000, and for a two-unit plant, $9,000. In order to find the investment represented by the change the erection cost must be added. This installation cost is about $750 for the single unit and twice this where two-unit equipment is installed, but this expenditure will, of course, vary greatly.

A lower cost would naturally be found in a new installation where no trenches or ducts have to be cut for the wires and where a suitable place could be easily prepared for the switchboard. As many of the older substation buildings are limited in size, it often requires much labor to set up a new board in a suitable place, old foundations and other obstructions frequently having to be removed or cut through for the wiring.

DRILLING FOR BEARING THERMOSTATS

The installation of the bearing thermostats causes a further variation in costs. In new machines the babbitt is usually made of a depth sufficient that the thermostats can be enabled to enter by a hole drilled in the babbitt and some even have the hole already provided, but in many of the older bearings it was found that the hole came partly in babbitt and partly in the iron outer section. This, of course, makes it almost

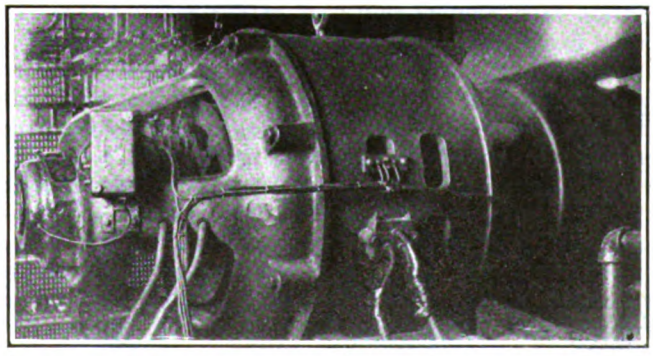


Fig. 7—100-Hp. Fan Motor, Ehrenfeld No. 1 Substation

Above the main terminal block is the 4-wire connection leading to the search coils which have been added to the motor in connection with the type C.T. relay. The search-coil group is wrapped around the outside of the stator coil ends, close to the end of the lamination. At the left end is a bearing-temperature relay.

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impossible to drill the holes with the ordinary drill press, so in some cases it was necessary to cut a groove of the required depth and size with a shaper and then rebabbitt the upper section.

We have found that the cost of maintenance, including weekly inspection and cleaning is about $250 monthly, for which sum twelve substations can be maintained, as one man should inspect two each day. In normal operation the use of automatic control does not make necessary any replacements that would not have to be made before its introduction. Brushes, breaker contacts, and so on would have to be renewed at least as often with manual operation. There is, of course, a charge for power taken by the relay coils, but this is small and is more than offset by the added reliability.

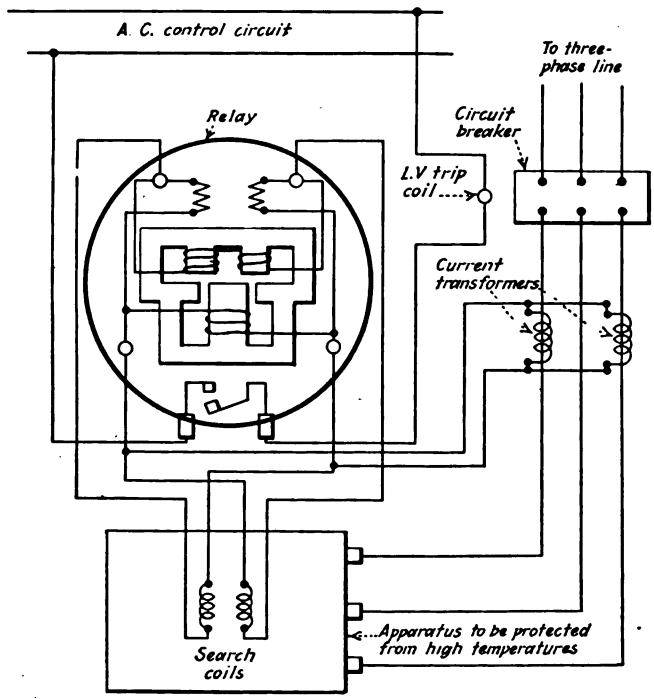

Fig. 8—Connections of Temperature Relay

The relay itself operates on the principle of the Wheatstone bridge. Its power supply comes from current transformers in the motor leads. By using two transformers in parallel the relay is not rendered inoperative if the line "goes single-phase."

To give an approximation of the total savings made by automatic operation, we will consider an installation of six single-unit stations and six of the double-unit type. These, as previously stated, can be cared for by one man. For fewer stations the savings would be in proportion, for the maintenance and weekly inspections would then require only part of one man's time. The total investment for the twelve stations considered would be about $91,500. The annual interest and depreciation on this sum at 12 per cent is $10,980 and the maintenance cost $3,000. Thus the total yearly charge against the automatic operation is $13,980.

The saving to be made is directly dependent on the number of operatives released. In this locality mine-substation operatives are paid approximately $150 per month. At this rate, if only one operative was released per substation by the automatic control, the net saving would be $7,620 per year or $635 per substation. At continuous operations where three shifts are required, the yearly saving becomes $50,720 or $4,220 per substation, because the cost of automatic operation is practically the same whether the plant runs continuously or only part of the time. There seems no question therefore but what a great saving may be made by converting manual substations to automatic.

Even in the case of a manual substation which is attended by an employee who spends most of his time at other work, conversion to automatic control may show an appreciable saving. In such cases, however, the saving is rather intangible but may be found in increased production per man and per unit of equipment. Even though it may not be proposed to convert any given manual station to full-automatic, it may be profitable to introduce several of the protective features of such stations because they furnish many valuable advantages and can be applied at small cost.

Main and By Products Exchange Places In Business of Coke Production

First ammonia was the sweetener of the byproduct coke-oven industry; now it is gas. Will toluol come next? A drug on the market after the war, it shows today renewed activity not as the basis of an explosive to propel shells but as a means of making paint.

J. D. Forrest, vice-president of the By-Products Coal Corporation, of Chicago, addressing the local section of the American Institute of Mining and Metallurgical Engineers at Charleston, showed how changed conditions since 1913 had caused rapid shifts in byproduct oven practice, making what were formerly considered main products change places with what at one time had been regarded as a byproduct. The first byproduct ovens were built chiefly to obtain ammonia, but now the chief product is gas. At one time it was not uncommon for one-half of the gas to be wasted, and that which was sold brought only 10c. per thousand cubic feet. Now little gas is wasted, and the plant must get 20c. or more for it in order to continue in operation.

COAL IS DOMESTIC-COKE BAROMETER

Before the war $1 per ton paid the operating and maintenance costs of carbonizing coal, but under present conditions the costs are $2 or more. The sale of coke usually pays for the coal; therefore the byproduct operator is not greatly concerned as to its cost. He is, however, troubled by its price fluctuations. He would not object to the coal operators getting together to stabilize the price, even if he had to pay a little more.

Mr. Forrest explained that the rapid and certain demise of the scattered merchant furnaces of the country is due to the fact that they have no byproduct ovens. It would not pay them to build ovens because they have no city or steel mill to serve as an outlet for the gas. Usually a byproduct plant must be situated so that it can sell the coke within a radius of 150 miles.

Toluol, one of the byproducts of a coke plant, recently jumped in price from nothing to 10c. and up to 50c. per gallon, because of its extensive use in the new lacquers such as "duco" which many of the paint companies are now marketing. The use of these lacquers promises to extend materially in the next few years. Exterior paint of houses is likely to furnish a new field for toluol.

As to the quality of the coals adapted to byproduct coking, Mr. Forrest said that, broadly speaking, the higher the thermal value of the coal, the lower the percentage of ash, oxygen and moisture. For making cupola coke, the higher the fusing point the better, but for furnace coke the opposite statement is true.

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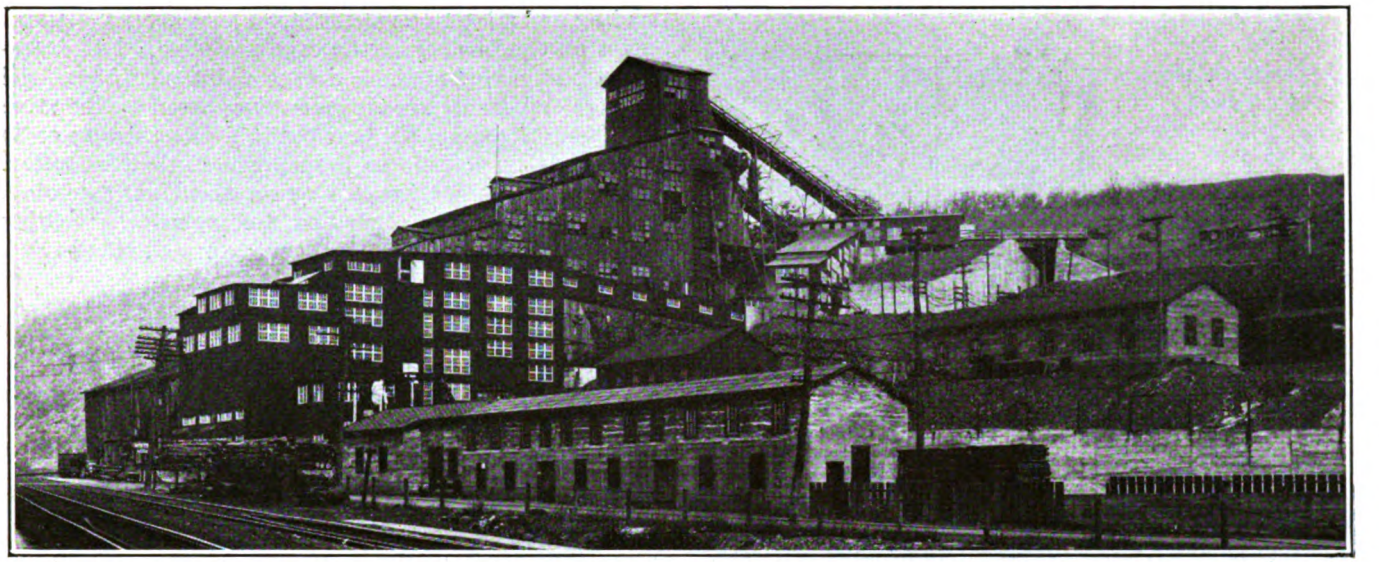

Preparing Coal for Sale in a Finical Market

Alloys Lengthen Screen Life—Lime Saves Exposed Metal from Corrosion—Some Devices Economize Water—Others Improve Quality of Coal—Shaking Telegraph Prevents Degradation

By Frank H. Kneeland
Associate Editor, *Coal Age*
New York City

PERHAPS never before in its history has the coal industry as a whole been confronted with a sterner necessity for preparing the best quality of fuel that it is commercially possible to produce. The reasons for this are not far to seek, for the industry is face to face with the fiercest kind of competition both from within and without.

During the recent strike in the hard-coal region a large proportion of the country's population that heretofore had relied almost exclusively upon anthracite for domestic fuel learned the use of substitutes—coke, oil and smokeless coal. These people will not now blithely revert to hard coal unless both its quality and price are reasonable. In order to recover their natural but invaded markets, therefore, it behooves the anthracite producers to look more carefully than ever before to their preparation. For the public is in no mood to tolerate any unnecessary ash.

In the soft-coal fields the conditions are not greatly dissimilar. With mines overdeveloped in comparison to the country's needs, with three-fourths of the nation's bituminous production coming from non-union fields, with protective freight rates that no longer protect, and with inter-field and inter-operation competition of the keenest kind prevailing, the way of the bituminous producer is indeed hard. He who even hopes to survive must needs look well to the quality of his product, and be sure that when he offers coal for sale it is indeed coal and nothing else.

Many producers have already discerned and heeded the handwriting on the wall. Others have not yet seen fit to change their preparation equipment in any way, believing doubtless, and in many instances probably not without good reason, that their methods of preparation and final products are well above the average of their fields. As a rule, however, most mining companies are not satisfied with "things as they are" but are striving for the best attainable.

Radical changes in methods or equipment seldom come at once but usually are the product of a growth that is more or less slow. This is the case at present. Although some new machines and devices have recently made their appearance, most progress is being made through a wider adoption and utilization of machines and equipment already available. In not a few of these, however, recent improvements have done much to render them applicable to present needs and more effective than ever before.

Improvements in Screen Materials

One of the first processes through which coal is passed after being brought from the mine, in most cases, is that of sizing over shaker screens. Although in the anthracite region the type of shaker employed has undergone little alteration in many years, the material of which the screen plates or jackets are composed has changed and is still changing. When the shaker supplanted the revolving screen the first jackets were of ordinary blue annealed-iron or steel plate. Because of the highly corrosive action of the water used these were soon destroyed.

The next step was to substitute bronze jackets, which gave a much longer life as the result of their immunity from acid attack. Because of the comparative softness of this metal, however, it was susceptible to the abrasive action of the material handled. Monel metal was introduced to overcome this difficulty, being harder than bronze and at least equally resistant to acid action.

The headpiece accompanying this article shows the new plant of the St. Clair Coal Co., near Pottsville, Pa. The new breaker may be seen in the foreground with the old breaker behind it. Note the difference in the relative sizes of the two structures. The new installation gives a better preparation than could be attained with the older one and does it more cheaply.

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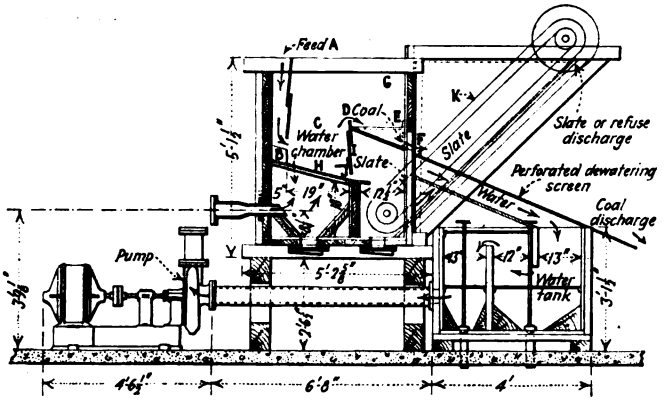


Vertical Section of Hydro-Separator

The floor space occupied by this machine has been reduced by placing the tank under the elevator. Feed enters the machine at *A* and passes through the gate *B* into the chamber *C*, where the rising current of water from the screen *H* buoys the coal up over the dam *D* and into the space *E*, from which it escapes through the gate *F* to the dewatering screen and thence passes by chute to the pocket. Meanwhile the slate and rock collects on the unperforated portion of the screen *J*, passes through the adjustable gate *I* and settles into the conveyor *K* by which it is removed from the machine. The action is gentle and continuous and degradation is negligible.

Many copper alloys later made their appearance and were successively employed for this purpose. Possibly the material most recently used for this purpose is what is generally known as "stainless steel" or, what is practically the same thing, "rustless iron." This in reality is merely an alloy of iron and chromium, or a high chromium steel. It is a comparatively hard metal and consequently resists abrasion well. Its acid-resisting qualities equal those of bronze and its tensile strength is slightly greater than that of steel. These desirable qualities render it possible to make jackets of this material from two to four gages thinner than bronze or iron plates intended for the same purpose. This not only decreases the cost but affords a better preparation.

High-chromium steel when used in screen jackets becomes polished under the action of the coal treated. When the recent strike was called and the breakers and washeries ceased operation it was a source of some solicitude on the part of coal operators as to how these jackets would stand the long shutdown. When work was resumed after months of idleness it was found that these jackets were covered with a thin gray powdery deposit that could be easily rubbed off, leaving the plate with almost as high a polish as when the shutdown started. After coal had been run for an hour or so these plates were in practically the same condition as when the shakers stopped operation at the beginning of the strike.

Has High Scrap Value When Discarded

Like bronze this material possesses a substantial scrap value when a jacket has become so worn that it is no longer fitted for screening coal. Taking its first cost, length of life and all other things such as labor, scrap value, etc., into consideration, it is estimated that on the average the standard jacket—37½ x 69½ in.—shows a saving of nearly $5 over bronze and nearly $3.50 over ordinary blue annealed steel. These are savings that are well worth considering.

We turn now to a consideration of preparation treatment proper. In its broadest sense preparation includes not only mining but all subsequent operations through which the coal is passed on its way to the railroad car or other vehicle of shipment. For the plan of operation, method of undercutting, snubbing, shearing, shooting, loading and mine transportation all have their inevitable effect on the quality of the coal marketed. Not infrequently improved methods that would result in material savings or benefits are strenuously opposed by the mine workers. Sometimes this opposition is so strong as to greatly delay, impede or even preclude their adoption.

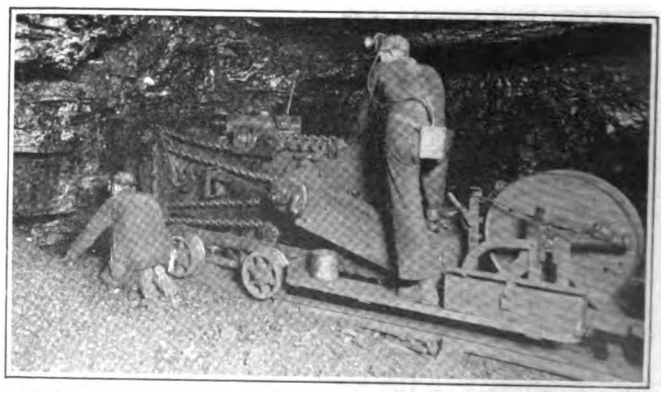
In the bituminous region center shearing, snubbing, improved methods of charging the explosive, including air cushioning, and conveyor loading are all being tried. In some beds, such as the Illinois No. 6 measure, center shearing in conjunction with careful methods of shooting have yielded highly encouraging results or some that would amply justify the adoption of these practices.

Conveyor loading also is exerting its influence upon the quality of the mine product. Where a long face is continuously undercut throughout its entire length it naturally takes less explosive to bring it down than if the coal were produced from several short faces, with their inevitable tight ends. Long-face coal is thus broken up less than that produced from short faces. Shoveling or rolling the coal into low conveyors also breaks it less than shoveling it into a car which stands much higher above the bottom, although this is offset to some extent by the drop given the coal at the loading point.

Mine Large Lumps and Load Them

At least two combined mining-and-loading machines, where used, are said to produce bituminous coal of large size. These are the McKinlay and the O'Toole machines. The McKinlay machine cuts circular kerfs in the coal face into which wedging rollers are forced, breaking the coal out in chunks. By the O'Toole machine the entire face is undercut continuously and the coal brought down by the action of the roof assisted, if necessary, by light "pop shots." By this means even the friable Pocahontas coal comes down in slabs so large that they have to be broken with picks before the conveyor will move and load them. Both of these machines appear to be giving excellent results in coal production. The McKinlay machine seems to be particularly adapted to entry driving; the O'Toole machine to the robbing of wide, long pillars.

Although not exactly new in point of years, several Miller shaking screens have been installed and used in the West Virginia field during the past few months. The details and action of this device were described by A. F. Brosky in *Coal Age* of Feb. 23, 1922; Vol. 21,



Center Shearing in Illinois Reduces Breakage

This particular coal face is located in the No. 6 bed of Southern Illinois. By dropping the cutter bar onto the bottom of the cut just before it is finished a slab of coal may be broken out upon either side of the shear, thus producing an appreciable snubbing effect. Center shearing, at least in some places, gives a loose end that reduces the quantity of explosive that is necessary to bring down the coal.

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Concentrating Tables

Table room of modern breaker in anthracite field. Here buckwheat, rice and barley are separated from their impurities. The twelve tables can treat 300 to 350 tons of fine material per 8-hr. shift.

page 324. A screen of this type has been in use for several months in one of the tipples of the Lake Superior Coal Co., near Welch, W. Va. It is 6 ft. wide and about 45 ft. long. This screen is supported independently of the tipple and actuated from an inclosed driving head which is belt-driven from a 20-hp. motor located on the ground. The head, which is totally inclosed and lubricated by a splash system, is mounted on springboards or wooden columns which are rigidly attached at both top and bottom. The screen proper is supported by A-frames built up of structural shapes and hinged at either extremity. The entire screen is thus free to oscillate back and forth, being restrained only by the spring of the posts supporting the driving head.

Oscillatory motion is obtained by the whirling of unbalanced weights in the driving head. This oscillation is differential in character; that is, it is a slow forward movement and a quick return, its amplitude when operating at full speed being about 6 in. One peculiarity of this type of screen is the fact that the amplitude of vibration is greatest during starting and stopping; that is, when the driving head is revolving at less than normal speed.

This screen is used both for sizing the coal and as a picking table. One of its noticeable characteristics when in operation is the fact that there is no appreciable retrograde movement of the coal, the material upon it appearing to move forward with the screen and then to stand stationary as the screen is jerked backward beneath it. The power consumption of this screen is extremely small. Starting from rest with the screen fully loaded takes no more power than starting with the screen empty. Both of these statements may appear almost preposterous at first blush, but it should be remembered that the energy required to drive this machine is consumed in whirling weights in vertical planes. Only a small quantity is lost in friction, and the whirling weights shake the screen.

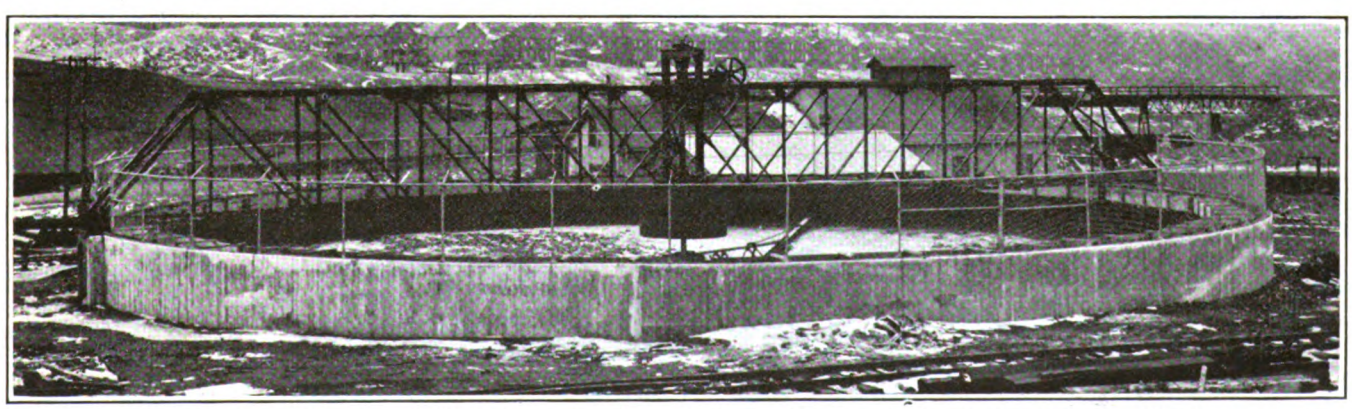
In preparation proper much advance has been made in the recent past. This has not been so much in the development of new methods and appliances as in a further adoption and utilization of those already in use. A Menzie hydro-separator of an improved design (see accompanying drawing) has been installed in the breaker of the East Boston Coal Co., at Kingston, Pa. Commercial tests show that it has a large capacity, much larger than its size would indicate. It is now used in cleaning pea coal coming to this breaker from several different sources and which consequently has a greatly varying specific gravity, which naturally renders it hard to clean. The feed to this washer is irregular, sometimes running as high as 40 tons per hour.

Little Impurity in Pea Coal

Inspection of the top of a carload of pea that has been treated in this machine reveals only here and there a piece of slate or rock. This machine's diminutive size, however, as well as the small quantity of power that it consumes and its low cost are strongly in its favor.

Few pieces of equipment introduced into this country for cleaning coal have attracted wider attention than the Rheolaveur coal washer. This device, which was described in *Coal Age* of Dec. 6, 1923, and Mar. 27, 1924, reached this country from Belgium. It has been successfully employed in Europe for some years.

One of the larger anthracite companies has been ex-



Big Thickener Clarifies 4,000 Gal. of Breaker Slush per Minute; Water Is Available for Re-Use

This 100-ft. thickener has a natural clay bottom. The makeup water is treated with hydrated lime before it is delivered to this tank, and the overflow is re-used in the breaker. Neutralizing the acid does much to preserve the spray and other water lines and to decrease general upkeep. The cost of the water treatment is many times returned by the longer life of the equipment.

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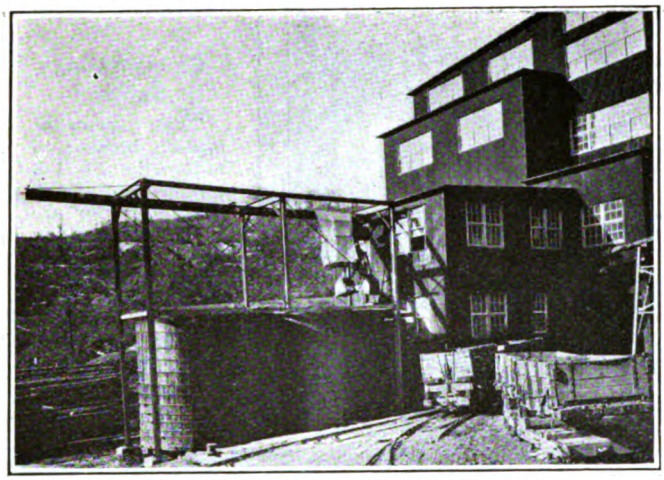


Part of Silt-Recovery Plant at St. Clair

In the modern breaker as in a packing house everything is utilized. In the present-day anthracite preparator even the fine material, down to 65-mesh or less is reclaimed. If this silt cannot be utilized immediately it is carefully stored for use at some future date

perimenting with the "Rheo" for some time, and the results obtained are said to have been highly satisfactory. This method of washing entails the installation of an entire process requiring the building or rehabilitation of a whole breaker or washery or a substantial portion thereof. One large anthracite company is now installing equipment of this kind to treat 3,000 tons per shift. This will form the first half of a 6,000-ton unit which will completely rejuvenate a breaker built only a comparatively few years ago and which has always been considered modern in all particulars. Another big anthracite producer is building a plant of similar eventual capacity and is doing it in the same way—namely, a half at a time. Seven other installations of this equipment, ranging in capacity from 1,000 to 1,600 tons of coal per shift, are either being made or are in immediate prospect. One of these is for the American Smelting & Refining Co., at Cokedale, Colo.

Treats Sizes From 3½ In. To 48-Mesh

This process treats all sizes of coal from 3½ in. down to 48-mesh on the same machine and in a single operation. This is an important advantage, particularly with bituminous coal. Between 4 and 5 tons of water is employed to treat one ton of mine product. That is, about 2½ gallons per minute is in circulation per ton of daily output. The makeup water needed will be from 5 to 10 per cent of the water in circulation. Thus the treatment of 1,000 tons per day will require a makeup of from 150 to 200 gallons per minute.

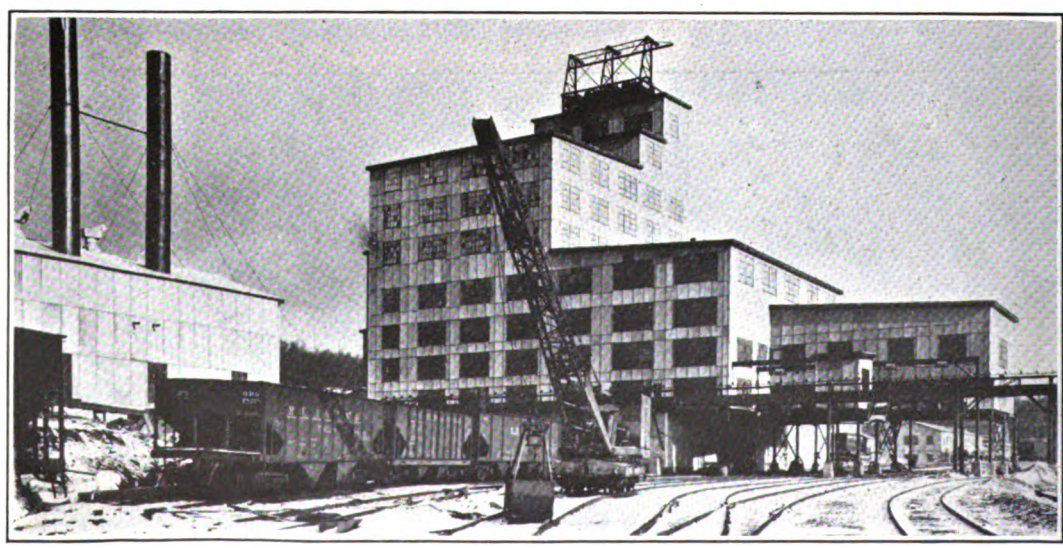
For treating the smaller sizes of coal, tables, classifiers and thickeners are receiving extensive application. Thus one new installation of this kind consists of a Dorr bowl classifier which recovers coal down to 65-mesh, two Deister-Overstrom tables that clean the No. 4 buckwheat down to an ash content of about 16 per cent, a Dorr classifier that dewaters the washed coal and a small Symplex classifier that dewaters the refuse, also a 64-ft. thickener to clarify all waste water from the breaker with the exception of that from the lip screens and track drainage. This machine handles about 2,100 gallons of water per minute and overflows 1,900 to 2,000 gallons per minute.

In this installation makeup water from the mine amounting to about 500 gallons per minute is delivered to a 30,000-gallon tank at the foot of the breaker into which the overflow from the thickener is also introduced. Slaked lime is added to the 500 gallons per minute of makeup water at the rate of about 200 lb. per hour. This is at the rate of slightly over 1/10 oz. of lime per gallon of makeup. The lime neutralizes the acidity of the water going to the breaker and renders it acid free. The expense involved is about $10 per day for lime, but whereas with untreated water the spray lines in the breaker lasted only about a week, with the treated water they last indefinitely. Purifying and using the mine water also obviated the installation of a pumping station on the bank of a creek 2,000 ft. away as well as an expensive pipe line connecting it with the breaker.

Eighteen Concentrating Tables

Another recent installation of equipment for treating the smaller sizes embodies eighteen concentrating tables treating the buckwheat Nos. 1, 2 and 3 with two classifiers dewatering the slate from these machines. A thickener in this plant 24 ft. in diameter recovers the No. 4 buckwheat down to 65-mesh. This product is raised to the top of the breaker and cleaned on seven tables. The washed coal is then dewatered in 6 model C-20 classifiers and the slate in two machines of similar type.

All waste water from this plant goes to a 100-ft. thickener being treated on its way with lime to neu-



Flotation Breaker

This breaker has been built around the Chance process of coal flotation. Naturally it differs radically both in construction and appearance from the older types of anthracite coal preparators. This building well exemplifies the simple straight lines and the stability of construction to which modern processes of preparation are particularly conducive. Steel concrete and glass are freely employed.

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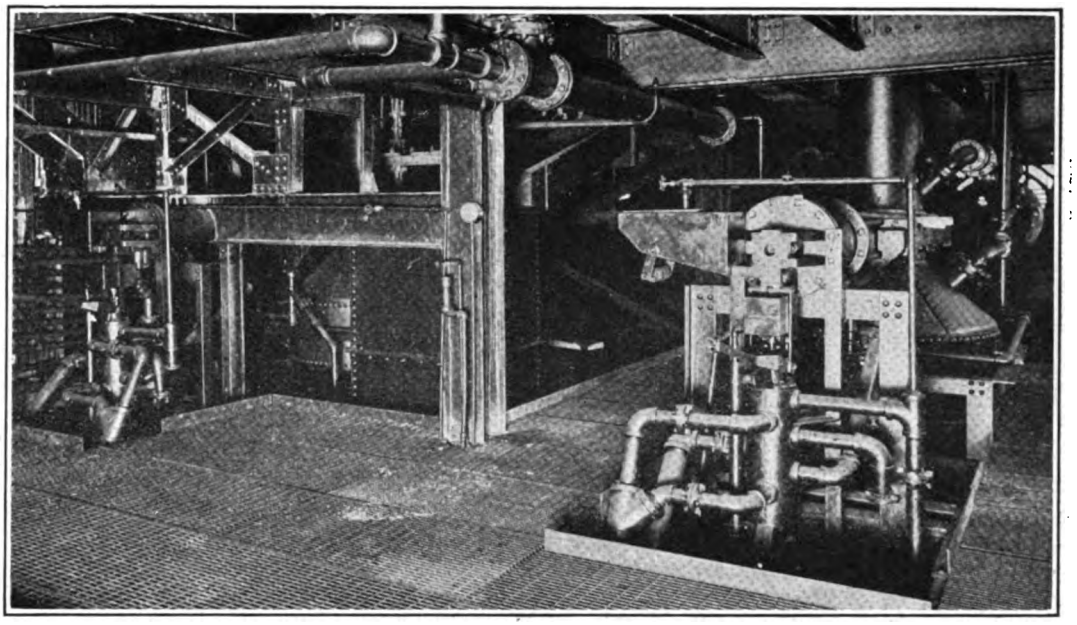
Refuse Removal

Equipment for removing slate and refuse from flotation cones in Chance breaker. Many think of a breaker or tipple as a dark, dingy sort of place where dust, dirt and grime are everywhere and eternally present. But note the absence of dirt in this picture.



tralize its acidity. This installation is designed to handle 4,000 gallons of water per minute. About 900 gallons per minute escapes with the sludge which will be used for slushing underground workings.

Particularly in the southern anthracite field where the coal measures are badly distorted, the proportion of fine sizes has always been large and their treatment in the past has been a problem. Modern means and methods, however, are here doing much to alleviate the former difficulties. The St. Clair Coal Co. operating in this field near Pottsville has recently constructed a new breaker utilizing the Chance flotation process of coal preparation. The new breaker is much smaller than the old one which it replaces, and the results obtained are suggestive of what may be expected in other installations.

Naturally some mechanical difficulties have been experienced in this plant as the mechanism employed requires a manipulation wholly at variance with that accorded the former equipment. Ridding the final product of the sand used in the flotation mixture has always been considered one of the difficulties to be anticipated with this method of preparation. After the men became familiar with the process, however, no trouble has been experienced from this source. Thus barley now leaves this breaker with only from 14 to 15 per cent of inert content and the silt carries only 18 to 19 per cent of ash.

Somewhat of an innovation in anthracite preparation has been adopted at this plant in that the small sizes are briquetted. The briquets thus made are guaranteed to contain not more than 15 per cent of ash. The inherent ash of the coal mined at this plant will average about 9 per cent.

Three Flotation Cones

Three flotation cones are installed in this breaker. The first treats coal of buckwheat and smaller size; the second takes the product of the mine of pea and larger size and the third retreats the reject from the other two after it has been crushed down slightly. The reject material from the second cone is first screened into chestnut and smaller and into stove and larger, these two products passing to separate rolls. The stove and larger is crushed to chestnut and smaller and the other size is reduced to pea and smaller. These products are then combined and passed through the third cone.

In this third cone the liquid is maintained at as high a specific gravity as possible, that is, between 1.7 and 1.75. In the other cones the smaller sizes are treated with a liquid of 1.6 to 1.65 sp. gr. and the larger sizes with a liquid of 1.65 to 1.7 sp. gr. Refuse from the No. 3 cone ordinarily is sent to a waste bank, but if the quality of this material is deemed to be unsatisfactory it is again crushed and retreated.

At this operation mining is being conducted in three beds, namely, the Buck Mountain, Skidmore and Mammoth. Some coal comes from strippings in worked-out areas and as a result contains much rock. The effectiveness of the preparation process employed, however, may be judged from the rock-and-bone content of the final products. Frequent tests on the coal as loaded for shipment show the following results: Egg, slate 1 per cent, bone, 2½ per cent; stove, slate 1½ to 2 per cent, bone 3 to 3½ per cent; nut, slate 3 per cent, bone 3 to 3½ per cent; pea, slate 4½ to 5 per cent, bone less than 5 per cent. Buckwheat, rice and barely run less than 15 per cent in ash and the silt under 20 per cent. All sizes except the silt are briquetted and the briquets sold under guarantee as to ash content, as has been stated.

Low Percentage of Coal Goes to Bank

The proportion of coal going to the refuse bank at this plant will average 4 or 5 per cent. This figure, however, includes all sizes. The proportion of the larger or domestic grades is, of course, slight, most of the coal thus rejected being the small sizes. The silt at present is pumped to a dam from which it will eventually be reclaimed.

Fine coal is brought to the briquetting plant from storage and passed first through driers, after which it is crushed in hammer mills, mixed with the binder and passed through the presses. The briquets are then baked in an oven in a temperature that gradually increases from 300 to 600 deg. F. After leaving the oven they are passed through a cooler before being deposited in the shipping bin. The capacity of this briquetting plant is approximately 450 tons per 24-hour day. A force of twenty-six men is employed—ten on the day shift and eight on each of the other two.

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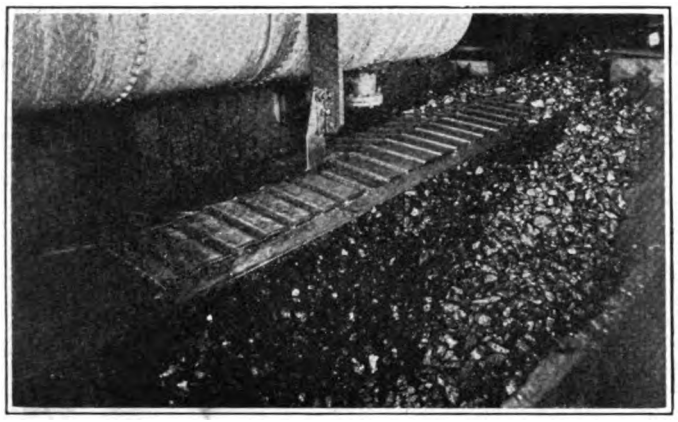



Egg Coal Eased Into Pocket with Negligible Degradation with Parish Shaking Telegraph

These pictures show telegraph lowering coal into a pocket that is nearly empty and one that is almost full. When the coal has built up around the sides of the curved plate extending across the top of the pocket the material already deposited forms a trough through which the incoming coal flows until it slides off the sides of the plate. The coal may thus slide or it may roll, but it can never fall more than a few inches. In this way degradation is greatly lessened.

Preparation in a true sense does not end at the discharge of the jig or the cone or other washing appliance. In order to assure delivery of the best possible product to the consumer the cleaned and sized coal must be deposited within the pocket and transferred thence to the car with a minimum of degradation. A recent invention for easing prepared sizes into the pocket with a minimum of breakage is what is known as the Parrish shaking telegraph, taking its name from its inventor, A. L. Parrish, superintendent of construction for the Kingston Coal Co., Kingston, Pa.

This device has been installed at the No. 2 colliery of this company at Edwardsville, Pa., and is shown in two of the accompanying illustrations. It consists of a trough or telegraph, slightly inclined, suspended by spring boards or other means and oscillated longitudinally by means of an eccentric in a manner exactly similar to that employed for shaking a screen. The inclination given this trough or chute is slight or far below the critical angle of coal on steel, so that the material moves only by virtue of the oscillation of the trough.

At the edge of the pocket the sides of the trough disappear and the bottom, which extends on entirely or almost entirely across the bin is humped or gabled in the middle. As shown in the illustration, also, it is provided with corrugations or riffles to assist in moving the coal forward. It is somewhat questionable, however, if these are really needed.

Suppose that the bin or pocket is empty. Coal from the jigs or other preparation equipment passes down the conveying portion of this telegraph by a series of short glides or slides. When the edge of the pocket, and consequently the delivery portion of the telegraph, is reached the coal promptly slides off on either side, drops a few inches to the slanting floor of the pocket down which it rolls or slides until it comes to rest at the bottom. Gradually the coal piles up until the delivery section of the telegraph is reached. The coal now builds up along the edges of the telegraph forming a channel the sides of which are loose coal and the bottom of which is the shaking gabled plate.

Coal coming to the pocket will not leave the delivery section of the telegraph until the edge of the pile in the pocket is reached. In other words the coal sides of the channel already referred to are effective in restraining the side movement of the material traveling on the plate and the incoming coal does not, therefore, leave the plate until the edge of the pile is reached. By this means the coal can slide or it can roll either along the bottom of the chute, the bottom of the pocket or down the sides of the pile, but it cannot fall more than a few inches. It thus reaches the gate or chute delivering to the car with far less degradation than if it were spouted or telegraphed into the pocket in the ordinary manner.

And now for a short look into the future. The trend toward better preparation is the logical outcome of economic conditions—the consumer wants clean coal and if it is not forthcoming he is inclined to turn to other fuels. The movement to supply this need has just gotten fairly under way. Barring some unusual contingency, not discernible at the present time, it can hardly stop in its present status. The future, therefore, should witness more efficient and cheaper methods of mining, better and cheaper preparation and less degradation in the processes of handling and delivery to the common carrier. The consuming public, also, should receive a product capable of satisfying all reasonable exactions as to quality.

Should We Neutralize Mine Waters?

"That neutralization of acid mine waters will require an expenditure of large sums of money, but that it does not seem to be prohibitive in most cases to treat these wastes in order to overcome in a large measure present objection to their entrance into streams," is the conclusion of R. D. Leitch, assistant chemical engineer, U. S. Bureau of Mines, Pittsburgh, Pa. "Whether" he adds "this will be an economically sound policy will depend upon the collection of more definite data than is available at present.

Except to satisfy aesthetic demands, there is no reason for spending more money and effort annually to purify natural waters than the damage caused in losses and difficulties experienced by users of water so polluted. The question is, or should be, to decide how much pure waters are worth from all possible viewpoints and then to determine the cost of purification in the same manner. If the one is cheaper than the other, common sense will demand the more favorable." "G. S. Rice has suggested," he asserts, "that the use of limestone for rock dusting to prevent coal-dust explosions will also have a considerable effect on neutralizing acid waters within the mine, and this seems to be a logical conclusion."

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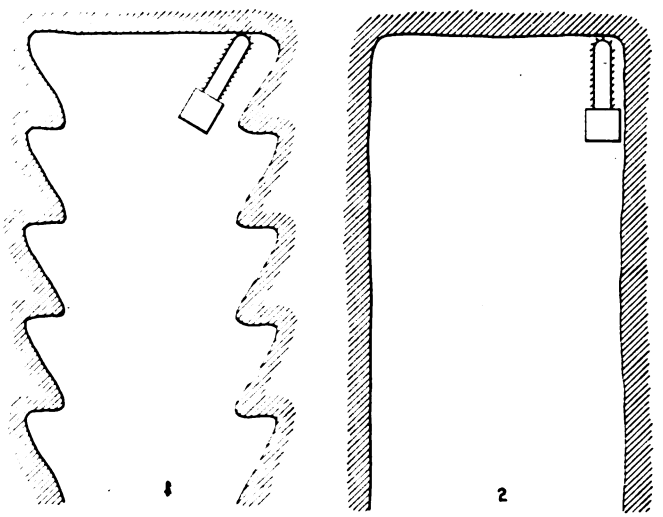
Quantity of Explosive Employed One Factor Only Of a Number in Successful Blasting

Rib Gouging to Be Avoided—Kerf Should Be Clean—Shearing Affords Additional Free Face—Resistance to the Explosive Should Be Made Equal in All Directions

By C. W. Nelson
Explosives Engineer, Hillman Coal & Coke Co., Pittsburgh, Pa.

THOSE who would blast coal successfully must recognize from the start that the problem involves a multitude of factors, neglect of any one of which may spell failure even though the others be properly performed. Different beds, and even the same measure, in different localities, may not possess the same characteristics. These peculiarities of seam or locality must be studied by the explosives engineer or blasting expert as special problems. Only those considerations that are more or less common to all coal mines regardless of the characteristics of the particular bed will be considered in this article.

The first operation that has a direct bearing upon



Figs. 1 and 2—Incorrect and Correct Way of Sumping

Serrated ribs are a sign of incorrect sumping. Whatever may be the position of the machine when cutting is begun, the sumping cut should be made in a direction parallel to the line of sights. This will assure a straight rib and avoid a wedging action in blasting. Fig. 1 shows a badly cut face and Fig. 2 one that is properly cut.

blasting efficiency, of course, is the cutting of the coal, whether this be undercutting, topcutting, shearing, or a combination of the last with either of the first two. If the coal is undercut, the side of the kerf should be parallel to the line of sights of the entry or room. One of the most common faults found where the coal is undercut is the practice of gouging the ribs. This is caused by the machine runners failing to square the machine with the sight line before sumping in, thus allowing the cutter bar to gouge or cut into the pillar beyond the normal rib line. Fig. 1 shows a working place in which the ribs have been gouged. It also shows how the machine is improperly placed for the sumping operation. Fig. 2 shows correct practice in these respects.

This gouging of the ribs has two bad effects on subsequent mining. First, it tends to throw the place off the sights and causes it to be mined beyond its normal width. Second, it encourages the drill runners or miners, unless they are closely supervised, to drill shotholes parallel to the edge of the undercut. When the ribs within the limit of a cut are gouged to any extent and the shotholes are drilled parallel to the sides of the undercut, the inside end of the drillholes lie outside of the normal rib lines of the room as shown in Fig. 3.

POCKETING THE SHOT BY RIB OFFSETS

The dot-and-dash lines *AA* and *A'A'* represent the normal ribs of the advancing place and the dotted lines show the edge of the cut to be blasted. That portion of the hole from *X* to *Y* lies beyond or outside the normal rib line *AA*. Under the circumstances practically the entire explosive charge placed in this hole will be located between *X* and *Y*. When this is detonated the force of the explosion will exert its energy in three general directions—downward and in the directions indicated by the arrows *B* and *C*.

With the hole placed as shown in Fig. 3, that component of the force indicated by *C* will act against a solid block of coal and consequently will cause more or less shearing along the edge of the undercut from *E* to *D*. Moreover, because a wedging action is set up, the explosive charge will not loosen the coal nor allow it to move forward. Consequently the major force of the explosive will act toward the undercut and along the general direction shown by arrow *B*, causing the coal to be shattered at the back of the cut and "set down" on the undercut, without allowing it to be lifted toward the front.

Such a shot shatters the coal badly at the back of the cut and fractures it but little at the front. Under these conditions, the miner must do much digging to loosen the coal for loading. He thus produces an undue percentage of small sizes. The practice of gouging by machine, therefore, should not be tolerated for it is entirely unnecessary.

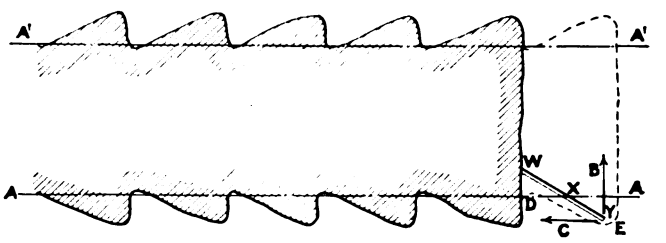


Fig. 3—Effect of Blasting on a Saw-Tooth Rib

Most or all of the explosive charge in the shothole shown lies within or behind the normal rib line. Detonation of such a charge not only results in much shattering of the coal but wedges the material to be brought down between the new face and the sloping rib. Such a shot signally fails to produce the best possible results.

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Fig. 4—A Shot Productive of Large Lumpy Coal

This place may not appear to have been shot but it has. The illustration shows a tight shot in the Pittsburgh bed. Note how the coal has separated from the roof and also the shearing cracks along the right-hand rib. These are what the miners call powder cracks. A vertical channel will be dug along this rib toward the back of the cut which will permit slabs of the coal to separate at the face cleats and to fall forward with little or no inducement from the miner's pick.

The use of a shearing machine without some type of horizontal cutter, of course, is not regarded favorably. Shearing should supplement undercutting or top-cutting if a large quantity of lump coal is desired. The advisability of shearing in conjunction with horizontal cutting is purely a matter of dollars and cents, and resolves itself into the question: Will the increased percentage of lump coal realized from this process warrant the purchase of the necessary machine and the additional cost of cutting? This question can be answered only after the natural conditions prevailing in any locality and the differential between the market price of lump and of run-of-mine coals have been given due consideration. The additional free face which shearing provides undoubtedly renders blasting much less difficult.

TOPCUTTERS SAVE ROOF BUT NOT COAL

Topcutting machines have had varied success. The greatest advantage obtained from their use, in a mine or section of a mine where the top is tender, lies in the protection afforded the roof from the shock and vibrations from the explosion. This protection in most cases, however, will be obtained at the expense of the production of lump coal. In the Pittsburgh bed difficulty has been experienced, with the arcwall type of machine, in obtaining a top cut of uniform depth where the room or entry in which the cut is made is more than 12 ft. wide. In practically all cases the depth of the cut is greater in the center than at either rib. As a result of this variation in the depth of topcut, the holes cannot be placed in positions that will enable them to break down the coal without undue shattering. Great difficulty is experienced in successfully blasting after this type of machine, as the shots under a topcut will not "roll" the front of the cut as will those over an undercut.

If topcut places could also be sheared, one would then have two well-balanced shoulders which would increase the size of the coal considerably. Here again the added investment, cost of operation and prospective financial return would be the factors that would determine whether it is wise to introduce this method.

The relation existing between the cut and the blasting of the coal has been briefly outlined. Closely allied with the cutting operation and of vital importance in obtaining good blasting conditions with the use of a minimum quantity of explosive per cut, is the removal of the bugdust from the kerf before blasting. The only reason for machine-cutting coal is to provide an additional plane of weakness or free face against which the explosive charge can act. The height of the kerf made by a machine when free from cuttings is about 6 in. With a 6-ft. cut in a 12-ft. entry this void amounts to 36 cu.ft. When all the bugdust is removed from the cut, the coal when shot can expand into this space in addition to being rolled forward into the working place. If only half the cuttings are removed, the coal can expand only a proportionate amount in this direction and consequently must be pushed forward into the room.

WHY CUT COAL IF BUGDUST IS LEFT?

To move the coal through this additional distance more explosive is required, which necessarily results in greater shattering. Under these conditions if enough explosive to heave the coal forward into the room is not used, the coal will be wedged in place and it will be necessary for the miner to dig out the shot. This will produce a maximum of fines, to say nothing of lowering the output of the miner. Probably no single factor upon which efficient blasting depends is more important than the proper cleaning of cuts.

To assure the removal of all bugdust one or both of two things must be done. The helper, or scraper, on the machine crew must shovel away from the machine all the cuttings thrown back by the bits. This will allow the cutters to clear themselves, thus minimizing the quantity of cuttings carried back into the kerf. With proper attention 70 per cent of the cuttings can be removed in this manner. In mines where blasting is done during the loading shift each miner should provide himself with either a hoe-shaped scraper or a long-handled shovel, with which he can remove all the loose material from the cut before shooting. By observing these two precautions full advantage of the cut will be obtained.

To compel the machine men to keep the cuts clean the inside officials must make frequent inspections of

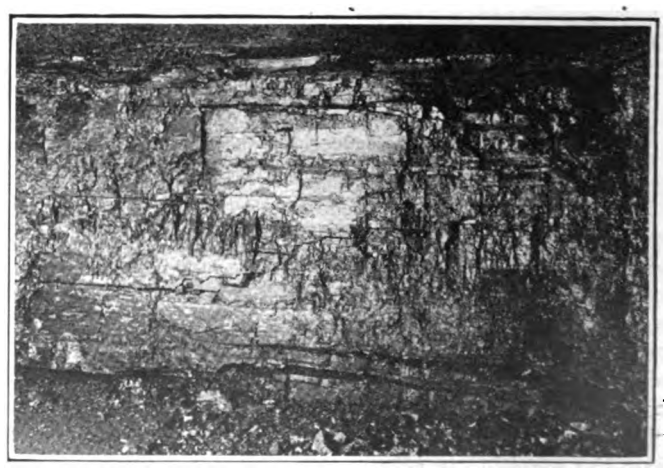

Fig. 5—Coal Well Fractured, but Not Shattered

In many cases explosives, no matter how used, will not throw the coal from the face. In such instances the best result that can be expected is the development of fractures which indicate a loosening of the material. The miner's pick or some other mechanical device must complete the job.

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the fresh cuts. When one that has not been cleaned is found they should call it to the attention of the machine men. In making these inspections, it is well to use a flashlight so that the back of the cut may be clearly seen. Clean cuts are essential, even when the production of lump coal is not the primary object sought. Coal cannot be efficiently blasted if the machine cuts are not clean.

Where shotfirers blast the coal during the loading shift and lump coal is desired, they should be instructed

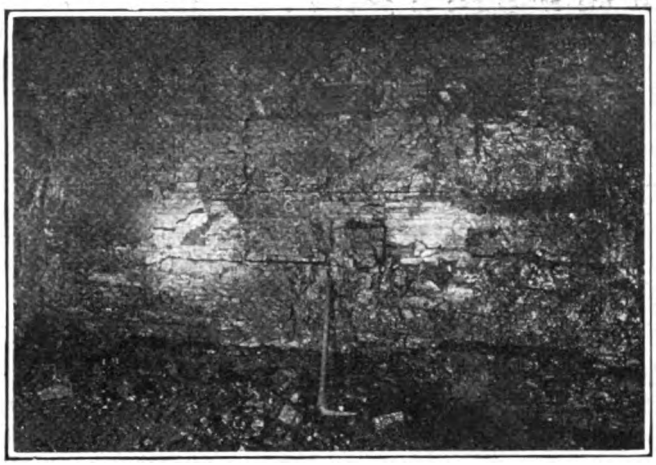

Fig. 6—Too Much Explosives Used in a Tight Shot

In the thick coal of the Pittsburgh bed no successful scheme has yet been developed to roll forward the coal from a tight shot. Although this shot has been overcharged, as shown by the shattering effect on the face, the coal has not been thrown outward into the room.

not to charge or shoot cuts from which the bugdust has not been removed.

Proper placement of holes for blasting depends primarily upon a number of factors, chief of which are the thickness of the coal, the depth of the cut, the direction and character of the cleavage, the hardness and brittleness of the coal, the natural weakness planes, the character of the roof and the bottom and the nature of the binders or other impurities.

MAY HAVE TO SHOOT IN BENCHES

The thickness of the coal will largely determine whether all the material between roof and bottom can be brought down at once or whether it should be removed in two or more benches. Wherever the coal is of such thickness and nature as to permit the practice, it is advisable to bring it all down in one lift. This reduces the number of holes and consequently the quantity of explosive necessary and the degree of shattering.

The depth of the cut naturally should be dependent upon the thickness of the coal and upon its relative resistance in different directions. This latter factor cannot be considered in the abstract. Coal cannot be successfully blasted in a 3½-ft. bed by means of a 9-ft. cut—at least not with the present conventional method of tamping. The distance from the end of the explosive charge to the face would be so much greater than that from the charge to the kerf that the force of the explosive would be expended toward the undercut, leaving the face practically unaffected.

Holes for blasting should be of such depth and location as to place a well-balanced load on the explosive charge. The cut should therefore be of such depth as to offer in all directions the least possible resistance to the explosive force generated.

The direction and character of the cleavage of the coal, if any, should be studied and the holes should be so placed as to derive the greatest possible advantages from these planes of weakness. Disregard of this consideration may result in unnecessary holes and in a material increase in the percentage of slack coal brought down.

In deciding on the number of holes to be drilled it is of prime importance to study the character of the coal itself. If it is of a woody structure, the holes should not be placed in the same manner as they would be if the coal were hard and brittle. Most coals have certain horizontal planes of weakness which may aid greatly in bringing down the material if the holes are so placed as to take advantage of these natural weaknesses.

Where the roof must be protected from the shock of the explosion, care should be taken to keep the holes as far away from it as possible, without losing sight of the fact, however, that the coal near the roof must be either loosened by the blast, or it must be dug or wedged down by hand.

BINDER DETERMINES SHOT PLACING

Probably the number and the resistance of the binders and bands play a greater part in determining the number and location of the holes than any of the above-mentioned factors. The holes must be so placed and the charges so proportioned that the explosive will effectively break these bands or binders and loosen the coal properly and yet at the same time prevent an undue

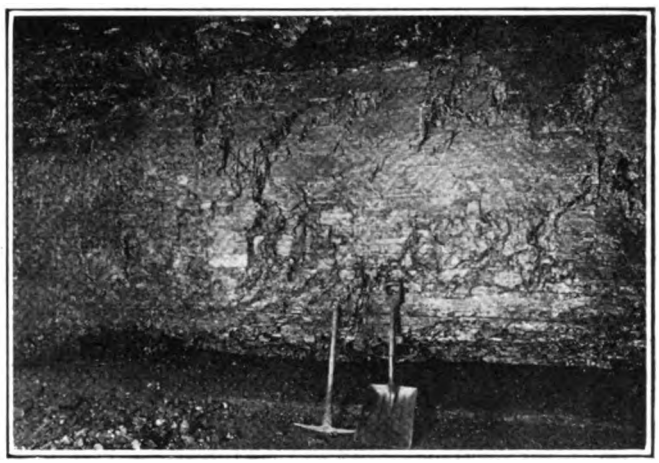

Fig. 7—Hand-Snubbing in the Pittsburgh Bed

This snub cut is started at a point 10 in. above the kerf at the front and extended downward and backward until it meets the kerf at a point 3 ft. in the rear of the face. An attempt was made in this instance to roll the coal forward. A number of similar tests in high coal in the Pittsburgh bed failed in their purpose. The coal being mined is about 7 ft. thick.

shattering or pulverization of these impurities. It is not possible in a general discussion to give the number and direction of holes needed to meet all conditions. Experiments must be made to solve this problem for each mine.

Much discussion during the past three years has centered about the proper sizes of cartridges to be employed and their relative advantages and disadvantages. Many experiments have been made by explosives engineers and technical representatives of the various powder companies with cartridges of small size. As a rule powder companies have objected more or less strenuously to the use of explosives of less than 1¼-in. diameter when these explosives have an ammonium-

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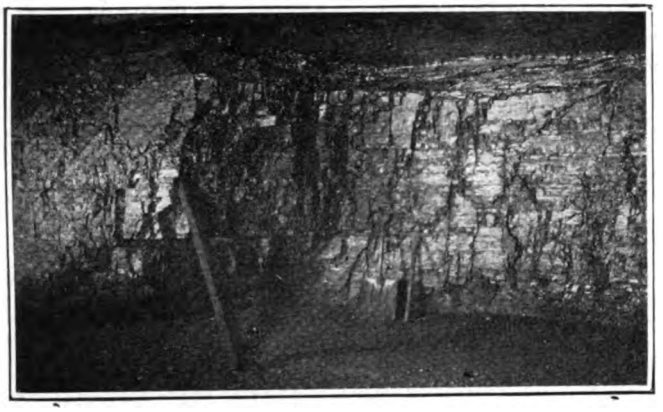

Fig. 8—Face Properly Prepared for a Butt Shot

In the Pittsburgh bed the common practice is to blast the coal with two shots. The place shown in the illustration is 22 ft. wide. The first or tight shot breaks the coal in the cut across about two-thirds of this width. After this initial shot is fired the miner props up what coal remains in place. The butt shot is fired after the coal dislodged by the tight shot has been loaded out.

nitrate base. Their objections have been founded upon the rate of deterioration of an explosive in relation to the diameter of the cartridge. The powder companies have justly claimed that as the diameter is lessened the rate of deterioration is increased. Naturally an explosive cartridge of 1½-in. diameter would lose its strength from deterioration more rapidly than one of 1¼-in. diameter. The manufacturers, therefore, have objected to making cartridges of small caliber, knowing that they would be held responsible for powder that becomes insensitive to detonation.

As will be shown later, the viewpoint of the explosive engineers has been diametrically opposed to that of the powder companies. Various tests have been made to determine the relative advantages and disadvantages of different lengths of explosive charge. The means employed to increase the charge length are known by numerous terms—air-spacing, and cushioned-blasting being the most common.

SPREADING THE CHARGE OVER HOLE

Results have proved that the relation of the length of explosive charge to the length of the hole is an important factor in the blasting of machine-cut coal. It has been found that most coals do not offer the same resistance to breakage in all directions because certain natural planes of weakness are present in them.

In many instances well-defined cleavage planes or slips are found which run more or less perpendicular to the bedding planes. These, and other irregularities, cause the resistance to vary in different directions. It also is true that the thickness of the coal and the depth of the undercut usually hold no fixed relation to one another. One must therefore take all these factors into consideration when trying to determine the length of charge best adapted to blast the coal economically and efficiently.

Satisfactory results from blasting cannot be obtained unless the shots are well-balanced. To provide this balance, the charge should be placed in the holes in such a manner as to assure equal resistances of the coal to the expanding gases in all directions. Should the resistance be unequal, the gases evolved, following the laws of physics, will act toward the line of least resistance. This gives inefficient blasting and entails the use of an excessive quantity of explosive. To remedy it, the depth of undercut and its relation to the thickness of the bed, as well as to the physical characteristics of the coal itself, must be known.

When these factors are ascertained, a theoretical determination of the proper length of charge can be made. For example, if the coal is undercut to a depth equivalent to its thickness, and its resistance is the same toward both free faces, the explosive charge should be placed as near to the back of the hole as possible in order that the expanding gases may not have an easier escape in one direction than in another. If the resistance is greater toward the front of the cut than toward the top of the kerf (in an undercut) tests must be made to determine the relative resistances in these two directions.

This relative resistance being determined, the explosive should be so placed as to put the front of the charge proportionately nearer the face than the top of the kerf in order that the burden on the explosive may be well-balanced. In connection with this problem the diameter of the cartridge plays an important part.

SMALL CARTRIDGES WOULD BE BETTER

With 1¼-in. cartridges one may find that a long charge cannot be used without overloading the holes. Under such conditions it would be advisable to use smaller cartridges so as to distribute the charge over this greater length. This procedure is necessary in districts where air spacing is prohibited. Where such spacing is allowed, the explosives charge can be lengthened so as to obtain a blasting balance by the use of compressible dummies, in conjunction with cartridges of large diameter.

In a bed in which the resistance toward the kerf is greater than toward the face, well-balanced shots cannot be produced with one row of holes. Under these conditions the coal must be blasted in two or more benches. That portion which is brought down in the first bench should be loaded out before the upper bench or benches are blasted in order to provide room for the expansion of the remaining coal. The material from the upper benches should not be allowed too great a fall, for the coal may be unduly shattered.

The foregoing discussion shows that no cure-all is known for the troubles encountered in blasting coal. Each bed and often each mine is a problem within itself and must be treated as such.

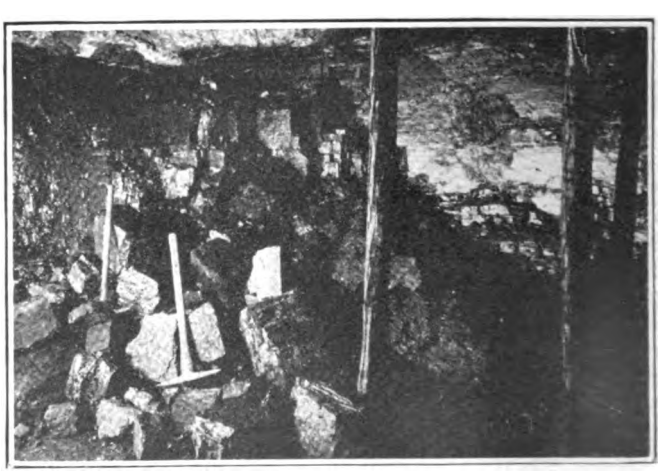

Fig. 9—Coal After a Successful Butt Shot

The condition of this coal was not staged; it shows the exact position that it assumed as the result of a shot. Much of it has been rolled out in lumps that can be conveniently handled by the miner. The coal which is still standing is sufficiently jarred and broken as to fall forward with little picking.

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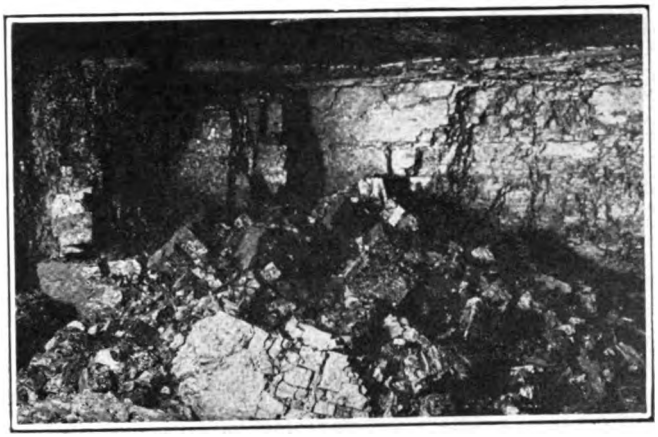

Fig. 10—Face After an Overcharged Butt Shot

Too much explosive in a butt shot has caused the coal to be unduly broken and blown for some distance from the solid face. Note how severely the material in the foreground has been shattered.

Clay is one of the best stemming materials that can be used. Care must be taken not to store it in wet places where it will soon become so soft and soggy as to be unsuited for stemming. It should be stored in crosscuts or room necks at distances convenient to the miners.

Education in blasting is sorely neglected at most mines. This is as true of the officials as of the men. Usually the method of blasting and the placing of holes that is practiced at any particular mine are believed to be the best possible not because they are the result of study and test, but because they are customary. The average mining man knows little or nothing of the characteristics of the different explosives on the market. What is true of explosives is true also of detonators, as also of the effect of the diameter of the cartridges and of the proper placing of the detonator in the explosive charge. Colliery superintendents should arrange to have at their safety meetings, men who know how to blast coal, so that they can teach the employees the most approved methods. Safety practices, as used by different companies should be studied and comparisons made in order that a safe and workable set of rules may be formulated. The shotfirers should attend such meetings whenever blasting is the topic for discussion. Suggestions and recommendations from these men should be given careful consideration.

To obtain an efficient blasting practice and to produce a satisfactory quality of coal, a thorough study must be made and a uniform practice instituted. This much having been accomplished, close supervision must be provided, and unofficial variations from standard practice must be prohibited.

Can Gas Be Made at Mines With Profit?

Big cities have frequently risen amid the mining areas that were the sources of their wealth and opportunity, but they now draw their supplies from a distance, for the mines have been depleted by their many years of operation. Thus mining installations become further and further removed from a possible market for gas. Some mines always had that disadvantage and many that did not have it would have found, had they tried to make gas, that they had an active competitor in natural gas such as would have made the artificial product an impossibly expensive fuel, wherever, at the mines or elsewhere, an attempt might have been made to manufacture it. The question arises therefore: should coal be shipped to the city for the manufacture of gas or should it be coked or otherwise gasified at the mines, the gas being conducted in pipe lines to the industrial centers?

Load Fluctuations Trouble Gas Men

W. W. Freeman, of Cincinnati, president of the Union Gas & Electric Co., discussed this subject for the benefit of the members of the Charleston, W. Va., section of the American Institute of Mining & Metallurgical Engineers, giving the reasons why gas usually had to be manufactured out of coal on which a heavy freight charge had been paid instead of out of coal that was debited with no such charges.

He said that load fluctuations are the chief worry of the gas companies. It is impractical to build transmission pipe lines 150 to 175 miles long large enough to handle the usual ten- to fifteen-day maximum winter peak. For this reason the logical place for a gas-making plant to reinforce the supply of natural gas is at the point of distribution rather than at the mines.

The demand for gas in Cincinnati is normally 3½ times higher in the winter than in the summer, and about 50 per cent of the year's sale is during the four winter months. The encouragement given to house heating only makes the situation worse. The mixing of artificial and natural gas is a difficult problem because a marked change in the percentages requires a readjustment of the customers' burners.

In discussing the paper, Mr. Forrest described the manner in which peakloads are handled in Chicago. Sufficient byproduct ovens to satisfy the maximum winter demands would involve an expenditure entirely out of all reason. At present the coke ovens have a capacity of twelve to fourteen million cubic feet. Producer plants have a capacity of about twenty-five million, and water-gas plants another twenty-five million. These latter installations, which cost far less than byproduct coke ovens, take care of peakloads, but the gas they make costs far more than if made in a coke plant.

Near Fairmont, W. Va., a byproduct plant is now operating which delivers artificial gas into the mains originally laid for the purpose of supplying the natural product. The new plant supplements the wells, the production of which is slowly decreasing. S. A. Taylor, consulting engineer, of Pittsburgh, Pa., and president, A. I. M. E., said that locations remote from cities have been selected by a certain large gas company for the building of new plants. These locations are chosen so as to make effective use of the large investment already expended in pipe lines. As the lines are already installed, the plant can be located somewhere near the coal supply.

OVER ONE-FOURTH OF THE RAINFALL that falls on the surface above the mines percolates into the workings according to R. D. Leitch, associate chemical engineer, U. S. Bureau of Mines, Pittsburgh, Pa. In fact he quotes the figure as 27 per cent of the annual rainfall and adds that, except from shallow workings, the mine drainage flows are said to be quite constant and to vary little with the occurrence of rain, whereas the flow in surface streams varies considerably from time to time. The maximum and minimum discharge from mines varies only about 17 per cent from the average.

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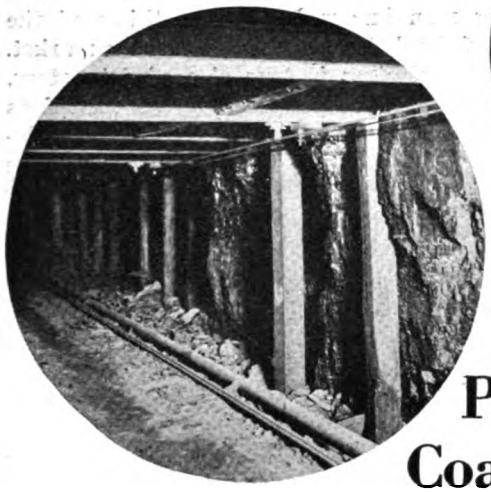
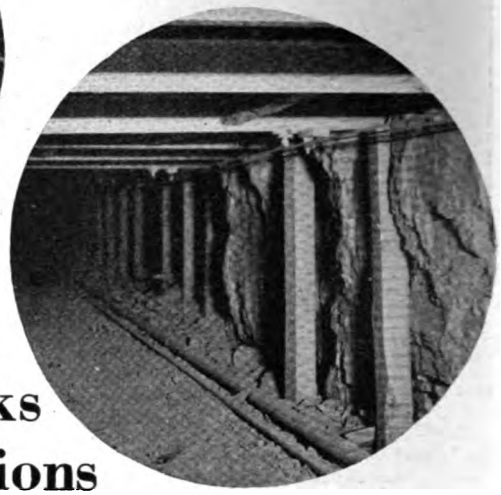
In center—Man stone-dusting with compressed air at Talk O'Th'Hill Colliery, near Stoke-on-Trent, Staffordshire, England



Below—Rock-dusting at the Inland Collieries, Indianola, Pa.; on left, a light application, on right, an efficient coat of dust





Rock-Dusting Promptly Checks Coal-Dust Explosions

Even Where Dust Is Wet Pulverized Rock Is Helpful—Not Only Roadways but Airways Also Should Be Strewn with Rock Dust — Barriers Valuable Especially at Strategic Points

By J. W. Paul and C. A. Herbert
U. S. Bureau of Mines

DESPITE THE ABSENCE of explosive gas, coal dust, when in a dense cloud in the air, may be ignited by an open light or an electric arc or by the flame from a non-permissible explosive, and being confined by the ribs, roof and bottom of the mine may quickly assume a rate of combustion that gives great and violent explosion effects.

A coal-dust explosion once started does not depend upon external application of heat or flame to keep it active, but may gradually or suddenly increase in violence in its travel through a mine. A coal-dust explosion is self-sustaining and will propagate so long as enough coal dust has been raised in its path to sustain combustion. Counteracting influences are of many kinds: (1) Obstructions which can be moved or destroyed, and which can thus transform some of the heat into kinetic energy, (2) The arrival of the explosion at places of large cross-section which permit of an expansion of the hot gases of combustion, thus reducing the heat, pressure and velocity of the gases to such an extent that the explosive violence declines and a sufficient density of coal dust is not raised in the path of the explosion, and (3) Long stretches in the roadways traversed by the explosion where roof, ribs and bottom are wet and thus retard combustion by the absorption of heat.

Nevertheless, where the advance air waves have carried an excess of coal dust, an explosion has been found to extend through a wet entry as much as 500 ft., continuing to propagate in the dry zone beyond with continued violence. Coal-dust explosions in mines have traveled with equal violenee in the intake and return air currents, and in a number of shaft mines the explosion has passed across the bottom of an intake shaft and continued along the intake current to all sections of the mine.

Many demonstrations in this country and in Europe have shown conclusively that coal-dust explosions may be prevented, controlled and stopped by the use of rock dust when it is either mixed with the coal dust or placed in barriers which drop it in large quantity in the path of the advancing flame of the explosion. In quenching the flame of a coal-dust explosion, rock dust acts as a heat absorber. It serves to best advantage when it is dry and capable of being raised into a cloud through the shock or concussion waves set in motion by the oncoming explosion.

Where a zone is moist, rock-dusting will also help. It has been found that when rock dust was strewn over or mixed with coal dust and, where through the humidity of the air current, surfaces become damp or wet, the moisture, by reason of the greater capillarity of the rock dust, wets the coal-dust particles with which the rock dust is in contact. Coal dust, when not mixed with an absorbent material, tends to repel water. Another advantage of damp or wet rock dust is that it imprisons the coal dust with which it comes in contact and in this manner prevents it from being raised in the air by concussion. Consequently, whether a zone is wet or dry, rock-dusting is of great value in the prevention of coal-dust explosions. However, dry rock dust is always preferable to wet, because of its readiness to rise as a cloud and dampen the flame of an explosion.

It has been shown in repeated tests in the Experimental Mine of the Bureau that rock dust when properly used is 100 per cent efficient.

The question then arises, What has been the efficiency of rock-dusting in coal mines where rock dust

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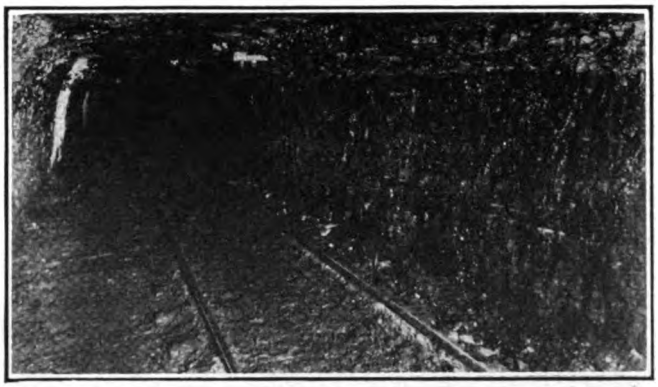


Before Rock-Dusting, Main Haulage, Montour No. 10

A rib in the roadway of one of the mines of the Pittsburgh Coal Co. Its multiplicity of ledges holds quantities of dust ready to be blown into the air by the advance waves of an explosion.

has been applied and where it has had opportunity to show its beneficial effects in stopping, or in a manner controlling, the spread of an explosion?

Explosions in mines, where rock dust has been distributed both by the strewing, or broadcasting, methods and by barriers, have been studied both here and in Europe, and it has been found that the range of the explosion has been controlled by the rock dust when only one of a pair of parallel entries or tunnels has been thus treated, but in each case the range of the explosion was greater than where the other parallel entry had been similarly treated.

The reason for this is made clear by a study of the pressures developed by a coal-dust explosion and the velocity it attains. In order to propagate an explosion that has gotten under way, as at the face of a working place, a dense cloud of dust must be raised in front of the advancing flame. To accomplish this, *air* waves of a high velocity must be created, and these are dependent upon the relative pressures set up by the advancing *explosion* wave. If this pressure is sufficiently reduced, the explosion wave will lose speed, and the air waves will cease to stir up the coal dust in sufficient density to admit of its flammation and propagation.

Both Entries Should Be Treated

It is apparent that, when rock dust is applied to only one of a pair of entries, the destruction will extend much further than if both had been rock-dusted, and this has been fully demonstrated in commercial mines where failure to rock-dust a trackless entry has permitted a dust explosion to extend over a relatively wide area, whereas the rock-dusted entry gave no evidence of the passage of flame.

Explosions which in some mines were of frequent occurrence have ceased to devastate such workings since they have been completely rock-dusted. In other mines that have been only partly rock-dusted, explosions have occurred and traveled relatively long distances, occasioning loss of life and doing much property damage. They were stopped only through the cumulative effect of the rock dust.

In mines relying wholly upon barriers, these protective devices have extinguished explosions only, however, after much violence has been exhibited and much destruction has been done. For this reason some mines originally equipped with barriers, have modified their practice and adopted that of strewing, or broadcasting, the rock dust throughout the mine, using barriers as supplementary only to the generalized rock dusting.

In a district where, under certain mining methods, previous explosions have extended throughout an entire mine or a large part of a mine, it has been noted that under similar mining conditions, where rock dust has been applied, explosions have been localized. It has been observed also that in a mine only partly treated with rock dust, the explosion covered a wider range. It, therefore, is essential that rock dust be applied throughout the mine if maximum safety is to be obtained. In concentrated methods of mining where machinery is used for cutting, loading and hauling the coal, many men may be at work within a small area, and to protect these men, rock-dusting should be applied as near the working places as conditions will admit.

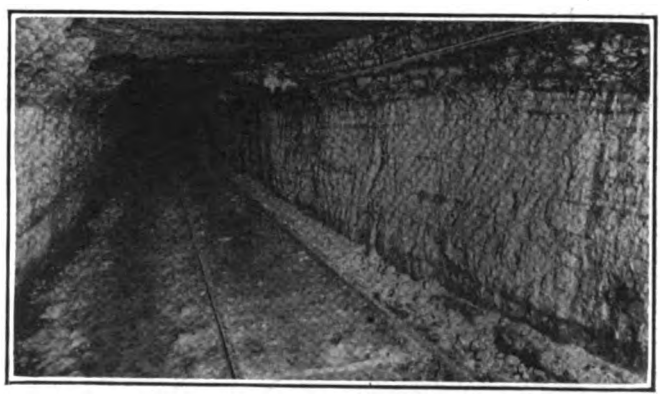
The experience of the Old Ben mines in Illinois, as described by J. E. Jones, was that, though barriers had stopped several explosions, the damage done and the risk to life were such as to show that the barriers did not afford the most efficient means of protection. Broadcasting of rock dust was, therefore, adopted as more efficient. Since then there has been no record of an explosion gaining any headway in any of these mines.

All But One Might Have Survived

In a mine in western Kentucky, rock dust had been broadcasted throughout the roadways up to a certain point. While preparations were being made to finish the job, a gas explosion in the untreated section ignited the coal dust. All the men in the district that had not been rock-dusted were killed, but those in the adjacent rock-dusted entries escaped uninjured, the explosion having terminated when it reached the rock-dusted part of the mine. Had the affected portion of the workings been rock-dusted, probably all would have been saved but the person who ignited the gas.

The New Orient mine in Illinois had been rock-dusted and only a few of the entries remained to be treated when an explosion of gas started a coal-dust explosion. This traveled along the untreated entries until it reached the rock-dusted area, where it was stopped. Moisture along part of the zone that the explosion traveled no doubt assisted in its retardation by furnishing no additional coal dust for fuel. However, the explosion, carrying dry coal dust from inby points, would have continued indefinitely but for the rock-dusting beyond the damp zone.

It was brought out in the official hearing following the explosion at the Horning No. 4 Mine, near Pitts-



After Rock-Dusting, Main Haulage, Montour No. 10

The Pittsburgh Coal Co. has had heavy operating losses but nevertheless has been rock-dusting its mines faithfully, even to designing a machine for that purpose. An unsafe mine is not only an offense against society but an undesirable property to operate.

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burgh, Pa., that the pair of entries in which the explosion occurred had been rock-dusted only on one entry and for a length of but 100 ft., however the main haulage up to the pair of entries had been treated with rock dust, and this was an important factor in the control of the violence of the explosion, which subsided through the cumulative influence of the rock dust in the part of the mine involved. This emphasizes the importance of applying rock dust to the airways and other parts not used as haulage roads.

In the study of a large number of mine explosions it has been found that where tight mine cars have been used without heaping the coal above the top, and where good track has been maintained, little, if any, coal has been spilled along the haulageway. In some of these mines the roof or bottom had been brushed to provide height, and this brushing had resulted in leaving an appreciable quantity of shale in a fine state which acted as rock dust. In these zones the violence of the explosion has been noticeably reduced, and in some cases the explosion has been checked or stopped, by the inert material which the advance wave of the explosion raised into a cloud.

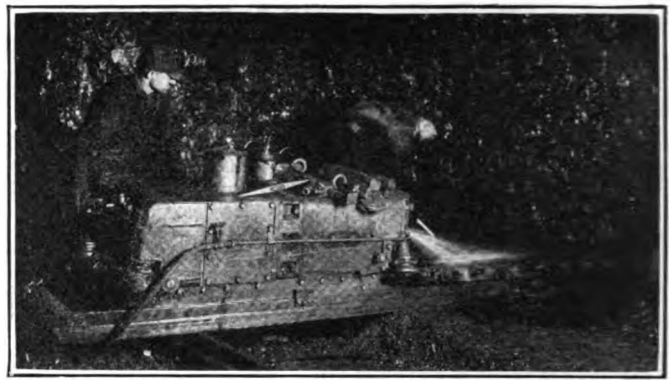
Great risk is taken when only part of a mine is treated with rock dust, such as the haulage roads, leaving the aircourses and trackless entries without this protection. A practice such as this invites disaster and when an explosion travels any distance in a rock-dusted mine it is conclusive evidence that the rock-dusting has been neglected or that some part of the mine has not been treated.



Undercutting Coal Without the Use of Water

A dense cloud of dust was raised in undercutting. This, the illustration does not show clearly. It is easy to see how large a quantity of dust is formed to serve as a powerful explosive should it be raised in the air and then become ignited.

Rock-dusting calls for maintenance and this can be accomplished only by frequent sampling and analysis of the dust on the floor, rib, roof and timber to determine whether a new application of rock dust is needed. Rock dust, unlike water, does not evaporate and when applied in a mine it "stays put," but as coal dust is constantly being made and collects in the mine, in course of time the rock dust will need to be replenished if the combustible is to be kept at a minimum. In order to determine the need for a renewal of the rock dust samples should be taken from the roof and ribs in the various sections of mine. At the same places other samples should be collected by gathering the dust in a line across the floor. These samples should be kept separate for analysis or for determination by the volumeter, which latter gives a quick method for determining the inert material present. (This method is described in Bureau of Mines Technical Paper 144, which may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 10c.)



Undercutting with Water Playing on Cutter Bar

Thus dampened the air is cleared of dust particles, both while cutting the kerf and loading the dust. Fine coal does not blow off the cars in transport and if an underground dump is used less dust by far than is usual is set free to distribute itself on the mine timbers, rib ledges, floors of passages and other points of collection.

The strewing, scattering or broadcasting of rock dust is the most efficient method by which it can be applied. Where only dust barriers are provided they may fail to stop a weak explosion near its place of origin, as the explosion may travel some distance before it assumes such violence as will operate a barrier, and meanwhile the explosion will do much damage and may take many lives. Barriers are intended only as a second line of defense in connection with the broadcasting of rock dust and are best suited for installation in entries connecting two mines, at entrances to abandoned or worked-out areas and at the entrances to panels or sections of mine workings.

Rock dust properly applied and maintained is a panacea for coal-dust explosions, and when its use has become a daily routine at all bituminous coal mines, the wholesale loss of life in mines will be at an end. No longer will large numbers of lives be lost by explosions extending through a large portion of a mine.

V-Troughs Last Long and Are Cheap

"The proper placement of rock-dust barriers has been a matter of some discussion," remarked Robert M. Lambie and Gordon MacVean in an article delivered before the Charleston (W. Va.) section of the American Institute of Mining and Metallurgical Engineers. "It must be realized that they are essentially of the nature of a secondary defense. Their use is to isolate abandoned workings, to separate interconnected mines from each other, to protect entries which cannot be given a general coating of dust, such as aircourses.

"There are numerous types of barriers in use but by far the greater number are the so-called 'V-trough' barriers. In general, practice in this country so far has been to place this preventive equipment in the returns of all air splits, the barriers to carry 100 lb. per square foot of cross-section. Each V-trough holds about 200 lb. of dust. In a 7x5-ft. aircourse from fifteen to twenty troughs to a barrier would be needed.

"The cost per set of fifteen troughs at Mine No. 8, of the Pittsburgh Terminal Coal Co., has been given as $44.55; per set of twenty-one troughs at Naomi Mine of the Hillman Coal & Coke Co., $47.88. The cost per V-trough varies from $2.25 to $3.60.

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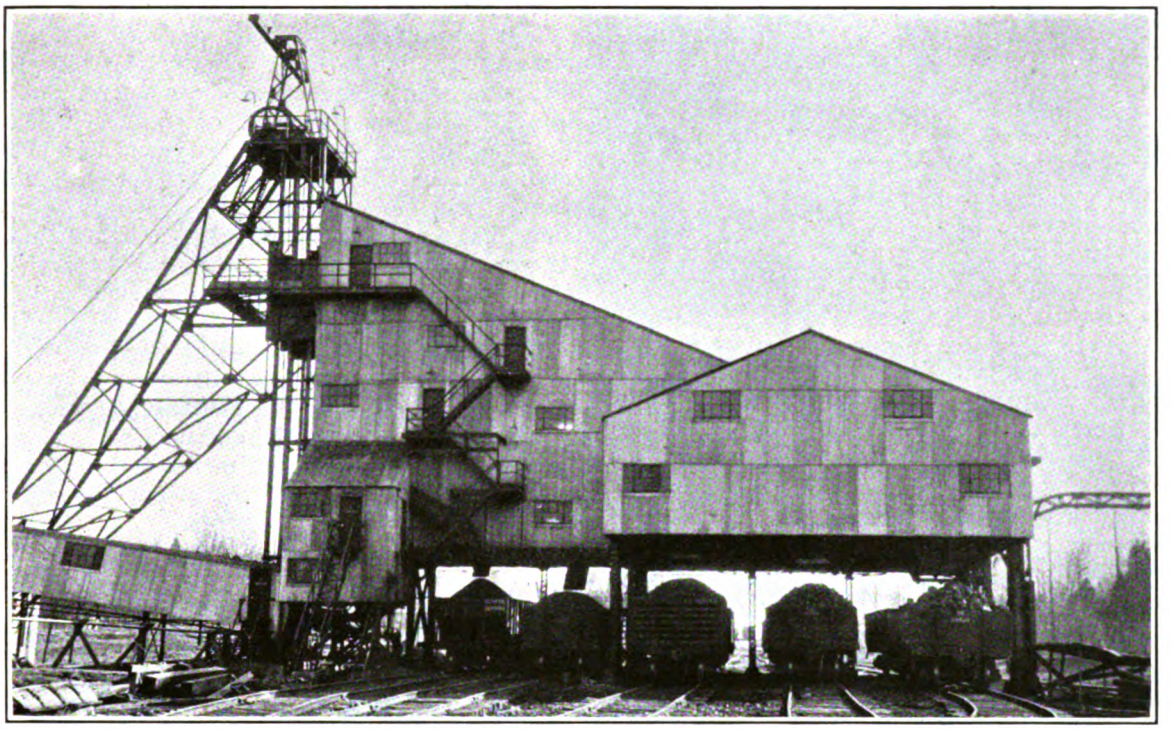

Coal Industry Greatly Needs to Reorganize and Reconstruct Its Operating Methods

Mergers Do Not Reduce Excessive Output—Big Tonnage, Lower Cost and Falling Prices Form Vicious Circle — Specialized Brains Needed to Rèvamp Mines — Manufacturing Methods Should Be Adopted

By John A. Garcia
Consulting Engineer, Chicago, Ill.

MUCH CONFUSION between cause and effect exists in the mind of the public and in that of many coal operators as to the solution of the problems confronting the coal industry. One of the main reasons for the continued failure to attain stabilization is the repeated effort to cure the effect without removing the cause of the trouble. This, admittedly, is over production.

There are cries for mergers but such consolidations, with few exceptions, do not in practice reduce output, but in many cases actually increase the total production. Some of the mines merged may, it is true, be shut down or abandoned as a result of the merger, but the output of the consolidated property is likely to be, and usually is, larger than that of the many units out of which it was created.

And again, there are cries for a reduction in the wage scale, but the net result to the operator of such a decrease would be little, in either the union or the open-shop fields, unless the differential between the two were changed by the readjustment, for the margin between cost and revenue will remain fixed should the wages in the two sections advance or recede simultaneously and in the same ratio.

The coal industry travels in a cycle. Increased output is advocated for the purpose of decreasing cost, but the outcome of the large tonnage is a lower price that defeats the ends so diligently sought. Further efforts are made to increase tonnage so as to lower costs accordingly and that decreased cost is met by further price reductions. The cycle is vicious. Unless it is broken there is no prospect of rehabilitating the industry.

Although mergers tend, as has been often said, to lower the cost of selling and administration, they usually create an offsetting disadvantage by fastening on the industry fixed charges for the interest on bonds. Before the merger the properties were financed by stock, and consequently the reorganization has replaced an optional dividend with a legal demand that can be met only by the production of coal for less than the market price.

Instead of boosting output to get lower cost it appears logical, in view of the cycle just cited, to decrease cost and at the same time to reduce the capacity of the mines. This apparently rash suggestion may not appear so impossible after examining the operations and records of a few companies where the "New Idea" has found lodgment.

The headpiece shows a modern tipple where only one man is needed at the dump yet the capacity is 4,000 tons daily. Compare this with the tipple that heads the right column of page 731. Here eight men manage with difficulty to load 2,000 tons per day. Who shall say we do not progress?

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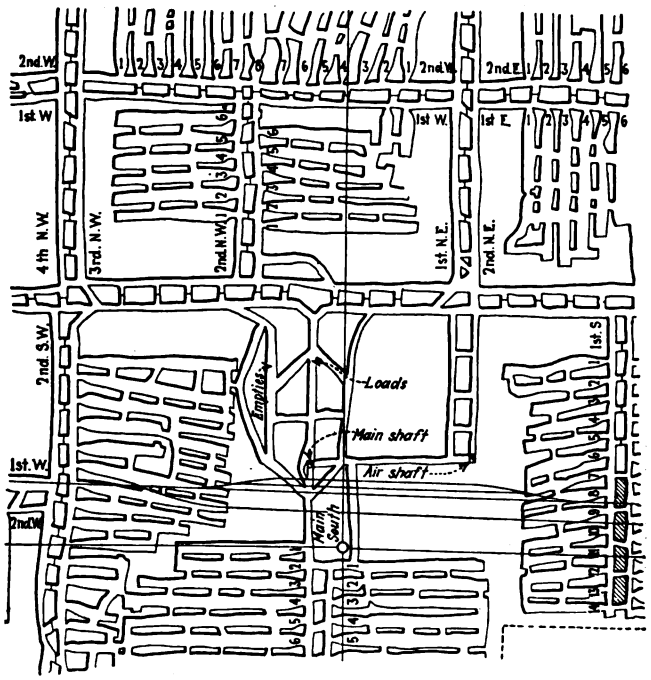


They Hoist 3,000 Tons at This Mine Daily

A great credit to the management that it thus overcomes the difficulties of layout and equipment. However it takes eight men to turn the trick. You can do wonders, if only you have the men, as Pharoah proved when he built the pyramids.

This plan, simply stated, is to regard the mine as a manufacturing plant and to upset the traditional notion that each miner shall be permitted to work in relative independence. In my opinion this may be done in part by replacing room-and-pillar mining with its many disadvantages by what is generally known as "modified longwall" thus permitting a real concentration of the workings.

In order to illustrate how concentration reduces the area of workings, assume a seam adapted to such concentration say 5 ft. thick. On a longwall face, 200 ft. long, with a 6-ft. undercut, 240 tons would be shot down. Even at the low average output of 12 tons per loader only twenty men would be required to shovel this coal. In practice the figures probably would be reversed, the tonnage per man would be 20 tons per day and the number of men employed twelve instead of twenty.

This same tonnage could be produced with rooms and pillars, only by working twenty-four places with a loader in each whose average production would be 10 tons. If the rooms were placed on about 40-ft. centers the lineal extent of development would be 960 ft. or almost five times as great a length as with a longwall face. This, however, may not represent actual conditions, but a mine that I recently examined showed only 12 per cent of the narrow-work coal being worked on the advance and 6 per cent being worked on the retreat or a total of 18 per cent.

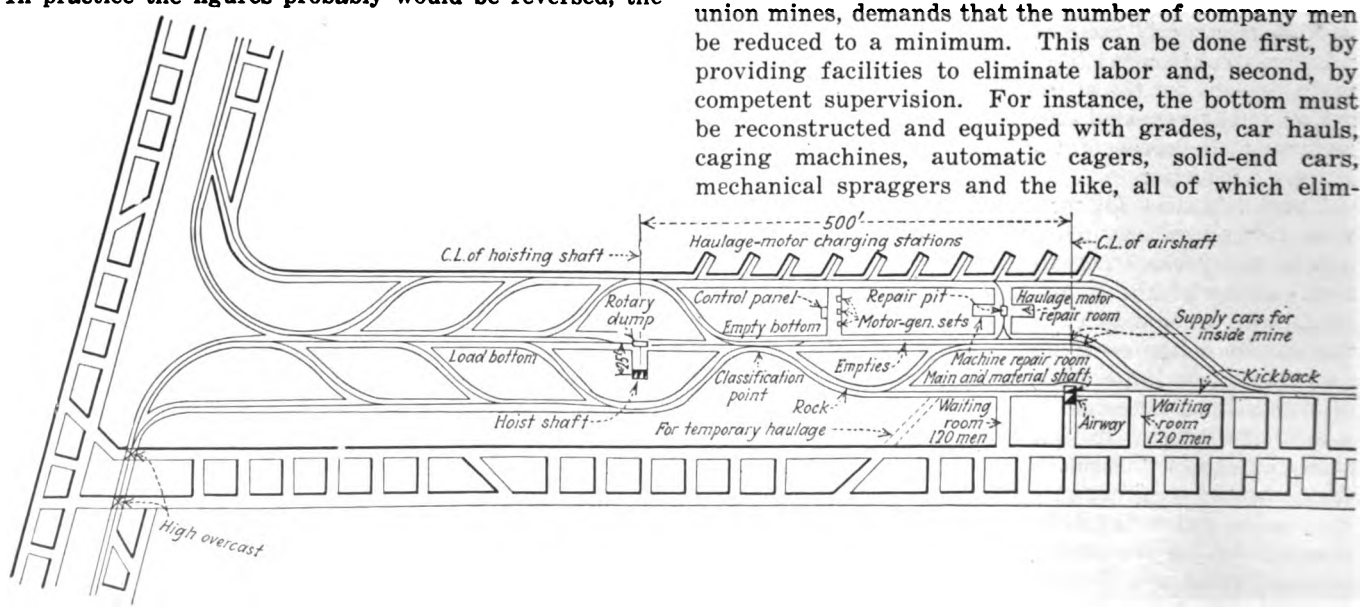
With face conveyors loaded by hand or with loading machines that place the coal directly into cars, whether the room-and-pillar or the modified longwall system is used, a different gathering and haulage system must be provided from that which serves for ordinary operations where such loading equipment has not been introduced.

MUST ADD SPACE, BINS AND CRUSHERS

With mechanicalization of loading, a well-trained and intelligent operating staff is made necessary and the problem of coal cleaning is accentuated. Machine loading necessitates the reconstruction or, at least, the rearrangement of the surface facilities. The sized coal of over 3-in. diameter may be cleaned by hand, but the tables will have to be extended so as to provide additional space. Conveyors to handle the refuse will also be needed. Small crushers must be installed to reduce the burnable refuse to nut or screenings. Bins and storage facilities must also be provided to facilitate refuse disposal.

Coal of less than 3-in. diameter, and certainly all under 2 in. cannot be hand-picked economically, so that the reconstruction program will require a plant for cleaning this material. Several means are available for this service—water, air, oil, flotation, or combinations of these—each with its special advantage but all calling for new equipment, structures, skillful engineering and intelligent operation.

The high wage scale, especially that prevailing at union mines, demands that the number of company men be reduced to a minimum. This can be done first, by providing facilities to eliminate labor and, second, by competent supervision. For instance, the bottom must be reconstructed and equipped with grades, car hauls, caging machines, automatic cagers, solid-end cars, mechanical spraggers and the like, all of which elim-



Mine Bottom Designed for 10,000 Tons per Day with Only Five Men Needed

Here there is an adequate bottom for car storage, means for moving cars without labor, a rotary dump that empties cars without uncoupling and a skip shaft. This mine has produced 12,000 tons in a day. There are other facilities such as waiting rooms for men and motor charging stations which with their carefully chosen locations make matters for profitable study.

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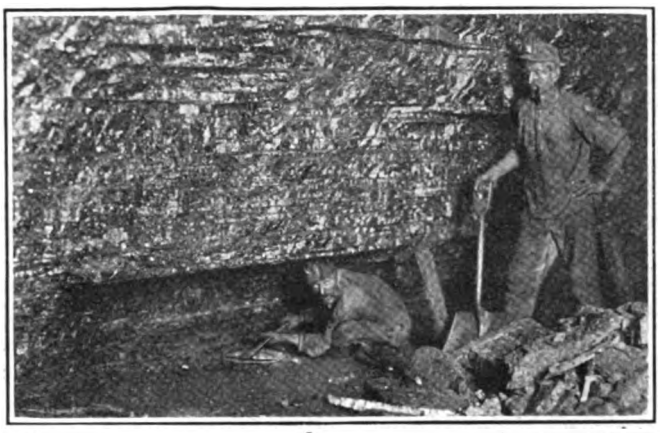





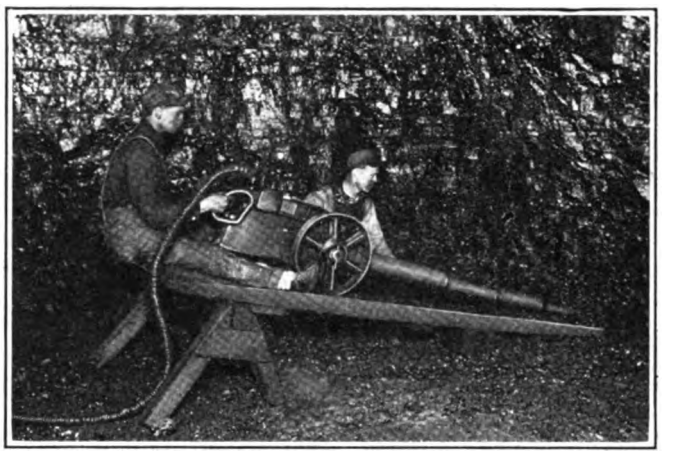

"Lest We Forget"—The Ways in Which Mining Used to Be Done but Rarely Is Performed Today

In the upper left illustration is shown the process of undercutting coal as it was actually done in 1900. Coal is said to be cut by hand pick in some mines today but as it is generally expressed we "let powder do the work." The lower left illustration shows the hoisting plant at Leaford, Ill. A few farmers' banks perhaps still use this means to raise coal. The upper right illustration features the mule. Less than thirty years ago a mule or a string of mules was quite generally the main-line unit. In the lower right illustration can be seen the coal puncher that in 1910 seemed to possess the field. "The electric cutters were large, heavy, expensive and of doubtful utility," some of us thought, but they came and conquered.

inate labor. Partings may be reduced in number and arranged for minimum labor cost in handling trips. Ample room, well-built switches, guard rails and other devices will prevent delays and de-railments. Cars must be so designed as to afford maximum capacity under the known conditions and a low maintenance cost with provision for easy oiling, and wheel replacement.

All construction work in permanent entries should be done in a manner and with materials that will avoid the constant renewal charge so common in many coal mines. The mainline stoppings should preferably be constructed of some permanent material, such as concrete, brick or tile, as should also the overcasts, pump rooms, repair shops, transformer stations and similar structures. The timbers on permanent roads, aircourses or manways should be of steel or treated wood, for in this item lies one of the most prolific sources of high repair costs.

The haulage system must be constructed for fast and safe traffic with roadway, drained and graded, and all timbering set with ample clearance. Maintaining a poorly built haulage system is an expensive item on the cost sheet, the work being done usually by the highest priced labor on the payroll, such as tracklayers, timbermen, and electricians, so that the best and most permanent construction at the start is the least expensive in the long run.

Savings in labor costs made possible by modernization may be illustrated by comparing a self-dumping cage mine with one using a stationary platform. In the former, not more than one man is needed at the dumping point, whereas, in a tipple where cars are pushed off the cage to the tipping point, the usual crew is eight men, making a difference in daily labor cost, at $6.50 per man per day, of $45. A great increase in hoisting capacity may also be realized with the first method.

Again five men at the shaft bottom will handle 12,000 tons per day where underground continuous rotary dump and skips are used, whereas eight men will be required where self-dumping cages are installed, and the hoisting capacity will be only about 6,000 tons. In the first case 2,400 tons will be handled per man and in the second only 750 tons. Thus with a rotary dump and skips the performance per man will be 220 per cent greater than it would be with self-dumping cages.

With New Mine Cars Large Tonnage

Reconstruction of mine cars offers a fertile field for engineering skill, and large cost reductions are often possible by improving their design so as to increase their capacity. As this is written the data have been received on the first day's trial of a new car designed with the same governing dimensions as the equipment previously in service. The record indicates a capacity for the new car of 10,000 lb. against a maximum for the old car of 8,000 lb., or 25 per cent additional coal. This was accomplished with an increase in tare weight of only about 300 lb. It means that 25 per cent more coal may be hauled without any increase in cost, that fewer cars are handled all over the mine for the same output, and that dumping and hoisting operations are proportionally reduced.

Handling railroad cars on the surface is also a "point

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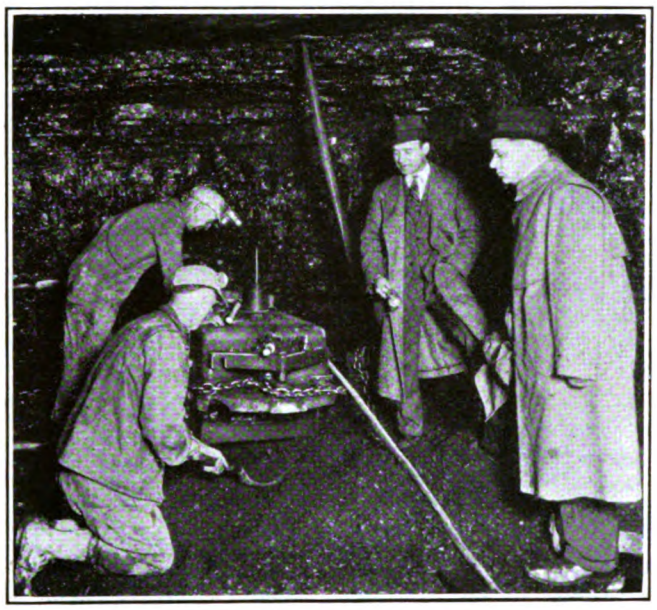


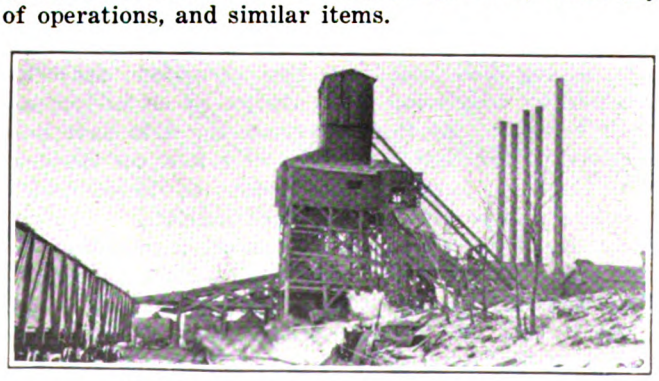
How Coal Is Machine-Cut in Present Decade

The labor-saving process has greatly progressed. It was easier to cut by air and to keep the pick in line by pressure of the feet (for after all it was gravity that advanced the puncher cutter to the face) than to do it by dint of hard blows of a pick swung by one's arms, but with modern machinery once the machine is in place it moves itself to accomplish its work and in some cases it travels by power into the room and out of it under the control of its master.

of attack" for the engineer seeking to convert a mine into a manufacturing plant. There is much room for improvement in the present customary method of "dropping" cars down a grade to and from the tipple. Car retarders under this structure are great labor- and time-savers and there are opportunities for cost reduction in the use of shunter locomotives with combined gravity and flat tracks, car hauls, and the like.

Reconstruction of the power plant and electrical distribution system at the average coal mine is a highly essential item and in the modernizing program, for the usual costs for steam and current are far too high. The advisability of purchasing power must be determined by careful analysis of each individual case. At many operations power generated at the mine would cost less than if purchased from a service company.

Where an ample water supply of the right quality is available and the plant can be reconstructed for truly economical steam generation using crushed picking-table refuse as a fuel, it is usually better practice to make power locally, though full consideration must be given to the load factor, idle days, night load, continuity of operations, and similar items.



Before the Transformation Was Made

In early days hoist houses had to be high, for the coal went over the screens by gravity and even then the big railroad cars could scarcely get under the tipple and the screening was none too good. The degradation, of course, was excessive.

It is safe to say that most coal mines need to reconstruct their electrical distribution system, for with the customary 250-volt, direct-current methods of furnishing energy to outlying and isolated mining machines and motors, it is extremely difficult to obtain satisfactory results from the electrical equipment. Generation and distribution of alternating-current to rotaries installed at strategic points in the mine appears to be the logical system to use wherever the point of power consumption continually recedes from the generator. Life of mine, however, as well as cost of feeders, projected length of entries, state laws, and the like all must be considered in the study of this problem. Furthermore each mine must be treated individually.

All the items of reconstruction and many others entering into the complete conversion of a coal mine as now operated, into a plant for the manufacture of fuel call for a complete reorganization of the usual personnel in charge. Engineering skill of the best grade is needed during the period of rehabilitation. In operation, the haulage will require the same kind of brains that now manage the railroads; the generation, transmission and use of power must be accomplished with the same skill



After the New Tipple Was Built

The old rickety structure is replaced by steel, not so high as the old one but giving better preparation, more height for cars and allowing greater hoisting speed.

and management as is exercised by the officials of public utility companies and the cutting, drilling, shooting, loading and preparation, as well as the marketing of the coal must be regarded as much the same kind of problems as those confronted in the manufacture and sale of automobiles. Into these three lines of endeavor—railroads, public utility and automobile manufacture—has flowed the best engineering talent and executive ability that the land has produced, with the result that in these lines America today leads the world in efficiency, low cost, uninterrupted production, satisfied labor and continued development of new ideas and methods.

In bituminous-coal mining one district is pitted against another by differentials in labor rates, freight rates and natural conditions; interstate competition adds further confusion and, finally, the union and "open shop" sections of the country are in a constant struggle to satisfy a market the normal demand of which is about one-half the mine capacity.

Such a situation, without doubt, signifies the survival of the fittest, and no artificial reorganization of the industry such as mergers or reduced day-labor wage, can bring about stabilization. Such methods in order to be

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effective must of necessity curtail output and reduce production costs in union fields. Reducing cost by cutting wages is the orthodox way of "managing" the average coal mine. It would appear, however, that this idea must pass and that the management of the profitable mine of the future will consider "tons per man" as of greater importance than "wages per day" and that permanent construction, both above and below ground, which is less expensive than temporary work with its high renewal and maintenance costs will in the future be regarded as preferable to the makeshift arrangements of the past.

The constantly decreasing number of young men who enter our mining schools and the pitifully small percentage of graduates entering the coal-mining industry is a true index of the reluctance, amounting almost to intolerance, with which coal-mine officials usually receive the infusion of trained brains. This is in marked contrast to the automobile, telephone, utility, railroad and other industries which not only welcome such men, but employ scouts to visit the technical schools and pick the best.

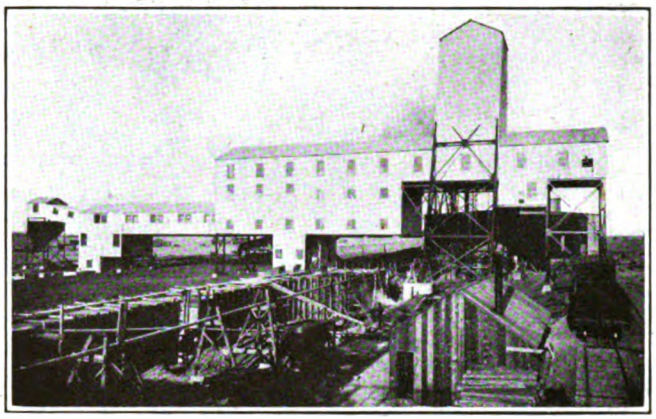
Coal mining is fundamentally and inherently a



Wood Must Go from Shaft Bottoms

The mine in which this photograph was taken was recently completely rehabilitated. The track shown provides storage for empty cars at the bottom of the hoisting shaft. The heavy concrete-and-steel construction indicates one of a number of changes needed to reconstruct an old plant.

science, and should be so considered. It requires a combination of engineering knowledge that no one man can fully absorb, for it is made up of structural, chemical, electrical and other branches of the profession to such a degree that individual knowledge becomes inadequate and organization alone will fill the requirements. To expect "factory" results from the management of a modern mine when the personnel is not made up of men trained in the technical, as well as the practical phases



A Fine Plant, but Eight Men Handle Only 2,000 Tons Daily

We move along rapidly and it seems difficult to convince anyone that what was standard a few years ago is obsolescent today, but so it is and, in financing, that fact should be remembered.

of the work, is just as futile as to hope for good results if engineers were not used in the construction and operation of a giant generating station, a railroad, or—to be specific—in the management of such concerns as the General Electric or Westinghouse companies.

The coal-mine operator deals in thousands of tons per day; the factory, the ordinary metal mine, the mill or the usual plant anywhere in hundreds of tons or even pounds. The coal miner does his work underground, in the dark, in the presence of unknown forces in roof pressure, water, gas, and the like, whereas the factory works to definite formulas in the daylight and on the surface of the ground. How much more necessary, therefore, is engineering in coal mining than in any other line of human activity? Thus far American operators have led the world in output per man, in lower production costs and in speed of development—all with practically no engineering at the average mine—but at what cost in extraction, in wrecked corporations, in overproduction, in tangled wage scales and in periodic chaos!

Reconstruction and reorganization of bituminous-coal mining will come either voluntarily step by step, with each individual company or by way of the more unhappy and violent method of bankruptcy. The choice lies with the coal operator and his banker. The interests of these two are mutual. The banker's vision and courage in many other phases of mining has been so clear and admirable that we may now quite logically look ahead with confidence to the dawn of a better day in the coal industry.



The Mules Next of Kin, the Electric Locomotive

The cars are rarely chunked with coal in the modern mine, as is shown here, but roughly heaped up in the center being filled hurriedly by a shovel or conveyor. For this reason larger cars than ever are needed if tonnage is to be maintained. Some are using side boards to obtain the needed height.



Reconstructing a Tipple, Time Had Made Obsolete

Many companies are rebuilding their surface plants, coal-handling and preparation equipment, thereby saving in labor and producing a better prepared coal. The reconstruction job here shown has since effected a saving per year equivalent to about 25 per cent on the investment.

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Mine Inspectors' Institute in Pittsburgh, Plans

Uniform Hoisting Signals and Elim Mines Initiates Terrific Explosion in Shoot Clear Across Valley—Company

From a Staff

PRESSING necessity for cheaper coal with resultant trials of new mining methods has brought fresh problems to mine inspectors and safety engineers. This was apparent at the annual meeting of the Mine Inspectors' Institute of America held in Pittsburgh, Pa., May 11, 12 and 13.

The registered attendance of over 120 men and the large program alike indicate that the institute is maintaining the progress started last year. Old timers say that it was the best meeting since the days of 1912 to 1916. Twenty-seven new members were admitted during the Pittsburgh sessions. Changes made to the constitution broadened the policies of the institute and made provision for more publicity.

Frank Hillman, safety inspector of the Woodward Iron Co., Mulga, Ala., and president of the institute, acted as chairman at all the meetings. The first two days were occupied by business sessions but the entire third day was devoted to an inspection of the U. S. Bureau of Mines experiment station and to a demonstration at the Experimental Mine.

SINGLE ENTRIES DREW NO COMMENT

On the first day, the members discussed single entries, explosive regulations and sprinkling. The paper "New Methods of Mining Single Entries in Their Development," by James Dalrymple, chief inspector of mines, Denver, Colo., drew forth many comments. As might have been expected, Mr. Dalrymple strongly opposes the driving of a single entry, his ideas being summed up in the following dictum, "The single entry is as old as mining and is as inefficient as it is old. Its inefficiency and dangers increase with its age."

It was understood that the term "entry" as used in the paper meant what is more commonly termed a room, scraperway, conveyorway, or the like. Although no one disagreed with the paper, the institute took no specific action to condemn the driving of long single rooms. Some interpreted this as a sign that many of the inspectors feel that the method is sure to come and that the ventilation problem must be solved accordingly.

A paper entitled "Regulations for the Use of Permissible Explosives," by Dr. J. J. Rutledge of Maryland, was constructively criticized. P. J. Callaghan, state mine inspector, Bridgeville, Pa., favored the elimination of the safety fuse, with the comment that electric firing is almost the exclusive practice in his section. He questioned the advisability of the practice of bringing out left-over explosive at the end of each shift.

Richard Maize called attention to the fact that the Pennsylvania law requires only a 5-min. wait before examination of a misfire, instead of one-half hour as recommended by Dr. Rutledge. Mr. Maize thinks that 5-min. is enough and inquired if a rule calling for short-circuiting of the electric wires at the firing machine or battery would not be a measure that would increase safety.

C. A. McDowell, manager, industrial relations department, Davis Coal & Coke Co., Thomas, W. Va., said that in the mines of this corporation, the men place their explosives with checks in the separate compartments that are provided in cars specially built for that purpose and destined each for its respective section of the coal mine.

WATER GOOD BUT DUST BETTER

A paper by Ed. Flynn, safety inspector of the Tennessee Coal, Iron & R.R. Co., Pratt City, Ala., on "Complete Watering System for Dust Control in Coal Mines" proved a disappointment to many. They were primed for an argument, but Mr. Flynn opened his remarks by stating, in effect, "I have no quarrel with the advocates of rock dusting." He claimed, however, that it was possible to fight the dangers of coal dust by water, and at the same time said that he believed

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Members, Mine Inspectors' Institute of America

# of America, Assembled Safety Regulations

ination of Fuse Sought—Bureau of Mouth of Experimental Mine—Flames Seeks to Sack Dust from Cutter Bits

Correspondent

that rock dust will do all in the way of explosion prevention that its advocates claim.

He insists that as yet dusting has not solved the problem at the face and that water on the cutter bar of a machine is a necessity. This, he said, requires a permanent piping system which can readily be utilized for sprinkling the major part of the mine. He said that rock dust should be used on the main slopes and in like places which are on the intake air. Answering a question regarding the cost of watering a mine Mr. Flynn said that in a certain mine covering 2,750 acres and containing 575 working places the sprinkling force consists of fourteen men in summer and twenty in winter.

On the evening of May 11, the institute was entertained at the factory of the Mine Safety Appliances Co., where the employees were held overtime to demonstrate the steps in the manufacture of mine-safety and first-aid products. Parts of the new McCaa oxygen-breathing apparatus were seen in the process of manufacture and the new continuous methane recorder was on exhibition. After a dinner on the top floor of the factory, professional talent entertained the members.

At the opening of the meeting on Wednesday two resolutions pertaining to safety were adopted. The first offered by V. E. Sullivan, of West Virginia, called for a uniform code of signals in all states where men are hoisted. The standardization committee was directed to prepare a report on this subject recommending a code to be submitted to next year's meeting. The second resolution by F. W. Cunningham, of Pennsylvania, declared that the use of fuse for blasting should be prohibited at all coal mines.

S. S. Hall, of Pennsylvania, read a paper on "Falls of Roof and Coal." He said that more serious accidents are chargeable to falls than to any other cause and that 75 per cent of these falls are due to disobedience, carelessness, and bad practices. His deductions indicate that the highest accident rate from falls is among men of 15 years' or more experience.

Mr. Dalrymple said that the efficiency of the individual must be increased before material reductions can be made in casualties. Mr. Maize cited a case of a company in his district which reduced accidents 80 per cent by strict supervision. Though education of the individual was not belittled, the consensus of opinion seemed to be that proper supervision and direction were the most important factors in reducing this class of accidents.

A paper by Edward Steidle reviewed the "Present



Officers of the Institute During the Past Official Year and the Pittsburgh Meeting

From left to right; Frank Hillman, W. H. Jones, Dr. J. J. Rutledge, G. B. Butterfield, J. H. Griftner, E. J. Hoey and William Boncer

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Mine Inspectors' Institute's New Leader

During the coming year E. J. Hoey will direct the business of the Institute as President. Mr. Hoey is district mine inspector, at Christopher, Ill.

Status of Rock Dusting in the United States." Five per cent of the bituminous mines, representing 12 per cent of the bituminous production of the United States is now dusted. An aggregate of 1,200 miles of entry has been treated. He emphasized the fact that rock dusting is only an additional safety measure or a line of second defense and that no other safety practices should be relaxed after dusting. He claims that the cost will not exceed 1c. per ton and that actual figures per ton from a number of mines run from 0.2c. to 0.9c.

Captain Steidle took occasion to criticize severely Harry Phythyon's book, "The Rock Dust Remedy." Mr. Phythyon was not in the meeting to defend his views but was in attendance at the banquet in the evening.

Dust Cannot Hold Enough Water

J. W. Paul, chief mining engineer, U. S. Bureau of Mines, called attention to the fact that tests have indicated that the dust of certain coals will not hold enough moisture to prevent propagation.

It was said that the Consumers Mining Co. is working on a plan to take coal dust from the cutting machine at the face by a suction fan and to sack it at that point.

Self-rescuers were described in a paper by George H. Deike. He stated that today protection can be afforded by suitable gas masks against every known industrial gas. The explosion at Overton No. 2 mine was cited as an example of what can be done where self-rescuers are available. At this disaster many lives were saved by the use of these devices. Although the self-rescuers are rated as of ½-hr. capacity, tests have indicated limits of from 1½ to 5½ hours.

E. J. Gleim, substituting for L. C. Ilsley, of the Bureau of Mines, gave an illustrated talk on "Permissible Electrical Mining Equipment." Among the pictures of the latest approvals were the Jeffrey conveyor loader and shortwaloader, also the Ohio Brass Co.'s junction box for portable cable connections.

Officials Have High Fatality Rate

The last paper, by Dr. T. T. Reed and J. J. Forbes, "Comparative Fatality Rates" was read by Mr. Forbes. He prefaced his remarks by calling attention to a statement by R. N. Hosler that the percentage of fatalities among mine officials in Pennsylvania is as high as among the workmen. The paper dealt with an investigation to determine if, in the period from 1915 to 1925, there is any relation between the production per death and the production per man per day.

The individual curves for each state show little or no relation between these factors, but the summation curves for all states indicate that the two factors may be in some slight degree related. Since 1920 the production per man per day, has steadily increased and production per death has decreased.

Officers Were Elected

The following were elected officers for the coming year: President, E. J. Hoey, district mine inspector, Christopher, Ill..; first vice-president, William Boncer, chief of coal-mine inspection, Richmond, Va.; second vice-president, W. H. Jones, chief mine inspector, Lexington, Ky.; third vice-president, Nicholas Evans, district inspector, Johnstown, Pa.; secretary, G. B. Butterfield, general manager, The Associated Companies, Hartford, Conn.; assistant secretary, J. H. Griftner, chief inspector, The Associated Companies, Champaign, Ill.; treasurer, J. J. Rutledge, chief mine engineer, Baltimore, Md.; editor-in-chief, James T. Beard, senior associate editor, *Coal Age* (retired), Danbury, Conn.

On Wednesday evening the Bituminous Mine Inspectors Advisory Association of Pennsylvania tendered a banquet to those attending the institute. J. T. Thomas, of Johnstown, acted as toastmaster, introducing the speakers: S. A. Taylor, J. J. Walsh, E. A. Holbrook, A. C. Fieldner, James Ashton, R. N. Hosler and J. T. Ryan. The climax of the evening was an address by a representative of the mining department of Russia, which representative proved to be the national entertainer, Luke Barnett.

Thursday morning, members of the Institute visited the various laboratories of the Pittsburgh experiment station of the U. S. Bureau of Mines. Among the new items seen were the continuous carbon monoxide recorder, the approved McCaa oxygen-breathing apparatus and the Fleuss-Davis breathing equipment which is also approved. The latter apparatus, which is made in England, uses an impregnated coke in a bag as the carbon-dioxide absorbent. This apparatus is a few pounds lighter than the Gibbs or McCaa.

To those who in the afternoon went out to the experimental mine at Bruceton, J. W. Paul promised, "probably the most spectacular coal-dust explosion that has been set off at the mine." None were disappointed. Flames shot out across the valley and gave the opposite hillside the most severe scorching it has ever had. The flames set the grass on fire in a number of places at least 100 ft. beyond the fence near the top of the opposing hill, thus extending 600 ft. or more from the mine portal.

Coal Dust Ignited Near Portal

In the preparation for this explosion no gas was used. Two pounds of coal dust per foot of entry was distributed from the mouth of the mine to a point 400 ft. inside of it. The dust was ignited by a blown-out shot consisting of 4 lb. of black blasting powder fired from a cannon at a point 180 ft. from the mine entrance and pointing outby.

This demonstration was but one of a number made during the afternoon at Bruceton, but it served as a fitting climax convincing any who might be skeptical that a blownout shot of black powder will produce an explosion of coal dust without the aid of gas.

Charleston was selected for the annual meeting to be held next year.

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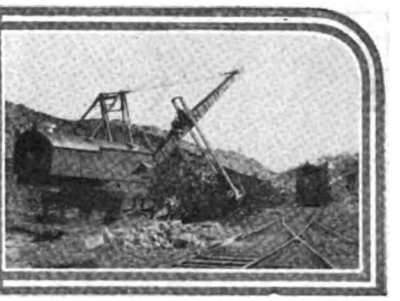
News Of the Industry



Consumers' Stocks of Soft Coal Total 40,000,000 Tons on April 1; 26 Days' Supply if Evenly Divided

Bituminous coal stocks in the hands of consumers on April 1, 1926, totaled 40,000,000 tons according to the U. S. Bureau of Mines. This is slightly lower than at a corresponding period last year, but about midway between the stock figures of June 1 and Sept. 1, 1925. The trend since the beginning of the year has been gradually downward to more normal proportions. Consumption continues to be more than production, which, during February and March, ranged downward from 12,167,000 to 9,626,000 tons a week, indicating greater inroads upon stocks.

At the rate of consumption prevailing during February and March this year, the supply on April 1 was sufficient to last 26 days. This is 11 days less supply than in March a year ago, the nearest like date for which figures are available for comparison, but four days greater supply than on March 1, 1923. If no substitution for anthracite had been necessary, the supply on Feb. 1 would have been sufficient for 31 days, but at the actual rate of consumption prevailing during January, the supply was enough for 28 days. The average days' supply figure, while useful for comparison with figures for other stock report dates, is not indicative of the true situation in many localities and industries, as individual supplies range from little or no coal on hand to very large reserves.

Upper Lake Stocks Near Normal

There were, in addition to the tonnage in consumers' hands on April 1, about 2,900,000 tons of coal on the Lake Superior and Lake Michigan docks; slightly less than 200,000 tons stored by the producers at the mines or at points between the mines and market; and approximately 1,000,000 tons loaded in cars but unbilled at mines. The first of these items is lower, as is normal at the end of the coal year, and the other two items higher, than on Feb. 1.

Anthracite and Substitutes. — With the resumption of anthracite operations in February, retail dealers' stocks of anthracite have increased considerably since the preceding date of stock taking, Feb. 1. Retail stocks of bituminous coal on April 1, while lower than at the time of the previous stock report, have not declined to any unusual or abnormally low level. Surplus stocks of byproduct coke at merchant plants on April 1, despite the record-breaking production during the two-month period under discussion, were even below the record-breaking minimum of Feb. 1, 1926, amounting to only 57,000 tons. At the beginning of the anthracite suspension, in September, byproduct coke stocks were 832,000 tons.

Estimates of the total quantity of soft coal in the hands of commercial consumers are based on practically complete reports from byproduct coke plants and steel plants, railroads and utilities, together with reports from a selected list of other industrial consumers and coal dealers—nearly 5,000 in all. The estimate for April 1, 40,000,000 tons, is believed to be accurate within 5,000,000 tons. It does not include coal in householders' bins, for which no estimate is possible, nor does it include the tonnage of steamship fuel in reserve. The tonnage on hand on the Lake docks also is omitted from this estimate but is included under the heading "Bituminous Coal in Transit."

Reports from consumers together with some supplemental information indicate that the average rate of all consumption plus exports during February and March was around 12,200,000 tons of bituminous coal per week. This rather high rate of consumption was caused partly by the activity of the coal-using industries typified by the large production of pig iron in March and the record breaking output of byproduct coke, and in part by the continued demand for anthracite substitutes. The weather continued cold and although production of anthracite was resumed Feb. 18, it was well into March before hard coal reached householders in volume sufficient to check the purchases of soft coal by householders who normally do not use it.

Comparison of the days' supply held by the principal consuming classes on April 1, 1926, with those on varying dates in 1919 to 1926 reveals that the reserves in every class were lower on April 1 than on Feb. 1, 1926. The greatest change was for coal-gas plants, which had a week's less supply on the last date than they had two months previously. The decline in supply held by other classes of consumers amounted to from one to five days only.

Reserves of soft coal on April 1, in terms of days' supply, differed widely, as usual, from state to state. The best indicators for this purpose are returns from the general industrial concerns, other than byproduct coke and steel plants. They are the largest single group of coal users, both as to number and tonnage consumed, and, being widely distributed throughout the country, their stores of coal are a sensitive barometer of conditions in the coal market. New England on April 1, was carrying considerable stocks of coal, four of the six states averaging close to 60 days' supply, the average for the entire region being 51 days. The stocks in the northern peninsula of Michigan also were maintained at a high figure the highest in terms of days' supply for any section of the country. In New York State stocks averaged 53 days, 6 days less supply than on Feb. 1. Lower Michigan was carrying 41 days' supply and Colorado 57 days. The remaining states show reserves varying from 8 to 45 days' supply, except Oklahoma, which shows heavy reserves.

As is customary, the utilities carried larger reserves than any of the other groups of consumers. The coal-gas plants on April 1 had a supply sufficient to run them, on the average, for 60 days, and the electric central stations had a 46-days' supply.

Byproduct coke and steel plants had a smaller tonnage in reserve than on Feb. 1, 1926, the decreases being two days' supply for each group. Complete returns from these important manufacturing classes indicate stocks on hand at recent dates as shown in Table II.

The total quantity of railroad fuel on hand April 1, according to information

Table I—Days' Supply of Bituminous Coal in Hands of Various Classes of Consumers in the United States, Jan. 1, 1919, to April 1, 1926a

(Figures represent number of days that supply would last at rate of consumption at time of stock-taking.

	Jan. 1, 1919	Mar. 1, 1920	Apr. 1, 1921	Mar. 1, 1922	Mar. 1, 1923	June 1, 1923	June 1, 1924	Mar. 1, 1925	June 1, 1925	Sept. 1, 1925	Feb. 1, 1926	Apr 1, 1926 b
Byproduct coke plants	32	15	28	39	19	23	34	25	20	22	23	21
Steel plants	42	19	38	48	26	29	56	30	27	30	26	24
Other industrials	65	27	47	56	34	39	53	40	32	38	37	32
Coal-gas plants	81	31	66	82	58	75	88	78	68	67	67	60
Electric utilities	49	21	48	54	34	45	63	51	48	43	47	46
Coal dealers (bitum)	39	13	26	23	11	27	40	33	31	27	17	14
Railroads	32	11	24	42	16	21	50	35	32	28	25	23
Total bituminous	42	18	36	43	22	30	49	37	32	32	28	26

(a) These figures are based on incomplete data. (b) Calculated at average rate of consumption during February and March.

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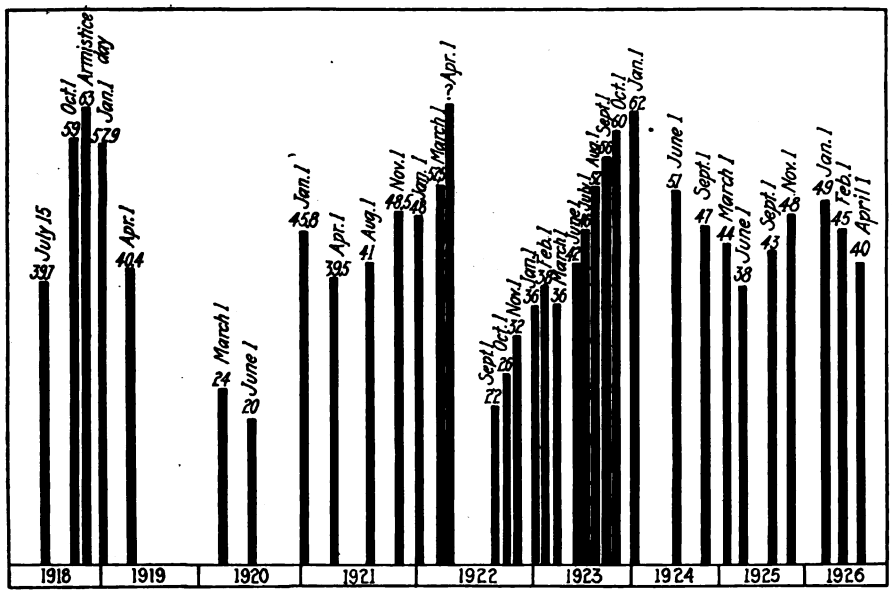

Total Commercial Stocks of Bituminous Coal, July 15, 1918—April 1, 1926

Figures represent millions of net tons and include coal in the hands of railroads, industrial consumers, public utilities and retail dealers. Coal for steamship fuel, on lake docks, in transit and in the bins of householders is not included.

received from the American Railway Association, was 9,090,000 tons, or approximately a 23-days' supply.

Coal brought to the surface, made ready for the market, but not yet delivered to a retail dealer or a consumer may be considered "in transit." The largest element in this mobile reserve is the coal in railroad cars, which, though never accurately measured, is known to run into millions of tons.

A few bituminous producers store coal at their mines. The quantity stored April 1 was small. From a list of 43 companies who have at some time in the past stored in quantity at the mines or at some intermediate point, the Bureau has received reports of only 199,000 tons so held on April 1, or 30,000 tons more than the revised figure for Feb. 1, 1926, the date of the last stock report. In March, 1923, these same companies had 808,000 tons on hand.

The total quantity of unbilled coal in cars at the mines was 1,006,000 tons on April 1, as against 760,000 tons on Feb. 1, 504,000 tons on Nov. 1, 1925, and 600,000 tons on March 1, a year ago.

Reports from all companies show stocks of 5,176,000 tons on the Lake Superior and Lake Michigan docks on Feb. 1, and 2,892,000 on April 1, compared with 5,160,000 tons on March 1, 1922; 1,700,000 tons on March 1, 1923; 7,806,000 tons on Jan. 1, 1924; 3,840,000 tons on March 1, 1925.

Table II—Coal Stocks at Byproduct Coke and Steel Plants

BYPRODUCT COKE PLANTS

	Days' Supply as at Mar. 1, 1925	Feb. 1, 1926	Apr. 1, 1926
Low volatile	23	24	24
High volatile	26	23	21
Average	25	23	21

STEEL PLANTS

	Days' Supply as at Mar. 1, 1925	Feb. 1, 1926	Apr. 1, 1926
Steam coal	36	36	30
Gas coal	26	21	21
Average	31	26	24

By April 1, the date covered by this report, anthracite production had been resumed for about six weeks. It was not possible to obtain reports from all retail dealers, but a selected group who have been reporting regularly for seven years are covered in Table III. Of these dealers, 812 handled bituminous coal and 587 had handled anthracite on preceding dates. It will be seen that stocks of anthracite, which on Feb. 1 were the lowest for any date in recent years, except possibly in September, 1922, have been greatly increased, in fact more than trebled during the sixty-day period since the preceding stock report. Bituminous retail stocks, on the other hand, decreased nearly 400,000 tons during the two months, or slightly less than the increased tonnage of anthracite in the retail yards.

Table III—Coal in Yards of a Selected List of Retail Coal Dealers

(In Net Tons)

Date	Anthracite *a*	Bituminous *b*	Total
Jan. 1, 1919	958,225	1,499,737	2,457,962
March 1, 1920	737,139	631,431	1,368,570
April 1, 1921	1,126,973	1,007,638	2,134,611
March 1, 1922	1,074,628	1,089,871	2,164,499
March 1, 1923	272,378	763,525	1,035,903
June 1, 1923	643,780	1,087,880	1,731,660
June 1, 1924	1,071,894	1,035,485	2,107,379
March 1, 1925	1,150,534	1,069,352	2,219,886
June 1, 1925	1,221,840	980,947	2,202,787
Sept. 1, 1925	1,430,509	1,287,415	2,717,924
Feb. 1, 1926	200,737	1,278,972	1,479,709
April 1, 1926	625,959	898,924	1,524,883

a The number of dealers reporting their stocks of anthracite on each date was 587.

b The number of dealers reporting their stocks of bituminous coal on each date was 812.

A group of 21 byproduct coke plants supplying gas for city use reported only 51,000 tons of unsold coke on hand April 1, as against 246,000 on Jan. 1 and 87,000 tons on Feb. 1, 1926. The figure of 51,000 tons is the lowest one on record since October, 1923. Stocks of byproduct coke on other recent dates have been: March 1, 1922, 987,00 net tons; Jan. 1, 1923, 212,000 tons; Jan. 1, 1924, 772,000 tons; March 1, 1925, 606,000 tons.

Economy in Use of Fuel Stressed by Railway Men; Storage Not Practicable

Further fuel economies was the predominating thought among approximately 2,500 delegates at the eighteenth annual meeting of the International Railway Fuel Association, which opened a four days' session at Chicago, May 11. The program was filled with addresses and reports on fuel accounting, distribution and statistics, conservation and efficiencies in the consumption of fuel by the railroads.

Coal operators were prominent among the delegates. Thirty-one companies had placards in the "Coal Parlor" of the convention hall in the Hotel Sherman. W. H. Harris and Thomas Irwin, both of Chicago, were in charge of the coal division.

R. J. Elliott, purchasing agent of the Northern Pacific Ry., said that the railroads still buy and use about one-third of the 522,960,000 tons of bituminous coal produced annually, and that there is no indication of any great reduction of this consumption by reason of electrification, use of oil or other motive power, except purely local efforts in handling suburban traffic.

Storage of coal to equalize the fluctuations between the months of high and low demand is not considered practical because of the expense and inherent fire potentialities, according to the report of the association's standing committee on coal storage.

"The storage of coal," says this committee, "does not increase consumption, and so long as the available output of the mines is so far in excess of consumption, it is impracticable to equalize the monthly mine production by the storage of coal.

"Overproduction and excellent transportation produce keen competition with a resulting low price and a better quality of coal."

D. H. Pape, assistant to the executive secretary of the National Coal Association, suggested concerted buying of coal on an annual budget plan by private consumers, industrial users and railroads, in order to stabilize the mining industry and eliminate peaks and low production periods.

Railroad Fuel Costs Advance Slightly in March

Average cost of coal used by Class 1 railroads in locomotives in transportation train service during March was a little above the February figure, according to the Interstate Commerce Commission. The averages for the different districts are as follows: Eastern district, $2.72; Southern district, $2.22; Western district, $2.93; entire United States, $2.65.

These averages indicate an increase over February of 3c. per ton in the Eastern district; 1c. per ton in the Southern district; 2c. in the Western district, and 2c. for the whole United States. Compared with similar averages for March of 1925 there is a decrease of 14c. per ton in the Eastern district; 19c. in the Southern district; 18c. in the Western district, and 17c. for the whole country.

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British Industry Nears Normal as Newspapers Reopen and Transport Service Resumes; Miners Still Out

The British labor situation is still grave. Although the general strike inaugurated at midnight May 3 was unconditionally called off by the Trades Union Congress on May 12, many men who went out in sympathy with the coal miners have not returned to work. In some cases employers refuse to discharge the volunteer workers who stepped into the breach. Peace apparently has been effected in the transport service through the signing of new agreements between the railways, city and interurban transportation systems and their men. Full-size newspapers also have reappeared.

The paralysis of coal production, however, continues. The government, in conformity with the promise made by Premier Baldwin, renewed its efforts at negotiating a new agreement in the coal fields as soon as the general strike order was recalled. Both owners and workers have asked for more time in which to consider the government proposals and the decision of the Miners' Federation will not be known until today.

Mr. Baldwin set out the government program in a letter to Evan Williams, representing the owners, and Herbert Smith, representing the miners. This program, made public in the House of Commons on Friday, provides:

(1) That steps shall be taken to put into practical effect the various recommendations for improving the organization and efficiency of the industry incorporated in the report of the Royal Coal Commission.

(2) That the government will grant an additional subsidy of £3,000,000 to be used in making up wage deficits during such period as may be necessary for the National Wages Board, with an independent chairman, to frame a national agreement which will govern the principles upon which district rates shall be ascertained and which will decide minimum percentages of base rates which must be paid.

(3) No reduction of subsistence rates below 45s. per week is to be made in the interim.

(4) That during this period there shall be a reduction in the minimum rates, other than subsistence wages, in all districts. The extent of the reductions is to be left to the negotiations set in motion by the government.

As the first steps in giving statutory effect to the Commission's recommendations, the government proposes to enact legislation on the amalgamations of undertakings (i.e., producing companies), a welfare levy on royalty owners, restriction of recruitment and the setting up of a wage board.

In the main, therefore, the government program is in accord with the memorandum submitted to the Trades Union Congress by Sir Herbert Samuel, chairman of the Coal Commission, as a basis for calling off the general strike. Sir Herbert, who appeared early last week in the rôle of peacemaker, proposed:

(1) That the coal subsidy be renewed for such reasonable time as might be required.

(2) That a national wage board, composed of representatives of the miners, mine owners and the public, with an independent chairman, be created and that this board revise the wage scales.

(3) That there be no revision of wages, however, without previous assurance that the reorganization of the coal industry recommended by the Commission would be executed.

(4) That a committee, with miner representation, be named by the government to prepare the legislative and executive measures necessary to effect a reconstruction of the coal industry.



Keystone View Co.

Sir Herbert L. Samuel

Chairman of Royal Commission, whose memorandum to the Trades Union Congress last week was the basis for calling off the general strike.

Lord Reading, former Viceroy of India, may be chosen neutral chairman of the suggested advisory committee for reorganizing the mining industry. Lord Reading has been in the Peers Gallery on every occasion on which the coal dispute was discussed and he was in conference with Premier Baldwin prior to the Cabinet meeting May 13, at which the whole situation was reviewed.

The lockout policy started by some British employers when the strikers applied for their old positions naturally has provoked considerable bitterness. The general dislocation of the industrial life of the nation has been so great that reports reaching this side of the water have given no clear measure of the extent of this lockout movement. When questioned as to his attitude on the subject, Premier Baldwin reiterated his pledge that those who had aided the government in the crisis should not suffer for their service. At the same time he expressed disapproval of retaliatory measures on the part of employers.

"I will not," he told the Commons on Thursday, "countenance any attempt upon the part of any employers to use the present occasion to get reductions in wages below those in force before the strike began, or to get an increase in hours. Last night I learned that a certain large group of employers was unwilling to meet the union concerned. I lost no time in broadcasting that I thought the essential associations of the employers and the unions concerned should meet immediately and discuss the many difficulties that arise in getting the men back to work."

Labor leaders in Parliament have protested vigorously against employers who decline to let the dead past bury



Ewing Galloway.

Miners' Wives Pick Coal from Big Colliery Waste Heap

Near Birmingham, Warwickshire, England. Apparently the men are leaving the work to the women, possibly arguing that it is a somewhat embarrassing situation being seen getting coal for themselves while denying the right of others either to get coal or to employ others to get it. Their answer probably would be, "One must live."

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its dead and have hurled accusations of a campaign on the part of certain employers to smash the unions. To these charges the Premier has retorted that he would not countenance any such campaign. This particular flare-up arose out of the reported position taken by some of the railways. Later, however, through the good offices of the Premier, a settlement was effected.

By the terms of this settlement the railway unions involved admit that they committed a wrongful act in calling the strike and agree that they will not again instruct their members to walk out without previous negotiations. The unions promise no protection to members who engage in unauthorized strikes and exclude from the benefits of the agreement persons guilty of violence or intimidation. They further covenant that they will not encourage supervisory employees to take part in any strike. The settlement does not touch wages or working conditions. Neither does it provide that the reinstatement of the strikers waives any legal claim for damages which the railways may have against the men who walked out.

More Railroads Seek Bids

The Atlantic Coast Line will open bids on May 26 for its fuel requirements for the present year at its main offices at Wilmington, N. C. The exact tonnage to be let has not been learned. The bids provide for mine-run and 6-in. resultant, according to reports.

The Pere Marquette railroad will open bids at its main offices in Detroit on May 20 for its fuel business, which will consist of from 55,000 to 70,000 tons of coal for shipment into Canadian points and from 775,000 to 825,000 tons for use on its lines in the United States. Most of the coal to be shipped to points in this country will be delivered at Toledo and points in Michigan, it is reported. The company buys its coal on a basis of mine-run and 6-in. resultant prepared at the mines, and figures are submitted on this basis.

Sealed proposals will be opened by the Supt. of Lighthouses, Baltimore, Md., 2 p.m., May 27, 1926, for furnishing anthracite No. 3 coal and bituminous steaming coal for stations and vessels, 5th Lighthouse District, as required during the fiscal year ending June 30, 1927. Information upon application.

R. G. Archibald, state purchasing agent, Boise, Idaho, is preparing proposals for bids on the state's coal for the winter of 1926 and 1927. Approximately 15,000 tons will be required. Bids will be opened by Mr. Archibald on June 10.

Kansas Gas Blast Kills Four

Four miners were killed by a gas explosion at the Cigaret mine of the Lightning Creek Coal Co., Cherokee, Kans., May 14. James Jamison and George Hollis, top workers, were crushed under the tipple, which was wrecked by the explosion, and Hallie Jamison and Crockett Jamison, sons of James Jamison, met death underground.



Keystone View Co.

A. J. Cook

The secretary of the British Miners' Federation is frequently referred to as "Emperor" Cook, as he speaks his mind in no uncertain terms on labor policies.

Union Row Brings Suspension Of District President

Dissension among officials of District 21 (Arkansas and Oklahoma), United Mine Workers, culminated May 10 in the suspension of William Dalrymple as president by the district executive board, meeting at Muskogee, Okla. The vote was five to two. A hearing on secret charges will be held in Muskogee this week before the board.

Marine Corps Wants Coal

Bids will be received for coal requirements for the U. S. Marine Corps on May 27 at the office of the Quartermaster, Room 3207 Navy Building, Washington, D. C. Tenders are wanted on the following items: 29,000 tons of mine-run low-volatile bituminous steaming coal; 18,500 tons 2x4-in. semi-bituminous coal; 5,000 tons Pulaski (Va.) anthracite stove coal, and 4,000 tons of mine-run low-volatile semi-bituminous.

Denies Exclusive Right To Label Coal

Judge Foster Symes of the U. S. Court in Denver, Colo., has just released his decision denying an injunction to the Victor American Fuel Co., which filed a complaint a year ago against several coal companies in Colorado in connection with the labeling of coal. In its complaint the Victor American company alleged, first, that it had the exclusive right to label coal by virtue of copyright and, second, an infringement upon the label and the labeling of coal by their competitors. Judge Symes held that the complainant did not have a right to monopolize the labeling of coal and that there was no infringement upon the labeling of coal as alleged in the complaint.

Pittsburgh Non-Union Mines Have Another Recruit

The Clinton Block Coal Co. has opened its mine at Imperial, Pa., on the 1917 scale. This adds one more mine in the Pittsburgh district to the list of non-union operations, which are in excess of the remaining union operations. About 50 men went to work in the mine. One of the officials of this company is B. H. Canon, who was chairman of the executive committee of the Pittsburgh Coal Producers' Association at the time it dissolved.

The Lowber Gas Coal Co., which operates a mine near Fayette City, Pa., has posted proclamations in various places in Fayette City inviting its former employees to return to work on the 1917 scale. No date is given when operations will be started.

The Peters Creek Gas Coal Co., operating the Piney Fork mine, near Finleyville, Pa., has closed down. The mine has been operating on the Jacksonville scale. According to a report in Pittsburgh, the management asked the men to return to work on the 1917 scale and about 20 responded. Reopening was thereupon deferred for the time being. The Braznell Brothers are the heads of this company.

Two more strikes are on at mines in the Pittsburgh district which had been operating on the Jacksonville scale. In each case the reason given was operating other mines of the companies on the lower wage rate.

Close to 500 men are reported out at the Charleroi mine of the Youghiogheny & Ohio Coal Co. This company recently started its mine at Wyano, Pa., on the 1917 scale, although the location of the mine is generally considered to be in the non-union district.

A strike also was called at the Rich Hill mine of the McClane Mining Co. at Meadowlands.

Fuel Yard Bids Vary Widely

Bids on coal requirements of the Government Fuel Yards, U. S. Bureau of Mines, opened May 12, revealed a wide price range. On 22,000 gross tons of bituminous nut and slack the prices named ranged from $1.40 for ¾-in. to $2.30 for 1¼-in. For 148,000 tons of mine-run the lowest bid was $1.60 and the highest $2.56. Tenders on 1,800 tons of bituminous egg were from $1.85 to $4.46; Broad Top egg, $3.60 to $5.04. For 41,000 tons of mine-run, nut-and-slack or slack the bids ranged from $1.12 on nut-and-slack to $2.35 for mine-run. On 27,800 tons of mine-run, nut-and-slack or slack the quotations were from $1.12 to $2.25 for mine-run.

Coal Absorbs Trade Journal

Coal Trade Journal, beginning with this week's issue, will be merged with *Coal*. The Coal Publishing Corporation, publisher of *Coal*, according to an announcement May 12, has acquired ownership and control of the *Coal Trade Journal*, which was founded in 1869. R. C. Beadle becomes the publisher of the merged publications, and F. R. Wadleigh, editor of *Coal*, retains that post on the consolidated papers.

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Coal Hearings Ended; Parker Bill Provides for Fact-Finding, Mediation And Emergency Distribution Control

By Sydney A. Hale

Washington, D. C., May 18.—Public hearings on coal legislation which have been going on intermittently before the House committee on interstate and foreign commerce since March 30, came to an end last Friday afternoon. Members of the committee now are considering what action they will take. Following an executive session this morning, it was intimated that the committee report might not be ready before next week.

In the opinion of many, however, the committee program is foreshadowed in a bill introduced in the House yesterday by Chairman James S. Parker. This bill, setting up fact-finding, mediation and emergency distribution control, follows the recommendations of Herbert Hoover, Secretary of Commerce, who appeared before the committee on May 14. In a sense, therefore, the Parker bill may be said to embody the ideas of the administration leaders on coal legislation. Its author hopes to see it enacted into a law before Congress adjourns.

The new bill makes the Bureau of Mines the coal fact-finding agency and compels the industry to furnish information to the Bureau. Refusal to do that would subject the offender to the danger of fine or imprisonment. In the event a labor dispute threatens production, the President may appoint mediators or direct the Secretary of Labor to endeavor to effect a settlement of the controversy. The Secretary of Labor may encourage arbitration, but no attempt is made to compel arbitration.

The bill also empowers the President to declare a state of emergency whenever labor disturbances or threatened labor disturbances menace the coal supply. If the menace becomes an actuality, the President may revive the Federal Fuel Distributor Act of 1922 and have the Federal Fuel Distributor co-operate with the Interstate Commerce Commission in controlling distribution.

Seizure Provision Unlikely

The likelihood that Chairman James S. Parker and his fellow committeemen will go further and seek to authorize government seizure and operation of mines during times of emergency is not strong. Such a provision was stricken from the Copeland bill when the Senate committee on education and labor reported out the New Yorker's measure last week. Neither the operators nor the miners favor such a proposal and it has found little support from most of the other witnesses who have appeared before the House committee.

Concluding his testimony on May 13, Walter Gordon Merritt, general counsel for the Anthracite Operators' Conference, stressed the fact that the power to regulate interstate commerce was subject to the other provisions of the Constitution and that Congress could not do indirectly what it was barred from doing directly. The Federal Fuel Distributor act, he felt, was of doubtful validity. Where transportation was adequate, Congress could not regulate coal by controlling transportation facilities. Neither could it seize coal for private purposes.

"Do you say," demanded Congressman Newton (Minnesota), "that Congress has no power to keep the wheels of industry moving?"

"There is no such power, in my opinion."

"I'd like to take a chance on it," retorted Mr. Newton.

Summarizing his remarks on publicity, Mr. Merritt pointed out that the industry already furnished voluminous reports on valuation, prices, profits, investment, expenses, depletion, insurance and taxes to the Bureau of Internal Revenue; data on employees, occupations and wages to the Department of Labor; detailed tonnage and realization reports to the Bureau of Mines, and various reports on operations, labor, earnings, prices and wages to the State of Pennsylvania. If Congress insisted upon fact-finding, he asked that it should not add to the burdens of reporting but arrange for duplicates of reports already filed.

Representative Dennison (Illinois) wanted to know whether the operators would object to making public their reports to the Treasury Department. Some producers, was the reply, would have very strong objections. Some operators, he added later, might carry any law passed to the Supreme Court. But fact-finding, he reiterated, would not cure the ills of the industry.

Competition Public's Protection

Competition from other fuels, said Mr. Merritt, was the best public protection against oppression. If operators were allowed full freedom to cooperate in production and distribution, they could save the public money—particularly in distribution—and fix responsibility for quality and price. Some operators think the rate relationships between bituminous and anthracite prejudicial to the latter and will endeavor to force readjustments, particularly on the steam sizes.

Mr. Merritt indorsed the recommendation of the Coal Commission that there be no fixed expiration for wage agreements, but that either party wishing a change in the rates and conditions give ninety days' notice. If at the end of thirty days no agreement had been reached, a Presidential board would have sixty days in which to study the question and make recommendations. Full freedom of action should be reserved to the workers at the expiration of the ninety-day period; not because the operators want it, he said, "but because the mine workers want it and are entitled to it."

Edgar L. Wallace, American Federation of Labor, centered his attack upon the mediation proposals. Any attempt to set up such agencies, he said, will only interfere with settlements within the industry. Men cannot compromise their differences or work in the spirit of collective bargaining when there is an adjudication board on the horizon. "Is it in the interests of the country that differences between the operators and the miners shall be settled by an outside party?" he asked. There was no general strike in the bituminous coal industry between 1897 and 1919; there would have been no strike in 1919, he declared, had it not been for government war-time intervention.



Secretary Hoover

Outside mediation, he contended, only increases the bitterness between capital and labor. Each side tries to make out a case by attacking the other and in time comes to believe "the facts" set up in argument, thus making real cooperation impossible. If the government fixes wages, it must also fix profits; because of varying costs, it would be compelled to fix such prices upon a basis which would yield the high-cost mines a profit.

Major legislative interest in the coal industry, stated Mr. Hoover in his testimony Friday, centers around the problem of labor relations. Given continuous production, the public is amply protected in prices by competitive processes. Transportation no longer looms up as an interrupting factor. The anthracite industry already has taken the first steps in settling its labor problems for a term of years. If the unionized section of the bituminous industry "could set up its own mediation board in the same terms as the anthracite industry, I believe Congress would be well justified in suspending any legislative action."

"If, however, there are to be periodic interruptions to bituminous mining, then outside mediation will be necessary. Most coal suspensions have been brought to an end sooner or later by such mediation, said Mr. Hoover. Power to appoint mediation boards, therefore, should be lodged with the President. The board, however, should not be a permanent agency, "as it is best to bring new minds and new men on the scene in such emergencies." These men cannot function without the basic facts on production, distribution, stocks, consumption, wages and average prices. "If the industry could

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furnish these facts regularly and reliably of its own volition, it would be better that it do so than to put the government to the expense."

Where mediation fails and the suspension is widespread, some provision must be made for fueling essential services. "Thus it seems to me there are three things to be considered by the committee at the present time: An emergency mediation board, emergency authority to the Interstate Commerce Commission in coal distribution, and, in failure of provision by the industry, a more effective service as to primary facts. This is not regulatory legislation—and would come into action only in failure to maintain production."

The measures discussed before the committee, continued Mr. Hoover, deal only with symptoms of much more deep-seated diseases. The fundamental ills of the bituminous industry center around two main causes—too many mines and the seasonal character of the business. "The net result of all this is that we have part-time operation of too many mines and the final consequence that most workers, especially in the commercial mines, are only employed part time. While the daily wage is usually very high, it does not for some fraction of their number constitute even a decent annual living. The bituminous industry is in long view a losing business in the periods between famines and no unprofitable industry can give satisfaction either to consumer, worker or operator. From all these causes arise most of our labor friction."

Stabilizing Influences at Work

Mr. Hoover, however, saw certain forces at work remedying some of the fundamental ills. War stimulation has passed. Car shortages have disappeared. "The annual demand for coal will increase despite constant improvement in methods of fuel consumption. Oil and other substitutes are not likely to displace coal in so relatively large proportion in the future." Growth of public utilities and byproduct coke plants will help to stabilize production. Storage by large consumers also will help. Sharp competition has tended to a permanent closing of some of the high-cost mines, although its effects have been somewhat obscured by expansion in non-union areas. Some consolidations have been made. There has, in a broad sense, been steady improvement in methods and equipment.

"The various forces in motion are on balance making for greater stability in the industry—although obscured by cross-currents. I do not believe its fundamental difficulties can be corrected by regulatory legislation. There is no parallel in a competitive industry such as this with the railways or public utilities, which occupy a semi-monopoly of some area or market. Regulation of prices, profits, the right to produce or wages would not secure cheaper coal nor would it solve the major questions of labor relations—it would result in a score of worse ills. I dismiss government ownership and operation as a calamity to workers, consumers and government. What we must hope for is a greater vision of leadership in the industry to the correction of its own difficulties."



George Otis Smith

The claim of Philip Murray, international vice-president, United Mine Workers, that the term and rates embodied in the Jacksonville agreement had been suggested by the government (*Coal Age*, April 22, 1926; p. 577) was denied by Mr. Hoover. Answering a question of Congressman Merritt (Connecticut), the Secretary of Commerce said:

"So far as I am aware, no suggestion was ever made as to the term of the contract. Both Mr. Davis, Secretary of Labor, and myself urged the operators and miners to convene at Jacksonville. The Jacksonville conference was the sequence of a provision in their former agreement. Difficulty arose as to whether the operators would attend that conference, and Mr. Davis and I both devoted ourselves to urging that they should get together, in the hope that they would be able to settle their difficulties without a lockout or strike. We made no suggestion, or at least so far as I am aware, no suggestion was ever made as to the term of the contract or the rate of wages."

"Has the result of that agreement, such as they did make, been to throw a large part of the business into the non-union fields?" asked Mr. Merritt.

Non-Union Output Helped

"I think the result has been to increase the productivity in the non-union fields. I think that at least is the superficial appearance. You are dealing there with a hypothetical question. Assuming that the wage rate under the Jacksonville agreement had been 25 or 30 per cent less, it is probable that the non-union fields would have decreased their wages to some point 20 per cent below the standard, and the same effect would have taken place. So I do not believe that any one can say it is a certainty that the increase in the non-union fields would not have taken place if the Jacksonville agreement had not been fixed at such a rate."

The bituminous industry, he told Congressman Hoch (Kansas), was deficient in vital statistics on stocks and consumption. Such data would have a stabilizing influence. Emergency government operation, he said in answer to questions by Congressman Lea (California), would not cure the situation and would lead to great economic loss. "Most of our vital industries have managed to find a solution to the problem of continuous production and we practically forget their existence. I have never despaired that the bituminous industry also will find an answer."

The picture of conditions presented by the Coal Commission report, said Dr. Smith, is still a true one, but it is incomplete. What is needed is continuous, not sporadic, fact-finding. Justice to the public and to all parties in the industry can best come "and is most likely to come if and when the facts are known." Dr. Smith did not agree with those who contended that fact-finding would put an enormous financial burden on the industry and on the government, but "whatever the facts cost, the results will be well worth it."

Dr. Smith reiterated his opposition to government operation of the coal mines, but was as vigorous in denying that the government had no jurisdiction over the coal business. "Neither unregulated private operation nor inefficient government operation can be regarded as safe and economic." If we can regulate a public utility supplying energy in the form of gas or electric current, why may not coal, which supplies energy in a solid form, also be regulated? Regulation of public utilities has had no blighting effects upon efficiency or upon earnings.

Wants Labor Trust Controlled

"The real issue as I see it is the sovereignty of the American people in relation to those who own coal mines or work in coal mines. Is the people's right to an uninterrupted supply the dominant right? We have outlawed combinations of capital attempting restraint of trade or even control of prices and with public opinion strengthened by a full knowledge of the facts. I would like to see legalized such combinations of capital as intend to promote trade and lower prices, as larger and stronger companies surely can. But I wish also to see brought under legal control any countrywide combination of labor which has the declared purpose of enforcing its own decrees by creating public distress.

"Fact-finding is not the cure, but is the route toward betterment of the coal industry for all concerned. Private business depends upon public opinion and well-informed public opinion is both more effective and more just. I urge fact-finding as promising the best argument for the continuation of private initiative—as proved in the public regulated public utilities."

Ira C. Cochran, commissioner, American Wholesale Coal Association, the last witness heard, after analyzing the functions of the wholesaler, pointed to the various service orders issued by the Interstate Commerce Commission as evidence that provision already had been made for emergency distribution control. Compulsory fact-finding would throw a great and costly burden upon the coal man which would be included in the price of his product without giving the public any compensating advantage. "We believe," he concluded, "that the wholesale branch of the coal industry is functioning effectually and economically and we are unable to suggest any regulation that would further serve the public interest."

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Urge Self-Government, Higher Efficiency And Less Waste in Business

Self-government in businss, but a self-government that recognized the social obligations of industry, was the keynote of the fourteenth annual convention of the Chamber of Commerce of the United States, held at the headquarters of the organization in Washington, D. C., May 10-13. "There is great hope," declared Herbert Hoover, Secretary of Commerce, at the annual dinner of the Chamber, "that America is finding herself upon the road to a solution of the greatest of all her problems—the method by which social satisfaction is to be attained with the preservation of private industry, or initiative, and a full opportunity for the development of the individual."

These newer ideals also received the attention of Governor Albert C. Ritchie of Maryland, who pointed out that business was no longer concerning itself solely with profits but was beginning to ask "whether the consumer is getting a square deal," whether distribution costs were out of line, whether concentration of industrial power and of wealth is going too far. "And when business once asks these questions and admits the need of an answer, I believe it can give it better than government can."

Another phase of the more advanced industrial thinking was elaborated upon by P. W. Litchfield, president, Goodyear Tire & Rubber Co., who took the position that wages should be the last to feel the force of business depression. "It used to be thought," he said, "that the first thing to cut when profits began to shrink was wages. It is now recognized that this condition should be met by increased efficiency, elimination of waste, the cutting down of overheads in production and distribution, and an attempt to maintain wages, because a general cutting down of wages curtails the demand for the finished products of industry, the demand for which is the very life-blood of prosperity."

Individualism Paramount

Business decays and civilization falters, asserted Julius H. Barnes, president, Barnes-Ames Co., when industry becomes the prey of oppressive governments and favoritism is substituted for equality of opportunity. This has been the history of the world from the hazy days of the Sumerian empire down through the dark years of the Middle Ages. Prosperity and society rest upon the possession of natural resources, the habits of industry and a stable and sound government. So long as America retains efficiency in its habits of industry and a sound government based upon the philosophy of individualism it can continue to enjoy the fruits of its heritage of natural wealth.

The problems peculiar to coal came up for consideration twice. The first time was when Walter Barnum, president, Pacific Coast Co., discussed the situation before the group meeting of the division of natural resources. At the conclusion of this address, in which Mr. Barnum insisted that the coal industry would and could function best in the national interest if left unhampered by government regulation, the group meeting adopted the following resolution:

"*Whereas*, Some citizens are making an increasing effort to persuade the federal government to inject itself into the business affairs of private industry, and

"*Whereas*, Proposed legislation now before Congress affecting the coal industry must mean, if enacted and sustained, the ultimate regulation and control of all branches of that industry, and

"*Whereas*, Such legislation would undo an improving situation by making it possible for either party to labor disputes to appeal to a political tribunal and would have a tendency to bring about conditions similar to those in Great Britain today, conditions directly traceable to governmental interference and continued appeal to the court of politics; therefore, be it

"*Resolved*, That the natural resources production division of the Chamber of Commerce of the United States hereby asserts its unalterable opposition. to and urges the Chamber to oppose legislation directed toward government interference in private business, whether it be coal or otherwise."

Oppose Coal Control

When the resolutions committee of the Chamber had finished its consideration of the proposal, the resolution reported to the Chamber and adopted by it read as follows:

"Regulation and control of the coal industry are proposed in divers ways by bills which are pending before Congress. We therefore consider it appropriate to reiterate the position of the Chamber of Commerce of the United States in opposition to proposals which have for their object the control of industries by governmental agencies."

According to Mr. Barnum, there is no more "coal problem" than there is the problem of obtaining a supply of other necessaries of life. Relatively and actually the coal industry can be proud of its record and there is nothing in proposals for government interference which justify a belief that such interference could improve the situation. Opposition of the industry to fact-finding as a form of regulation "is based solely on its compulsory feature and on the fact that no man can tell where it will end. You cannot give assurance of uniform profit to a business so widespread and so competitive within and without its own ranks as is the bituminous coal industry."

Notwithstanding the fact that coal must be produced where found, be it forest or plain, desert of mountain, efficiency is not a stranger to the coal business. Neither is stabilization unknown. In the ten years preceding the World War average spot mine prices on bituminous coal held to a $1@$1.25 level. There were, it was true, violent fluctuations during the war and reconstruction periods, but at no time did the American consumer pay as much as Continental European coal users.

These causes of fluctuation have been removed. The danger of a transportation shortage has been eliminated. The great increase in non-union operations makes an effective nationwide strike impossible. The curve of prices and realizations, therefore, is again flattening out. There will be no violent change "unless there is another war or government interference."

The industry also is co-operating to improve coal combustion processes and consumption technique. Its so-called overdevelopment, which has been the salvation of the country during strikes, is less than that of certain other industries held up as models of efficiency. It leads the world in output per man. The percentage of machine-mined coal is three times that of Great Britain. The product is sold at prices which have given the nation the cheapest power supply in the world.

America, said Mr. Hoover, is gradually adjusting its industrial system to the instincts of industrial freedom and equality of opportunity. The country is developing a new relationship in industry which is departing widely from the conceptions of the old world. In wages, American industry has discarded the theory that the lowest rates of pay and the longest hours marked the roads to the lowest production costs and the highest profits. Labor, too, is abannoning the idea that restriction of individual output guarantees employment to the many.

"No one will doubt that labor always has accepted the dictum of the high wage, but labor has only gradually come to the view that unrestricted individual effort, driving of machinery to its utmost, and elimination of waste in production are the only secure foundations upon which a high real wage can be builded, because the greater the production the greater will be the quantity to divide."

Co-operation Brings Betterment

The greater development of the cooperative sense in industry also is contributing to business and social betterment. Associations have been created and expanded. The ethics of business have been elevated. Larger production units are coming into play although the public thinking on size is muddied by old conceptions of the effectiveness of ruthless competition. But mass production does not necessarily imply monopoly. "What we sorely need is thoughtful consideration directed to the essential question of how to maintain real competition, instead of legalistic formula; how to substitute constructive competition for destructive competition."

Mutualization and diffusion of stock ownership in many industries have made management ascendant over ownership in the control of business policies. The lessened pressure to enlarge profits has in many cases brought decreased prices, higher wages and more liberal expenditures for scientific research.

"Some of our industries have lagged behind others in the march toward stability, although they have kept up the march of efficiency. The bituminous coal industry, due to war expansion, destructive competition and other causes; the textile industry due to migration South and West, and especially some important branches of the agricultural industry are not yet in that stable condition which the nation requires."

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British Muddled Through Again in Ending Tie-Up, Is Washington Opinion

By Paul Wooton
Washington Correspondent of *Coal Age*

Settlement of the general strike in the United Kingdom appeals to some in Washington as being typical of the ability of the British to muddle through. The nation's genius for negotiation and compromise again has carried them through a situation which was loaded with more evil possibilities than any other world development since the great war.

From the somewhat conflicting reports available at this writing it appears that the struggle has been a test of the general strike more than a determination of the mine-wage dispute which caused it. It was inevitable that the general strike should be tried. As long as it was untried some would be sure to urge it periodically and it would have continued to hang, sword-like, over the British people.

The test has shown that the general strike is a much less formidable weapon than the unions supposed. It did not bring the country to its knees. At the end of the nine days food prices had increased but little. The reaction of the people of the country in favor of the government and against the group threatening constituted authority with force developed as it had been predicted by the spokesman for the government.

On the other hand, the strike was more effective than the Tory extremists predicted. The enormous loss of production, the stoppage of foreign trade and the effective way in which obstacles were placed in the path of most industrial activity impressed the government sufficiently that it was willing to make material concessions.

Dispute Back Where It Started

The memorandum of settlement, to which the Conservative leaders must have agreed, tacitly at least, although the only name connected with it is that of Sir Herbert Samuel, chairman of the Royal Coal Commission, simply throws the coal dispute back where it started. After vowing that it never would consent to a subsidy after May 1, the government now obligates itself to continue the subsidy for "a reasonable time." Instead of standing pat for the wage recommendation of the Commission the question is to be referred to the national wage board on which operators and miners are to be represented with the "neutral element" under an impartial chairman. What is this but our old friend arbitration?

The trend toward socialism in Great Britain has been increased by this policy of compromise and evasion. There was a shortage of housing, so the government embarked in the house-renting business. In 1923 the ratio of unemployed to the total population was no greater in Great Britain than it was in this country, but instead of arousing the Kingdom to a great co-operative effort to provide employment, as was done here, Great Britain provided a dole and is still paying it. Such policies as these have extinguished the initiative of the people.



Daniel T. Pierce
Vice-Chairman, Anthracite Operators' Conference

France had a general strike once but the authorities rose to the occasion—called all classes to the colors—and the strike lasted twenty-four hours. Germany is working her way up from the bottom and labor is co-operating. Mussolini has saved the people of Italy from just such a situation as developed in Great Britain. If he restores democratic government he will go down in history as one of the world's greatest political leaders.

Among the British there has been no general effort to get the industrial establishment on a better basis. There has been no increased installation of labor-saving devices. The scientific and economical methods of generating and distributing electricity have lagged. We have extended power to the elbow of every workman. London still is served by twenty-eight central power stations. Instead of taking advantage of an exceptionally advantageous position for the installation of a great superpower system the British were busy with compromises—doing such uneconomic things as shortening the hours of labor so there would be more jobs or paying out subsidies of one kind or another. As a result the "workshop of the world" no longer is able to compete.

Hardens Class Feeling

It is hard to see how any good can come from the strike. The results all seem to be liabilities. One effect has been to freeze class feeling and to pave the way for more radicalism.

Thanks to the virility of our business, industrial and political leadership we have come through the hardest period in the economic history of the country with socialism and radicalism less in evidence than at any time in twenty-five years. Despite the gigantic losses of the war, we have raised the standard of living to a higher point than ever has been reached before. This has been done by correcting fundamentals and not by trying to compromise things of a social and economic character.

One thing, however, is certain. The British have shown no disposition to abandon the ballot box in favor of class force.

Score Hard-Coal Preparation At Retailers' Convention

Washington, D. C., May 17.—Sharp criticism of post-strike preparation of coal by anthracite mines broke as an unexpected climax to the first day's session of the ninth annual convention of the National Retail Coal Merchants' Association at the New Willard Hotel today. Daniel T. Pierce, vice-chairman, Anthracite Operators Conference, had just finished an eloquent plea for greater co-operation between the producers and retail distributors and an exhortation to the industry to clean its own house, when the criticism was voiced. Roderick Stephens, chairman of the governmental relations committee of the association, asked the delegates whether he was correct in asserting that sizing standards had not generally been maintained since the strike ended and that shipments with more than the permissible percentage of undersize had been common. A sea of upraised hands indorsed his statement.

Mr. Pierce's address was the feature of the afternoon session. He declared that the door was wide open for contact between the producers and the retailers. The anthracite industry, he said, intended to fight to the limit to retain its markets and to maintain its standards. Reputable producers did not want to ship poor coal and did not intend to allow poor coal to be shipped. They planned to use the peace won by the recent wage pact to expand and intensify their merchandising program.

The morning session was devoted to the presentation of reports from officers and committees. President Samuel B. Crowell presided.

Columbus Mining Co. Obtains Four More Mines

The Columbus Mining Co., eastern Kentucky operators with headquarters in Chicago, has taken over the sale and distribution of four additional mines in eastern Kentucky, it was learned last week. The company now has twelve mines in the field having an aggregate daily tonnage of between 6,000 and 8,000 in the Hazard and Elkhorn fields, producing from beds Nos. 4, 7 and 9.

The new mines are the Meens Haskins Coal Corporation operations No. 1 and No. 2, at Vicco; the Diamond Block Coal Co. mine at Diablock and the Apex Elkhorn Coal Co. operation at Millstone.

While the company is merely the selling agent for the mines in the new transactions it is expected that the operations will be controlled by outright purchase within thirty days.

The Columbus Mining Co. began in the eastern Kentucky field in 1917 with one mine and has expanded to its present capacity of twelve in nine years.

Halt Rail Efficiency Probe

Investigation into the efficiency and economy of management of the country's common carriers has been discontinued by the Interstate Commerce Commission. No reason was given for the action. The inquiry was instituted after the shopmen's strike in 1922.

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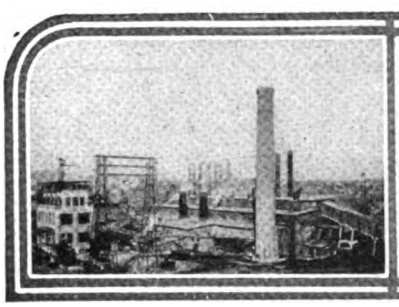
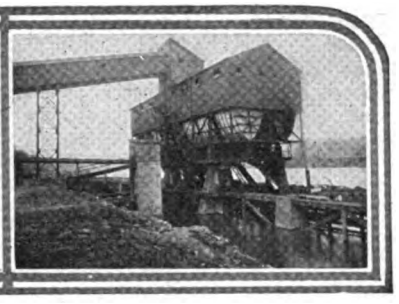


News Items From Field and Trade



ALABAMA

The eighth annual Alabama first-aid contest will be held in the City Auditorium, Birmingham, July 10. The various committees on arrangements are now planning the details, and indications point to the most successful event of the kind yet held. Intensive training is being carried on at mining centers throughout the district, the work being aided by officials of the local Bureau of Mines, of which C. E. Saxon is foreman miner and F. E. Cash, district mining engineer. The Alabama Mining Institute, through its secretary, James L. Davidson, and assistant secretary, H. E. Mills, is giving the event its undivided attention.

Receiver for Goodwin Co.—The Goodwin Coal Co., with a mining operation at Goodwin, near Dora, Walker County, has filed a petition in bankruptcy in the U. S. District Court at Birmingham. Liabilities were given as $144,341 and assets $173,641.39, the latter consisting of notes, machinery, etc. Milton H. Fies, of Birmingham, was appointed receiver. The company began business in 1925.

Galloway Plant Burns.—The Galloway Coal Co., with head offices in Memphis, Tenn., and a number of operations in the Carbon Hill section of Walker County, suffered a loss of $75,000 to $100,000 when fire destroyed its tipple and washery at Holley Grove mine on the night of May 7. It is understood that the plant will be rebuilt at once.

ILLINOIS

No. 7 mine of the Consolidated Coal Co. of St. Louis, one of the biggest at Herrin, has been shut down for an indefinite period. Slack market and necessary repairs were the reasons for the shut down. The mine employed about 500 men.

New Record by O'Gara.—The O'Gara Coal Co.'s mine No. 1, just south of Harrisburg, broke the company's record for daily production on May 1, when 3,202 tons of coal was mined, hoisted and placed in railroad cars in an eight-hour shift. This broke the record of 3,137 tons held by the company's No. 9 mine.

The Taylor-English mine, located nine miles southwest of Danville, which employs about 600 men when working at capacity, reopened early in May, after having been closed since June, 1, 1925.

The tipple and all top buildings at the Firbury mine were destroyed by fire May 9. It is improbable that they will be rebuilt as the expense of a steel tipple and other items required by law, coupled with the high costs of operating, will make it impossible for the mine to compete with non-union shafts.

INDIANA

Evidence to show that the abandonment of the Central Indiana R.R. between Muncie and Brazil is justified on account of operating losses, was submitted before Clyde H. Jones, member of the Public Service Commission, by representatives of the Big Four and the Pennsylvania railroads, joint owners of the line. Opposition to the abandonment of the road was voiced before the Commissioner by business men, farmers and others living in the territory through which the road operates.

The Vandalia Coal Corporation, a Delaware corporation, has qualified to engage in coal mining in Indiana. The company has 14,128 shares, of no par value. Agent for service of process, Robert W. McBride, 1239 State Life Building, Indianapolis.

KANSAS

The Stephenson-Fenimore Coal Co., of Pittsburg, Kan., was granted a charter May 7 by the Kansas state charter board. The company, of which J. J. Stephenson and James Fenimore are principals, is capitalized at $100,000. It has purchased and will operate a strip pit, known as Reliance No. 1, near Midway. The purchase was made from the Reliance Coal Co. and included the steam shovel at the mine and fee to 100 acres of coal land. A mining lease on 400 adjacent acres, of which about 100 acres is underlaid with coal, also was obtained. Mr. Stephenson and his son opened the mine in 1914 and operated it until 1917, when they sold it to the Reliance company, which operated it until the sale, late in April to the new company. The 400 acres of leased land also belonged to the Stephensons until 1917. They sold it then to Hugh Beasley, from whom the Stephenson-Fenimore company leased it.

MINNESOTA

Ford to Acquire Superior Dock.—Indications are that the Ford interests will close the purchase of the old Superior Coal & Dock Co. dock at Duluth. A decision has been reached in the matter of taxes, which had been in litigation, and it seems likely that the purchase will be made.

The Brown Coal Co. has moved its offices from the Security Building, Minneapolis, to the new Baker Building.

MISSOURI

Coal Development is being undertaken in the northeastern part of Barton County, which, if successful will extend the Pittsburg field. The Duvall Loan Co. and the Sherwood Coal Co. have opened offices in Milford. Both concerns own large acreage and are optioning additional land for purchase at $40 to $70 an acre. The Duvall company has much drilling and J. B. Duvall, the field manager, has indicated that the results warrant the installation of steam shovels.

U. P. to Build—The Union Pacific Coal Co. will spend $359,904 for new buildings and new machinery during the next year, according to the budget recently adopted by the board of directors. One of the chief improvements will be the erection of a new building in Rock Springs to house all general offices of the company, which are at present in three buildings; the company store, and the Southern Wyoming Electric Co.'s sales division.

The Kolb Coal Co. announces the removal of its offices to suite 718 to 721 Louderman Building, Eleventh & Locust Sts., St. Louis.

The contract to supply coal to the public schools of St. Louis was awarded to the Hawthorne Coal Co., of St. Louis for $3.65 for Standard lump delivered in the bins. The contract is for about 32,000 tons.

MONTANA

The Interior Department will lease at public auction 40 acres of public coal land in Big Horn County, through the land office at Billings, requiring an initial investment of $500 during the first three years, with a minimum production of 275 tons annually commencing the fourth year, the government to receive a royalty of 15c. per ton, mine-run, on coal produced.

OHIO

The Stalter-Essex Coal Co., announces the reopening of Mine No. 7, near Pomeroy, in the Pomeroy Bend field, which had been closed for about a month, due to the embargo on lake shipments. This mine employs 100 men and together with Mine No. 5, in the same field, produces 1,800 tons daily. Both mines are operated under the 1917 wage scale. The product has been contracted for in the lake trade, according to Fred Essex, head of the company. The Ohio Mining Co., another subsidiary, is operating mines Nos. 87 and 144, at Jacksonville, Ohio. These mines are being operated under the Jacksonville scale.

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Coal Financing Closes Bank.—Protecting T. S. Jones' coal interests in West Virginia, closed up the Union Savings Bank of Yorkville, but everything is expected to turn out all right, so that the bank can open again. The state bank examiners closed the institution as a result, it was said, of a loan of $305,000 to Jones, who is vice-president of the bank. C. W. Heil, president of the bank, said the loan was given to protect Jones' investments in West Virginia. But the bank examiners said no banking institution may lend more than 10 per cent of its capital, and as the institution is capitalized at $100,000, the law was violated. The resources of the bank are said to be more than $1,000,000. No charges were filed against anyone.

Columbus Opens School Bids.—Bids opened May 13 by the Columbus Board of Education for 15,000 tons of lump or mine-run coal and 2,000 tons of nut, pea and slack for the public schools were as follows: West Virginia and Kentucky lump—Bell Coal Co., Columbus, $4.48; Colonial Fuel Co., Columbus, $4.32; Reliable Coal & Supply Co., Columbus, $4.79. West Virginia nut, pea and slack—Bell Coal Co., $4.29; Burns Coal Co., Columbus, $3.69; Colonial Fuel Co., $3.58; Franklin Builders' Supply & Coal Co., Columbus, $4.29; William Miller, Columbus, $3.93. Ohio lump—Bell Coal Co., $3.94; Burns Coal Co., $4.30; Franklin Builders' Supply & Coal Co., $4.55; Hub Builders' Supply & Coal Co., Columbus, $4; William Miller, $3.94. Ohio mine-run—Bell Coal Co., $3.86; Franklin Builders' Supply & Coal Co., $4.36; William Miller, $3.74; Third Avenue Coal Co., Columbus, $4.34. Ohio nut, pea and slack—Franklin Builders' Supply & Coal Co., $3.66; William Miller, $3.30.

PENNSYLVANIA

The Snowdon Coke Co., near Brownsville, is firing 75 additional ovens that were put out with the settlement of the anthracite strike. All of the company's 295 ovens now are in blast. Five ovens are permanently out of commission due to the erection of a coal bin over these ovens in connection with a coal tipple that is being built.

First-quarter earnings of Pittsburgh Terminal Coal Corporation were $114,665 after all charges but before federal taxes, compared with net deficit of $91,813 in the first quarter of 1925. The company closed down five of its mines last month, leaving only two in operation.

Sweeney Brothers, of Scranton, have just put through an agreement with the Delaware & Hudson Co. whereby they obtain a five-year lease on a culm dump near White's Crossing on the Honesdale branch of the railroad. The contractors are to pay the railroad royalty of 50c. a ton and put up a bond of $10,000 as a guarantee that they will market 20,000 tons before the lease expires.

The Jones & Laughlin Steel Co. is engaged in placing gantry cranes on Neville Island for the purpose of unloading coal from barges to its cold-storage plant. A number of these cranes are being brought on barges up the river from Memphis.

Glen Alden Defers Dividend.—Directors of the Glen Alden Coal Co., at Scranton, failed to take action May 11 on the semi-annual dividend which is due at this time. The expectation was that the dividend rate would be increased or that an extra disbursement would be declared. Final action on this matter, however, was postponed until the June meeting.

The Hillman Coal & Coke Co. has given an order to the American Bridge Co. for the construction of 20 all-steel barges for the coal towing trade. Each of these barges will be 175 ft. long, 26 ft. wide and 11 ft. deep. There will be 3,200 tons of steel in their construction.

The mine of the Clearfield Bituminous Coal Corp. located at Rossiter has resumed work after having been idle for a few weeks. The tipple at the mine was recently destroyed by fire. Loss, including machinery, was $60,000. About 750 men are employed.

Passes 50,000 Tons Daily. — Open-shop mines of the Pittsburgh Coal Co. attained an output of 50,162 tons from 11 mines for the first time during the week ended May 8, it is just announced by the company. This total does not include Delmont mine, in Westmoreland County, which has always been a non-union mine, but only the former union pits in western Pennsylvania. The company has 2,500 men at work.

Reading Conversion Time Extended.—Further extension of time for converting old stock to the new issue in connection with the segregation of the Reading Company's interest in coal and railroad properties, as decreed by the federal courts, was granted in Philadelphia early last week. Certificate holders now have until July 1, 1927, to exchange their rights for new shares, the U. S. Circuit Court of Appeals having previously extended the time until Jan. 1, 1927. Counsel for the company urged that the hard-coal strike had interfered with the exercise of the rights of conversion. Joseph Wayne, Jr., Philadelphia, was appointed a trustee of the new coal company's stock, succeeding the late Joseph B. McCall, Philadelphia. The other trustee is N. H. Fairbanks, Springfield, Ill.

WEST VIRGINIA

The West Run Coal & Coke Co., Scottdale, Pa., a West Virginia corporation, has surrendered its charter, according to a certificate filed in the office of the Secretary of State in Charleston.

The Vulcan store of the Elkhorn Piney Coal Mining Co., at Powellton, was completely destroyed by fire on April 15, together with the entire stock of goods. When discovered the blaze had gained such headway that it was impossible to save the building.

The meeting of the West Virginia Coal Mining Institute, which was scheduled to have been held in Bluefield on June 1 and 2, has been postponed until July 13 and 14, according to an announcement made by Robert M. Lambie, chief of the state Department of Mines, who is president of the institute. Because of the many meetings arranged to attract coal operators and tradesmen the meeting of the state organization was deferred.

A modern rotary dump and a new system of mine cars have been added to the facilities of Brooklyn Mine of the Scotia Coal & Coke Co. near Finlow, Fayette County.

Officials of the United States Coal and Coke Co. at Gary were officially congratulated last week in a telegram from Herbert Hoover, Secretary of Commerce. The message was prompted by the winning of the national safety trophy by the Gary No. 6 mine and of honorable mention in the national safety contest by Gary No. 3 mine.

Plans are being made to celebrate Safety Day in West Virginia by holding a first-aid and mine rescue-contest at Huntington on Aug. 31, when a large gathering of mining men from all parts of the state will be in attendance. Prominent mining men from West Virginia and other states will address the banquet in the evening. Prior to the observance of Safety Day there will be a series of safety meetings in all parts of the state.

A new tipple is being erected at mine No. 4 of the Winding Gulf Collieries Co., at Winding Gulf, Raleigh County. Uprights have been erected and the work will be completed by July 1.

Coal mines along the Norfolk & Western Railway in April loaded 3,162,230 tons of coal compared to 3,353,480 tons in March. Production in the various fields last month were as follows: Pocahontas, 30,175 cars; Tug River, 11,475 cars; Thacker, 3,298 cars; Kenova, 3,593 cars.

Mining extension students, who took the course offered jointly by the federal government under the Smith-Hughes act and West Virginia University, Morgantown, are planning a banquet to be held in Welch on Friday evening, May 21. Robert M. Lambie, chief of the state Department of Mines, has been asked to act as toastmaster.

CANADA

Coal Probe to Begin.—Organization of the special committee named by the House at Ottawa last week to investigate the domestic coal question in Canada will begin this week. Edmond A. Lapierre (Nipissing) is likely to be chosen chairman. As a result of the debate in the House it is probable that the scope of the committee will be widened to probe the cost of production and distribution of domestic coal, mined in Alberta and the Maritime Provinces, and the committee is likely to avail itself of the data now in the hands of the Dominion Railway Board on this matter following its inquiry on the instructions of an Order-in-Council a few weeks more. Another question which may be discussed is that brought up by James Malcolm (North Bruce), who urged the government to consider the question of control of production, especially in the Alberta region. He thought some form of control would help to distribute production more evenly, afford more stable employment to the miners and thereby help to reduce the cost of producing the coal. It was only by such a cut in the cost of production, he said, that coal delivered in Ontario could be enabled to compete successfully with United States coal.

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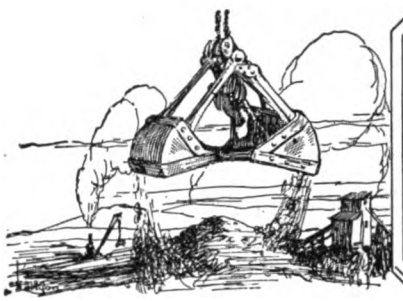
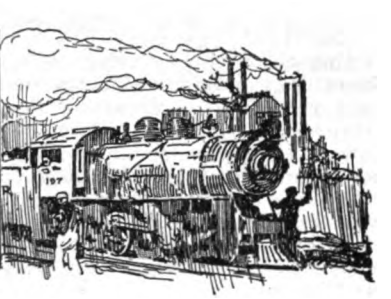


Production And the Market



Market Outlook Brighter as Lake Movement Picks Up; British Strike Discounted

The British strike did not last long enough to have much effect on the bituminous-coal markets of the United States; as a matter of fact, for even its limited duration its influence was far from important, being of an indirect character. While there was an appreciable expansion of inquiries from sources normally dependent upon British coal, accompanied by a pronounced hardening in quotations for West Virginia smokeless coals, there was no impressive spot buying. Though the British miners have not yet returned to work and each day that they stay out will have a bearing on the usual British markets, potential production on this side is such that the effect will be quickly discounted.

Smokeless coal has reappeared in the Midwest market, with lump and egg priced at about $3 and nut at $2. Southern Illinois producers continue to hold to their circular, aided by a spell of unusually cold weather for May, which has kept domestic demand active. The placing of a number of large railroad contracts has helped the steam-coal situation considerably.

Embargoes on Lake Coal Lifted

Lifting of embargoes on lake coal movement to Toledo and Sandusky has brightened the outlook in central and southern Ohio. Although Ohio coal will play a small part in the lake business, the volume of distress coal has been lightened and competition for all-rail business lessened. In Kentucky too the outlook is brighter; railroad and industrial buying are substantial and domestic demand is somewhat better. Full headway on lake movement will be a further stimulus.

Unloading of cargoes at the Head of the Lakes has been heavy. Movement from the docks, however, has been only moderate, but as the industrial outlook is good there is no apprehension. During the week ended May 16 dumpings at the lower ports included 1,144,712 tons of cargo bituminous and 47,748 tons of vessel fuel. The total for the season to that date was 2,790,618 tons, as compared with 3,427,720 tons a year ago and 2,337,287 tons in 1924.

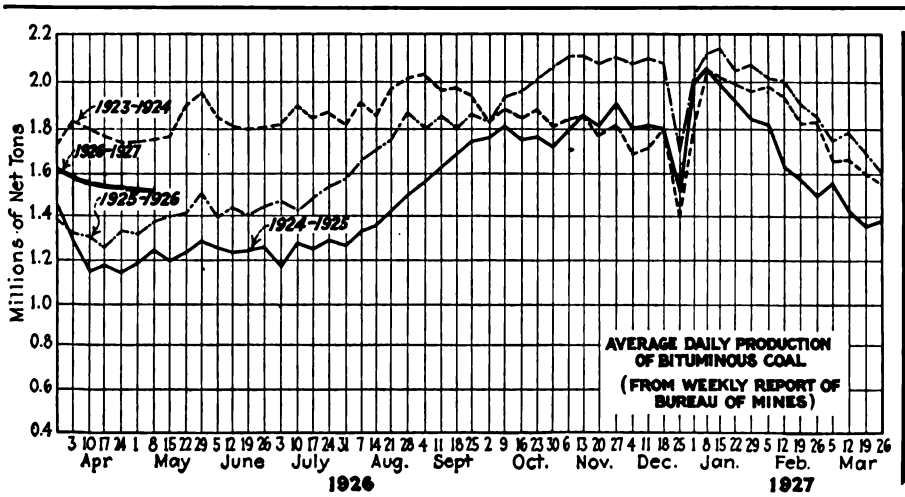
The policy of operators in scaling down output to the level of demand continues to show results. Production during the week ended May 8 was estimated by the Bureau of Mines at 9,031,000 net tons, a decrease of 94,000 tons from the revised figure for the preceding week. Nevertheless Kentucky and West Virginia coals are bringing conspicuously low prices in Midwest markets. While "no bills" are slightly less in evidence on the whole, Ohio markets suffer keenly from this evil.

Spot Prices Suffer Reaction

Coal Age Index of spot bituminous prices dropped back after last week's advance. As of May 17 the index figure stood at 159 and the corresponding price was $1.93, as against 161 and $1.95 the week before.

Heavy production of anthracite has taken the snap out of the hard-coal market. Company producers are moving domestic sizes with comparative ease, but the independents are finding their work cut out for them to induce purchasers to pay fancy premiums for their product. Consumers are in no hurry to lay in supplies for next winter, though it is expected that the present retail stocks, which are fair, will be pared down by pre-vacation fill-ups. The steam sizes are inactive.

The spot market for Connellsville coke is sluggish. Production continues to be reduced, but nevertheless there is a mad rush for what little spot business there is and prices are sliding.



Estimates of Production

(Net Tons)

BITUMINOUS

	1925	1926
April 24	8,030,000	9,271,000
May 1 (a)	7,987,000	9,125,000
May 8 (b)	8,277,000	9,031,000
Daily average	1,380,000	1,505,000
Cal. yr. to date (c)	170,653,000	196,472,000
Dail av. to date	1,569,000	1,805,000

ANTHRACITE

April 24	1,890,000	2,087,000
May 1	1,936,000	2,098,000
May 8	1,987,000	1,985,000
Cal. yr. to date (c)	30,908,000	21,559,000

BEEHIVE COKE

May 1 (a)	169,000	210,000
May 8 (b)	143,000	212,000
Cal. yr. to date (c)	4,250,000	5,170,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

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Cool Wave Helps Middle West

Unusually cold weather last week kept the Midwest domestic market alive, an unexpectedly favorable tonnage of prepared coal moving forward. Very low prices prevailed on eastern Kentucky and West Virginia fuels. Some operators have quoted as low as $1.85 per ton, f.o.b. mines, for shaker screened 4-in. block, and West Virginia 4x2-in. egg in some instances has gone as low as $1.40 per ton.

Producers of smokeless coal are now back on the market, and their quotations are on the basis of approximately $3 for lump and egg, and $2 for nut. Southern Illinois operators are continuing to hold their circular at the $2.60 level for 6-in. lump, and report a fair volume of business.

There has been some activity in the steam market during the past few days. Prices have strengthened on all grades of screenings, from No. 5 duff to full 2-in., and a number of large railroad contracts have recently been placed.

Business continues quiet in Williamson, Franklin and Saline counties. Lump and egg are piling up at the mines that are working and nut is not moving as fast as it is being produced. Nearly all the shaft mines that have crushers are using them. A few additional mines have been reported as suspending operations for the summer. Stripping operations seem to be showing up fairly well and working steadily, although the prices they are receiving are somewhat uncertain.

A late cool spring at St. Louis has caused demand for domestic tonnage in small quantities, principally of the cheaper grades.

Kentucky Outlook Brightens

The outlook in the Kentucky field is brightening. Although lake coal has not yet started to move in volume from the eastern part of the state, there is a fair tonnage going to all-rail destinations in the southeast and north of the Ohio River. Western Kentucky mines also are enjoying a good run of business to northern markets. Domestic demand has improved slightly, and industrial buying absorbs all the screenings offered. Railroad purchases, too, are on a substantial basis. Spot quotations on screenings are stronger and there has been no weakening in prices on other sizes in either field.

Dock companies at the Head of the Lakes have been kept busy unloading the heavy run of cargoes. Between May 5 and 10 67 boats were discharged and 15 additional cargoes were en route. Coal men at Superior and Duluth expect to handle about 900,000 tons of anthracite and to make further recoveries of bituminous business that has been going to Illinois and Indiana mines.

Shipments from the docks during the past fortnight have been on a modest basis, but this causes no uneasiness. The industrial outlook is healthy and prices are well maintained. During April shipments aggregated 11,855 cars, as compared with 14,836 cars in March and 9,210 cars in April, 1925. Present

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	May 18 1925	May 3 1926	May 10 1926	May 17 1926†
8mokeless lump	Columbus	$2.85	$2.60	$2.85	**$3.00@$3.25**
8mokeless mine run	Columbus	1.85	1.90	2.00	**2.00@ 2.15**
8mokeless screenings	Columbus	1.45	1.20	1.25	1.15@ 1.35
8mokeless lump	Chicago	2.85	2.60	3.10	3.00@ 3.25
8mokeless mine run	Chicago	1.85	1.80	2.00	2.00
8mokeless lump	Cincinnati	2.85	2.85	3.00	**3.00@ 3.25**
8mokeless mine run	Cincinnati	2.00	1.80	1.80	1.75@ 1.90
8mokeless screenings	Cincinnati	1.35	1.35	1.35	*1.25@ 1.35*
*8mokeless mine run	Boston	4.25	4.30	4.60	**4.75@ 5.00**
Clearfield mine run	Boston	1.85	1.80	1.90	*1.70@ 2.00*
Cambria mine run	Boston	2.10	2.10	2.10	2.00@ 2.25
Somerset mine run	Boston	1.95	1.90	2.00	*1.85@ 2.10*
Pool 1 (Navy Standard)	New York	2.55	2.60	2.60	2.50@ 2.75
Pool 1 (Navy Standard)	Philadelphia	2.60	2.80	2.80	2.65@ 3.00
Pool 1 (Navy Standard)	Baltimore	1.95	1.95	1.95	1.90@ 2.00
Pool 9 (Super. Low Vol.)	New York	2.00	2.05	2.10	2.00@ 2.25
Pool 9 (Super. Low Vol.)	Philadelphia	2.00	2.35	2.35	2.20@ 2.50
Pool 9 (Super. Low Vol.)	Baltimore	1.85	1.75	1.75	1.70@ 1.80
Pool 10 (H.Gr.Low Vol.)	New York	1.85	1.85	1.85	1.70@ 2.00
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.70	2.05	2.05	1.90@ 2.25
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.70	1.60	1.60	1.55@ 1.65
Pool 11 (Low Vol.)	New York	1.50	1.60	1.60	1.50@ 1.75
Pool 11 (Low Vol.)	Philadelphia	1.55	1.70	1.70	1.55@ 1.85
Pool 11 (Low Vol.)	Baltimore	1.45	1.45	1.45	1.45@ 1.50
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.50	1.40	1.40	1.30@ 1.55
Pool 54-64 (Gas and St.)	Philadelphia	1.50	1.45	1.45	1.35@ 1.55
Pool 54-64 (Gas and St.)	Baltimore	1.50	1.25	1.25	1.25@ 1.30
Pittsburgh sc'd gas	Pittsburgh	2.40	2.30	2.30	2.25@ 2.40
Pittsburgh gas mine run	Pittsburgh	2.15	2.05	2.05	2.00@ 2.15
Pittsburgh mine run (St.)	Pittsburgh	1.95	1.80	1.80	1.75@ 1.90
Pittsburgh slack (Gas)	Pittsburgh	1.55	1.55	1.55	*1.45@ 1.55*
Kanawha lump	Columbus	2.10	2.05	2.05	1.85@ 2.25
Kanawha mine run	Columbus	1.40	1.55	1.55	1.40@ 1.75
Kanawha screenings	Columbus	1.10	1.00	1.00	*.85@ 1.05*
W. Va. lump	Cincinnati	2.05	1.85	1.85	1.75@ 2.00
W. Va. gas mine run	Cincinnati	1.40	1.50	1.55	*1.40@ 1.60*
W. Va. steam mine run	Cincinnati	1.30	1.40	1.40	*1.25@ 1.35*
W. Va. screenings	Cincinnati	1.10	1.00	1.00	**1.00@ 1.10**
Hocking lump	Columbus	2.25	2.35	2.35	2.25@ 2.50
Hocking mine run	Columbus	1.40	1.55	1.55	1.40@ 1.75
Hocking screenings	Columbus	1.10	1.05	1.05	1.00@ 1.15
Pitts. No. 8 lump	Cleveland	2.25	2.20	2.15	*1.75@ 2.50*
Pitts. No. 8 mine run	Cleveland	1.90	1.80	1.80	*1.65@ 1.70*
Pitts. No. 8 screenings	Cleveland	1.40	1.40	1.35	*1.25@ 1.35*

Midwest	Market Quoted	May 18 1925	May 3 1926	May 10 1926	May 17 1926†
Franklin, Ill. lump	Chicago	$2.60	$2.60	$2.60	$2.60
Franklin, Ill. mine run	Chicago	2.35	2.40	2.40	2.35@ 2.50
Franklin, Ill. screenings	Chicago	2.10	1.90	1.90	1.85@ 2.00
Central, Ill. lump	Chicago	2.35	2.30	2.30	2.25@ 2.40
Central, Ill. mine run	Chicago	2.10	2.05	2.05	2.00@ 2.15
Central, Ill. screenings	Chicago	1.85	1.55	1.55	**1.60@ 1.80**
Ind. 4th Vein lump	Chicago	2.60	2.40	2.40	2.25@ 2.60
Ind. 4th Vein mine run	Chicago	2.35	2.15	2.15	2.10@ 2.25
Ind. 4th Vein screenings	Chicago	2.00	1.80	1.80	1.75@ 1.90
Ind. 5th Vein lump	Chicago	2.25	2.15	2.15	2.00@ 2.35
Ind. 5th Vein mine run	Chicago	1.95	1.95	1.95	1.85@ 2.10
Ind. 5th Vein screenings	Chicago	1.60	1.35	1.35	1.30@ 1.45
Mt. Olive lump	St. Louis	2.50	2.50	2.50	*2.25@ 2.50*
Mt. Olive mine run	St. Louis	2.25	2.15	2.15	2.15
Mt. Olive screenings	St. Louis	1.75	1.40	1.40	**1.50@ 1.60**
Standard lump	St. Louis	2.25	2.50	2.50	*2.25*
Standard mine run	St. Louis	1.80	1.80	1.80	1.75@ 1.85
Standard screenings	St. Louis	1.70	1.15	1.15	**1.25@ 1.40**
West Ky. block	Louisville	1.65	1.75	1.75	1.65@ 1.85
West Ky. mine run	Louisville	1.35	1.25	1.25	1.10@ 1.40
West Ky. screenings	Louisville	1.20	1.05	1.10	**1.00@ 1.25**
West Ky. block	Chicago	2.00	1.75	1.75	1.65@ 1.85
West Ky. mine run	Chicago	1.30	1.15	1.15	.80@ 1.50
South and Southwest					
Big Seam lump	Birmingham	2.30	2.15	2.15	1.90@ 2.40
Big Seam mine run	Birmingham	1.75	2.00	2.00	1.75@ 2.25
Big Seam (washed)	Birmingham	1.85	2.00	2.00	1.75@ 2.25
S. E. Ky. block	Chicago	2.25	2.40	2.40	2.10@ 2.75
S. E. Ky. mine run	Chicago	1.70	1.65	1.65	1.50@ 1.85
S. E. Ky. block	Louisville	2.20	2.05	2.05	1.85@ 2.25
S. E. Ky. mine run	Louisville	1.30	1.50	1.50	1.35@ 1.65
S. E. Ky. screenings	Louisville	1.10	1.05	1.05	**1.00@ 1.15**
S. E. Ky. block	Cincinnati	2.20	2.50	2.50	*2.00@ 2.75*
S. E. Ky. mine run	Cincinnati	1.35	1.50	1.55	*1.25@ 1.75*
S. E. Ky. screenings	Cincinnati	1.10	1.00	.90	**.90@ 1.10**
Kansas lump	Kansas City	4.10	4.00	4.00	4.00
Kansas mine run	Kansas City	2.85	3.00	3.00	3.00
Kansas screenings	Kansas City	2.60	2.50	2.50	2.50

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**; declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	May 18, 1925 Independent	May 18, 1925 Company	May 10, 1926 Independent	May 10, 1926 Company	May 17, 1926† Independent	May 17, 1926† Company
Broken	New York	$2.34	.....	$8.05@$8.60	.....	$8.25@$9.25	.....	$8.25@$9.25
Broken	Philadelphia	2.39	.....	8.60	$9.25	9.00@ 9.25	$9.25	9.00@ 9.25
Egg	New York	2.34	$8.65@$8.95	8.35@ 8.60	9.00@ 9.50	8.75@ 9.25	*8.75@ 9.00*	8.75@ 9.25
Egg	Philadelphia	2.39	8.60@ 9.30	8.40@ 8.60	9.25@ 9.75	9.15@ 9.25	9.25@ 9.75	9.15@ 9.25
Egg	Chicago*	5.06	7.86@ 8.50	7.44@ 8.18	8.48	8.13	8.48	8.13
Stove	New York	2.34	8.85@ 9.25	8.85@ 9.10	9.25@ 9.75	9.25@ 9.50	9.25@ 9.75	9.25@ 9.50
Stove	Philadelphia	2.39	9.20@ 9.75	8.85@ 9.00	9.60@ 10.00	9.35@ 9.50	9.60@ 10.00	9.35@ 9.50
Stove	Chicago*	5.06	8.22@ 8.70	7.92@ 8.10	8.84	8.33@ 8.58	8.84	8.33@ 8.58
Chestnut	New York	2.34	8.50@ 8.75	8.35@ 8.60	9.25@ 9.50	8.75@ 9.15	*8.75@ 9.25*	8.75@ 9.15
Chestnut	Philadelphia	2.39	8.60@ 9.45	8.50@ 8.60	9.25@ 9.50	9.00@ 9.15	9.25@ 9.50	9.00@ 9.15
Chestnut	Chicago*	5.06	8.14@ 8.35	7.69@ 8.00	8.71	8.38@ 8.58	8.71	8.38@ 8.50
Pea	New York	2.22	5.00@ 5.50	5.00@ 5.60	6.50@ 7.25	6.00@ 6.25	*6.25@ 7.25*	6.00@ 6.25
Pea	Philadelphia	2.14	5.40@ 5.75	5.00@ 5.40	6.50@ 7.00	6.00@ 6.50	6.50@ 7.00	6.00@ 6.50
Pea	Chicago*	4.79	4.91@ 5.36	4.69@ 5.00	6.03	5.65@ 5.80	6.03	5.65@ 5.80
Buckwheat No. 1	New York	2.22	2.00@ 2.60	2.50	1.85@ 2.50	3.00@ 3.50	*1.70@ 2.50*	3.00@ 3.50
Buckwheat No. 1	Philadelphia	2.14	2.25@ 2.75	2.50	2.00@ 2.50	2.50@ 2.75	2.00@ 2.50	2.50@ 2.75
Rice	New York	2.22	1.75@ 2.10	2.00	1.50@ 2.00	2.00@ 2.25	*1.50@ 2.00*	2.00@ 2.25
Rice	Philadelphia	2.14	1.90@ 2.00	2.00	1.75@ 2.25	2.00@ 2.25	1.75@ 2.25	2.00@ 2.25
Barley	New York	2.22	1.40@ 1.60	1.50	1.00@ 1.50	1.50@ 1.75	1.25@ 1.50	1.50@ 1.75
Barley	Philadelphia	2.14	1.50	1.50	1.50@ 1.60	1.75	1.50@ 1.60	1.75
Birdseye	New York	2.22	1.40@ 1.60	1.60	.....	2.00	1.30@ 1.60	2.00

*Net tons, f.o.b. mines. †Advances over previous week shown in **heavy type**; declines in *italics*.

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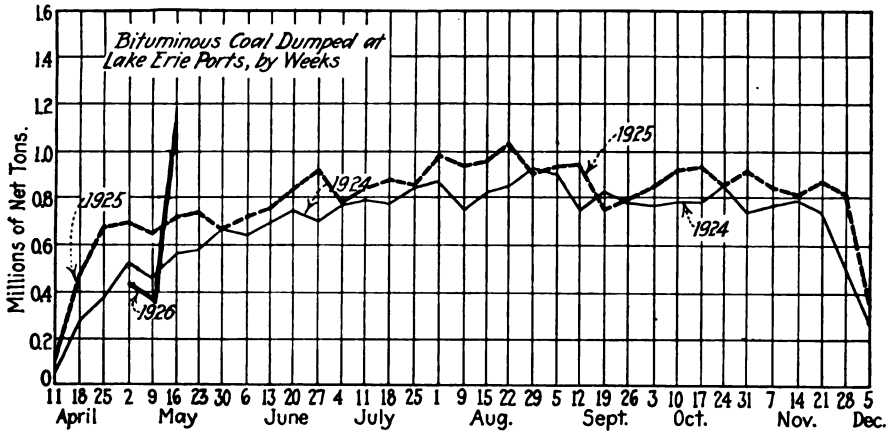


estimates place the May total at approximately 11,000 cars. Contracts with large consumers are being renewed with little difficulty.

Inflow of coal by cargo to Milwaukee continues steady, but is slower than during the opening weeks of last year because of ice conditions in Lake Erie. Up to May 13 only 20,000 tons of anthracite had been received in Milwaukee, against 168,908 tons at the same date in 1925. Bituminous coal received up to May 13 totaled 203,809 tons as against 339,660 up to the same date last May. The market continues satisfactory.

Wisconsin to Probe Prices

Milwaukee dealers are disturbed by the announcement of a state investigation of prices of fuel in Milwaukee and interior points. The state Market Commissioner says a report by an official committee "shows a difference of $5.20 a ton in the retail price of prepared Pocahontas coal in Wisconsin cities during the winter months of 1925-26."

Usual early season quiet in the Twin Cities has been intensified by slack commercial conditions and erratic weather. Little progress has been made in lining up future business. Several railroads have been considering contracts, but little aside from these has been available. The local market has held fairly firm, with little offering at concessions. Prices are fairly well maintained on the basis prevailing for some time. Southern Illinois lump is $2.60; central Illinois, $2.25; western Kentucky, $1.75.

Current Business Slow in Kansas

In the Southwest operators are receiving few orders for immediate delivery, though a fair list for future delivery is accumulating. While some summer storage is reported, it is not sufficient to have any noticeable effect on the market. Kansas lump and nut are accumulating at the mines but in smaller quantities than in former years when crushers were not so generally used throughout the Southwest. Crushing of strip-pit production to fill steam orders is preventing any shortage in that market.

There has been a slight recession in domestic demand for Colorado coal, particularly in Nebraska, Kansas and Oklahoma. The Denver local market, on the other hand, is active. Industrial buying also holds up. The price situation with respect to both Colorado and Wyoming coals is unchanged. Except for belated cold weather in the Salt Lake City retail market, the general situation in the Utah field shows no material variation from that prevailing in recent weeks.

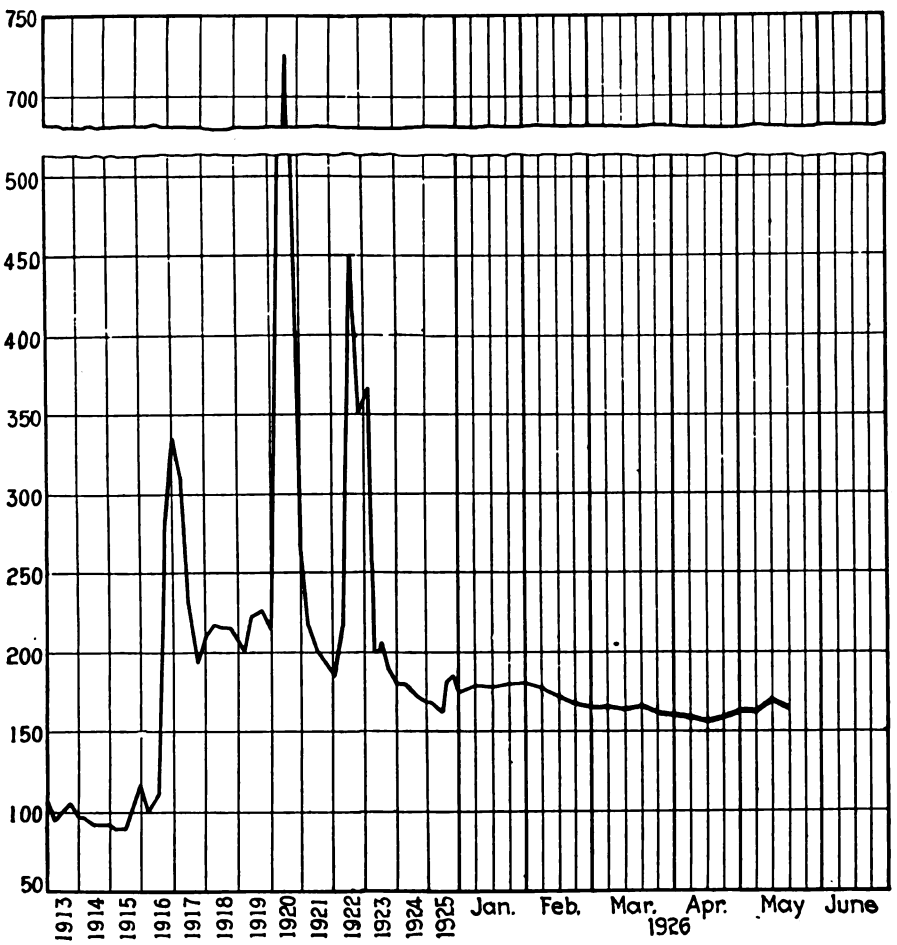
Smokeless Stiffens at Cincinnati

Lake business, now getting its start six weeks late and with a huge tonnage to pass over the unloaders, has given snap to the Cincinnati market. Smokeless has bettered more than other lines. All standard stuff is firmly held at $3 for lump and egg, with some specialty offerings as high as $3.25 spot. Direct sales offices say they are sold up on their make of prepared. Nut goes all the way from $1.75 to $2.50, depending on selling conditions at the mines. Low-volatile mine-run is a bit better. Not so much $1.75 coal is to be had and even on large orders $1.90 is reasonably obtainable. The better part of the screenings shipments go at $1.25, though some large sales have been made at $1.35 where the grading was exceptional or suited for a specific purpose.

In high volatile slack has stiffened once more, so that $1 is low, good by-products and gases bringing around $1.10 and $1.15. Mine-run is $1.25@$1.35 for steam, though byproduct is still firmly held. Egg still ranges at $1.50@$1.75. Two-inch for the lakes sells all the way from $1.65 to $1.90 with the inquiry bettering.

Retail business has tapered off due to warmer weather. River business continues in volume, but little or no storage stuff is going to the stockpiles.

Lifting of the embargoes on lake coal to Toledo and Sandusky has dissipated the gloom which has been enshrouding central and southern Ohio trade for the past few months. Although Ohio operators expect only a



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926				1925	1924
	May 17	May 10	May 3	April 26	May 18	May 19
Weighted average price	$1.93	$1.95	$1.92	$1.93	$1.95	$2.05
Index	159	161	159	159	161	169

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.

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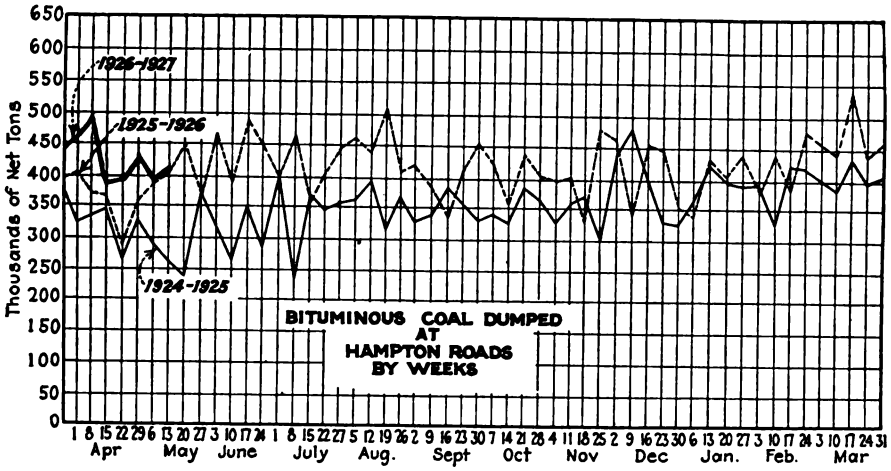


meager share of the lake tonnage, the opening of the season takes off the pressure of distress coal, and somewhat lessens non-union competition for all-rail business. Large consumers are showing more interest and a few contracts have been closed. Contract prices, however, are low.

Domestic demand is at a standstill. This situation helps to maintain a strong market for screenings and prices on that grade are firmer. Production is still at a low ebb. Most of the larger mines in southern Ohio are down and the output from those running does not exceed 15 to 18 per cent of the potential capacity of the field.

Buying in eastern Ohio is very slow, practically all prices are now at or below the cost of production, and lethargy is pronounced. There is considerable "no bill" coal on track at the mines. Aside from vessel fuel, the No. 8 district is doing comparatively little in the lake trade. During the week ended May 8, this district produced 210,000 tons or about 30 per cent of potential capacity. This is an increase of 21,000 tons over the preceding week, but 7,000 tons under the corresponding week a year ago.

Pittsburgh Depression Increases

The only change noted in the Pittsburgh district last week was a slight softening in the market for spot screenings. Demand continues light. Most of the union production of western Pennsylvania is now coming from mines on the Pan Handle and they are not averaging over two or three days a week. Some of the Bessemer district open-shop operations are doing better in running time, but there is no profit in the tonnage. The Pittsburgh district as a whole is not averaging over 20 to 25 per cent of capacity and a large part of this comes from captive mines. Over 50 per cent of the commercial production is being mined by open-shop operations.

The new month brought a slight gain in central Pennsylvania production. Loadings for the first week in May were 14,233 cars, or approximately 2,000 cars more than in the first week of April. Approximately 80 per cent of the tonnage is non-union. Pool 1 coal is quoted at $2.45@$2.60; pool 71, $2.15@$2.25; pool 9, $1.95@$2.15; pool 10, $1.75@$1.85; pools 11 and 18, $1.60 @$1.70.

Pessimism is unabated in the Buffalo bituminous trade. Complaint is made that coal is forced and prices suffer. Slack has weakened. Nominal quotations are: Fairmont lump, $1.50@ $1.65; mine-run, $1.30@$1.45; slack, $1.10; Youghiogheny gas lump, $2.15@ $2.35; Pittsburgh and No. 8 steam lump, $1.85@$2.10; gas and steam slack, $1.30 @$1.50; Allegheny Valley mine-run, $1.60@$1.85.

Demand Quiet in New England

In New England there is no spot buying of any moment. Smokeless coals are firmer than a week ago, but this is owing partly to actual purchases already made for users of British coals, although most of the price advance can be attributed to possible export demand later on. Consumers apparently are not at all anxious over prices the next few weeks. Potential production is so great that the effect of the British strike lasting but a few weeks will be discounted.

On board vessels at Hampton Roads the asking price ranges $4.75@$5 per gross ton, a marked upswing from the April average. So much depends upon the course of export business the next week or two that it is difficult to forecast conditions on Pocahontas and New River, but if the Welsh mines do resume soon the market here will again sag to the pre-strike basis.

Central Pennsylvania remains in the doldrums. Only a minimum tonnage is moving and the totals for this territory must be relatively small. Even high grade forge coals are in extremely light demand.

On cars Boston and Providence for inland delivery there is only mild request. Most factors have on hand coal that was received on the April basis and quotations are only moderately firm. A few are asking $5.75 per gross ton, but inquiries for 20- to 50-car lots disclose a willingness to shade that figure considerably.

New York Bituminous Trade Quiet

"Calling off" the British strike made no impression on the New York bituminous market because there had been so few orders placed for foreign shipment. Distress tonnage has practically disappeared, but domestic industrial consumers show no disposition to increase their stocks of coal. There is, however, a fair volume of tonnage moving to meet current requirements.

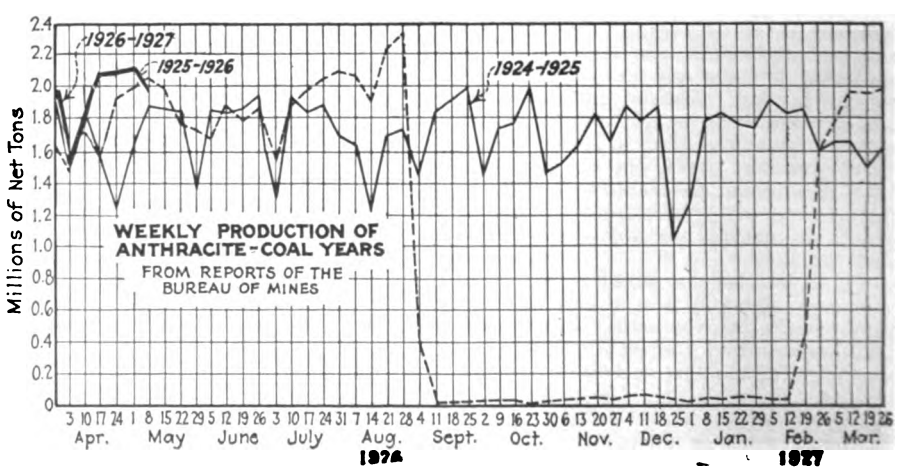
Philadelphia was another market in which the British situation had no influence. As at New York, buyers seem content to let things drift on as they are and little contract business has progressed beyond the inquiry stage. At Baltimore, on the other hand, there has been a revival of interest on the part of the consumers of steam tonnage, but the revival was not strong enough to lift up the spot-price levels.

Seasonal declines are less marked than usual in Birmingham territory. The small surplus of better grade coals thrown on the spot market is easily absorbed, but the lower grades are less fortunate. Contract customers are taking their full quotas. The bulk of the domestic coal now moving is on contracts. Nut and egg are in better demand than lump. The lower grades of white ash still are backward. Domestic coke is a little stronger at $3.25@ $3.50 for nut and $4.75@$5 for egg. The foundry market is quiet; spot coke is $6@$6.50 and contract, $5.50.

Anthracite Market Sluggish

There is no snap to the anthracite market at New York. Company domestic tonnage, however, is moving steadily, but buyers will not pay fancy premiums for independent coal. Retail stocks are fair, but it is expected that these will be reduced by pre-vacation fill-ups. The steam sizes are sluggish. No. 1 buckwheat is the weakest, but rice also is soft. Barley shines by contrast.

Demand for domestic sizes at Philadelphia is dwindling. Householders are reluctant to order their next winter's fuel and dealers do not want to accumulate heavy stocks. The majority of the shippers have unbilled loads at the mines and independents are shading



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Car Loadings and Supply

	Cars Loaded — All Cars	Coal Cars
Week ended May 1, 1926	995,641	165,627
Preceding week	973,304	166,586
Week ended May 2, 1925	981,711	149,218

	Surplus Cars — All Cars	Coal Cars	Car Shortages All Cars	Coal Cars
May, 1926	276,573	115,205	.....	.....
April 23, 1926	286,203	126,959	.....	.....
April 30, 1925	337,181	160,913	.....	.....

nut quotations to effect sales. Pea is scarce. Of the larger sizes, stove is in the most active demand. Barley moves with little difficulty, but No. 1 buckwheat is offered as low as $2 and rice quotations are off 25 to 35c. The Baltimore trade is quiet.

Lake shipping is well under way at Buffalo. The latest weekly report shows clearances of 59,600 tons, of which 29,000 tons went to Milwaukee, 11,000 tons to Sheboygan, 8,000 tons to Chicago, 6,900 tons to Washburn and 4,700 tons to Manitowoc. Local business has been sustained by weather conditions. The temperature also has been responsible for retail activity at Toronto, but this is easing off. There is a growing demand in Ontario for Welsh coal.

Dullness still characterizes the spot market for Connellsville coke. Despite curtailed production, there is still a scramble for the little spot business that appears from time to time, with the result that some spot furnace coke has sold down to $2.90. Small lots are held at $3. Spot foundry holds at $4 @$4.50, but the undertone is weak.

Output from the Connellsville and Lower Connellsville ovens during the week ended May 8 declined 9,070 tons, according to the Connellsville *Courier* The greater part of this loss was in the output of the furnace ovens. The total from those ovens was 89,500 tons, a decrease of 7,900 tons. Merchant-oven output, 70,840 tons, was 1,170 tons less than during the preceding week.

Foreign Market And Export News

How British Coal Strike Affects Europe

Continental Europe industries normally dependent upon Great Britain for a substantial portion of their coal supplies view the tie-up of the British coal mines with growing concern. Coal-producing interests of those countries, on the other hand, express great confidence in their ability to keep the wheels of trade turning by speeding up their output.

The Spanish iron mines, says a late cable to Washington, are anticipating serious inconvenience as a result of the British strike, although the coal-mining industry is optimistic regarding its ability to supply the demand. The iron industry probably is not seriously affected because of the restrictions recently decreed by the Spanish Government against the use of British coal.

The French coal industry is pushing production in an effort to fill the gap made by the stoppage of British deliveries, while prices have not as yet been affected. Probably Belgian and German shipments will supply the deficit, especially if the restriction on free German coal (that not imported on reparations account) is removed.

French production of coal and lignite totaled in March 4,566,000 metric tons as compared with 4,088,000 in February. Coke production amounted to 319,000 tons in March, which is over 40,000 tons more than in February, while the production of briquets reached 327,000 tons in March, a slight reduction when compared with the previous month. Production during April is estimated to have reached new high levels in anticipation of the British strike.

Prices of industrial fuel are as yet unchanged but increases are expected should the strike in Great Britain continue. The price of indemnity metallurgical coke is to be approximately 190 fr. per metric ton on June 1, an increase of 47 fr. in five months.

At a general meeting of the Czechoslovak coal miners' union on May 6, it was resolved that no increase in coal exports be permitted during the British coal strike. The railway unions support the action.

Owing to large existing stocks of coal in Italy, no apprehension is felt on account of the British coal strike. Buyers are declining to place orders at higher prices.

No Change in Belgian Situation

Brussels, Belgium, May 7. — There has been no marked change in the Belgian coal situation. The undercurrent of improvement noted in recent reports continues. Industrial demand is good. The rate of foreign exchange, the absence of German competition and the strike in Great Britain all combine to give the Belgian mines the full advantage of this situation. The Borinage district in particular is feeling the beneficial effects of these factors.

Inquiry is very strong for semi-bituminous and lean beans 8 mm. x 20 mm. of the stocks are almost exhausted. Semi-bituminous and lean peas also are in good demand. Coking smalls are sought after between 87 and 88 fr. as well as lime duffs at the newly increased price of 72 fr. per ton. Lean duffs and cement duffs are asked for and even fairly scarce at 42@45 fr. per ton.

The situation in domestic fuels also is improved.

During March Belgium imported 701,665 metric tons of coal, 226,031 tons of coke and 7,304 tons of patent fuel. Germany was the principal source of supply. During the same month Belgium exported 127,214 tons of coal, 84,995 tons of coke and 65,420 tons of patent fuel. France was her best customer.

Coal Strike Threatens Poland

The Polish Silesian coal fields, which are the principal source of Poland's coal supply, are threatened with a possible tie-up because of demoralization of the railroads and the likelihood of a miners' strike. The operators are unable to move their daily output of 80,000 tons. The miners are demanding a 30-per cent increase in wages, asserting that the German miners across the border are receiving 500 per cent more than they.

Export Clearances, Week Ended May 13

FROM HAMPTON ROADS

	Tons
For Canada:	
Dan. Str. Thrompenberg, for Gaspe	2,779
Swed. Str. Bore, for Montreal	4,218
Br. Str. Ryburn, for Quebec	2,314
For Spanish Morocco:	
Nor. Str. Spes, for Ceuta	1,494
For Brazil:	
Jap. Str. Naples Maru, for Rio de Janeiro	7,336
Braz. Str. Mandu, for Pernambuco	4,029
Grk. Str. Maria Stathatos, for Rio de Janeiro	6,588
Br. Str. Dovenby Hall, for Rio de Janeiro	6,588
For Tunis:	
Ital. Str. Lodovica, for Sfax	4,891
For Gibraltar:	
Jap. Str. Etna Maru	9,216
For Cuba:	
Amer. Str. Glendoyle, for Guantanamo	2,965
Nor. Str. Gro, for Havana	4,414
For Dutch East Indies:	
Du Str. Madaera, for Batavia	644
For Egypt:	
Br. Str. Oanfa, for Port Said	2,317
For Barbados:	
Nor. Str. Marstenen, for Bridgetown	2,817
For Miquelon:	
Nor. Str. Marga, for St. Pierre	1,595
For Bermuda:	
Amer. Schr. Albert H. Willis, for Hamilton	789

FROM BALTIMORE

For Egypt:	
Br. Str. Eastern City, for Alexandria	7,383
For Cuba:	
Am. Str. Delfino, for Guanico	502
For Italy:	
Ital. Str. Alberta, for Savona	6,591

FROM PHILADELPHIA

For Cuba:	
Nor. Str. Ringshang, for Habana	——

Hampton Roads Coal Dumpings*

(In Gross Tons)

	May 6	May 13
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week	165,662	161,743
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	63,740	66,191
C. & O. Piers, Newport News:		
Tons dumped for week	123,987	141,904

*Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS

	May 8	May 15†
Pool 1, New York	$5.50@$5.75	$5.50@$5.75
Pool 9, New York	4.95@ 5.20	*4.90@ 5.20*
Pool 10, New York	4.70@ 4.95	*4.70@ 4.90*
Pool 11, New York	4.40@ 4.70	*4.40@ 4.65*
Pool 9, Philadelphia	5.10@ 5.40	5.10@ 5.40
Pool 10, Philadelphia	4.80@ 5.15	4.80@ 5.15
Pool 11, Philadelphia	4.25@ 4.50	4.25@ 4.50
Pool 1, Hamp. Roads	4.75@ 5.00	*4.50@ 4.60*
Pool 2, Hamp. Roads	4.50@ 4.75	*4.30@ 4.35*
Pool 3, Hamp. Roads	4.00	**4.00@ 4.10**
Pools 5-6-7, Hamp. Rds.	4.50	*4.15*

BUNKERS

Pool 1, New York	$5.75@$6.00	$5.75@$6.00
Pool 9, New York	5.20@ 5.45	*5.15@ 5.45*
Pool 10, New York	4.95@ 5.20	*4.95@ 5.15*
Pool 11, New York	4.65@ 4.95	*4.65@ 4.90*
Pool 9, Philadelphia	5.35@ 5.65	5.35@ 5.65
Pool 10, Philadelphia	5.05@ 5.40	5.05@ 5.40
Pool 11, Philadelphia	4.50@ 4.75	4.50@ 4.75
Pool 1, Hamp. Roads	4.75@ 5.00	*4.80*
Pool 2, Hamp. Roads	4.50@ 4.75	*4.35*
Pools 5-6-7, Hamp. Rds.	4.50	*4.15*

† Advances over previous week shown in heavy type; declines in *italics*.

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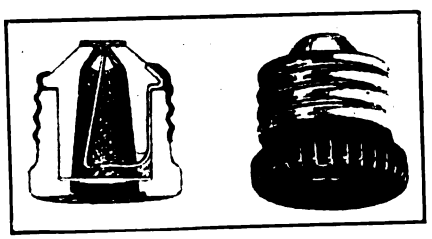
New Equipment

Fuse Shows When It Blows

Non-renewable and of distinctive design, the new fuse plugs shown in the accompanying illustration was recently placed on the market by the Trico Fuse Manufacturing Co., of Milwaukee, Wis. It is known as the Cleartop and consists of a separate porcelain base and body. The base is provided with a long baffle chamber that extends to the inside top of the body and holds the mica window in place. Body and base are held together by a heavy brass screw shell, the body being finished in a dull black that gives it the appearance of molded insulation.



Plug of Improved Construction

Shows side view and cross-section of new fuse plug. Construction is simple and rugged. The device is guaranteed to give unmistakable evidence of failure.

Some of the distinctive features and advantages claimed for this plug by the maker are: A large heavy knurl embraces the top edge, a clear India window is provided, as is also a visible link with the amperage stamped directly upon it, and a large central contact is employed. Each fuse is guaranteed to "show when it blows." This fuse is approved by the Underwriters Laboratories and is packed for the market in cartons of fifty.

Pen Charts Methane Content Of Mine Atmosphere

A continuous methane recorder has been developed by the Mine Safety Appliances Co., of Pittsburgh, Pa., and the new instrument will be placed on public exhibition for the first time at the American Mining Congress convention in Cincinnati, Ohio. This device is designed to reduce the probability of methane explosions in mines, as it will provide a means of continuously recording the proportion of methane in any split. It will likewise serve as a guide for regulating the fan or fans so that the content of this gas may be kept well below the explosive limit.

It has been demonstrated that rock-dusting will render coal dust non-explosive. If then the ventilation be properly regulated by means of one of these methane recorders the probability of a gas explosion, which is the only kind of explosion possible in a properly rock-dusted mine, will be greatly reduced.

In this recorder an electrically driven pump continuously draws in a sample of the mine atmosphere. This is then passed through a purifying chamber in which all dust or other particles of a solid nature are removed. It next passes through a canister containing chemicals that absorb all moisture and carbon dioxide.

It is then led to a flow meter that maintains a constant head or pressure in forcing it through an orifice of 0.014-in. diameter. This pressure is so regulated as to force ½ liter per minute through this orifice, any excess being bypassed to the outside air.

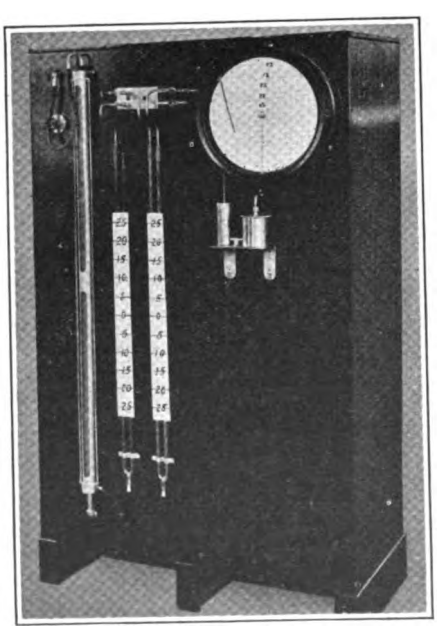
This ½ liter of the sample is then led through a fused silica tube containing platinized asbestos which by means of an electric furnace is maintained at a temperature of 800 deg. C., or 1,472 deg. F.

This high temperature and the catalytic action of the material within the tube serve completely to oxidize any methane that may be present to carbine dioxide and water. Another canister filled with chemicals completely removes these products of combustion.

The remainder of the sample is next led through an equalizer that brings it back to its original temperature. It is then forced through a second orifice of the same diameter as the first namely, 0.014 in.

If no methane is present in the first instance, the volume will remain constant, and the head, or pressure, required to force it through the second orifice will be the same as that necessary to drive it through the first. If methane is present in the original sample the volume of gas passing the second orifice will be less than that passing through the first, and the pressure required to force it through naturally will proportionately be smaller. This difference in head is registered by means of a sensitive pressure gage, the chart used being calibrated to read in percentages of methane.

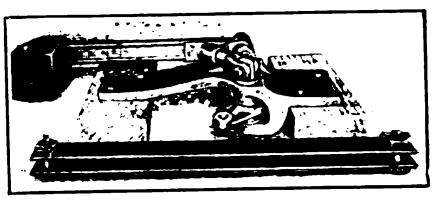
The chart employed covers a range from zero to 4 per cent and, it is said, can be read with accuracy to a few hundredths of one per cent of methane.



A glance at this chart will thus show the proportion of methane present in the mine atmosphere at any moment. The chart is made for one day's operation and the two canisters of chemicals are good for one week. Keeping the instrument in service is said to be a simple operation.

Parallel-Throw Switch Is Low, Compact and Durable

Designed to afford maximum service at minimum cost, the new parallel-throw switch stand shown in the accompanying illustration has been placed on the market by the West Virginia Rail Co., of Huntington, W. Va. This stand is made in two sizes, the first intended for rails weighing up to 40 lb. per yard and the second for those weighing 45 to 60 lb. per yard. Both crank and lever shafts are supported by double bearings. In consequence none of the working parts overhang and the inevitable bending stress and wear are avoided.



Switch Stand and Rod

This stand is low and of unusually rugged construction. When the connecting rod is rigid as here shown the switch is self-locking, but when provided with a spring it becomes automatic in operation.

All bearings are reamed from the solid metal, assuring the best conditions for slow-moving journals. The design is such that an increasing pressure is applied to the switch points at the extremities of the throw. The stand is low, thus offering a minimum of obstruction. When equipped with a rigid connecting rod as shown in the illustration the device is self-locking.

A hexagonal hole in the crank accurately fits the hexagon steel crankshaft, making transmission of the turning movement positive. The crank is placed at such a height as to be in alignment with the switch bar, thus avoiding offsets and consequent bending stresses in the connecting rod. As a special safety connecting-rod bolt is used to hold the rod, both stand and switch points are protected from breakage should a trip run through the switch, provided the rod is of the rigid type. This bolt is easily replaceable when broken or sheared. The entire stand is made of steel and malleable iron and is thus extremely strong and durable.

A New Welding Torch

To meet the demand for a small welding torch, the Alexander Milburn Co. has developed a torch that is 18 in. long and weighs 25 oz. It is known as the type J-Jr. In design it is sturdy and compact. It uses the same tips as are supplied with the standard torches of larger size and is said to be adaptable to all classes of welding. It can use gas supplied either from generators or compressed in tanks. It uses low and comparatively equal pressures of oxygen and acetylene.

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Eliminating Dust of Underground Dumps, p. 753

COAL AGE

The World's Accepted Authority on Coal Mining

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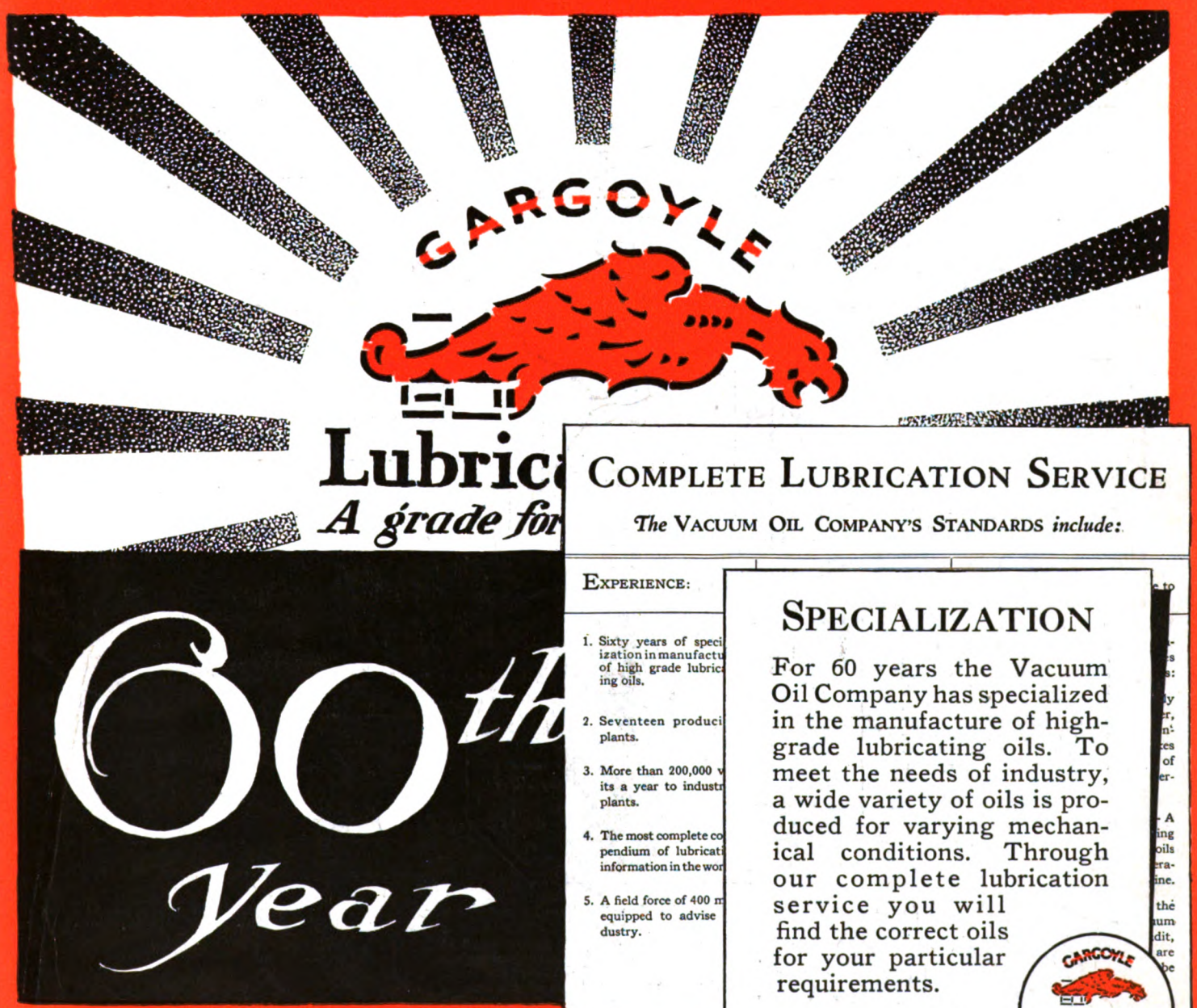

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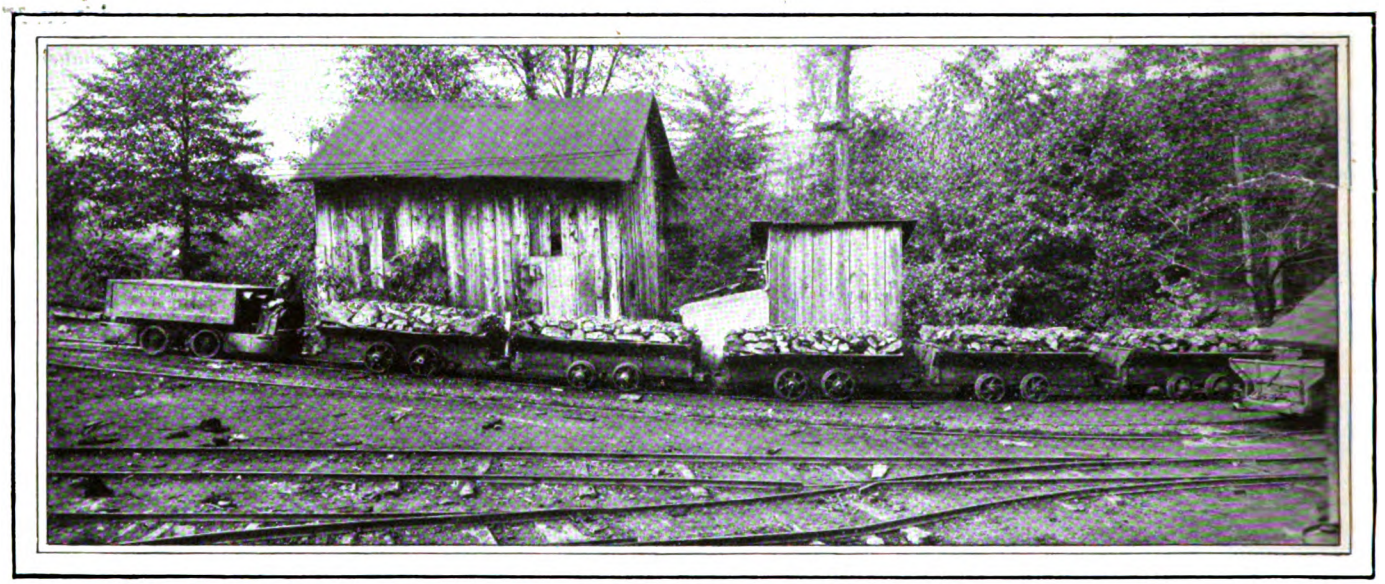
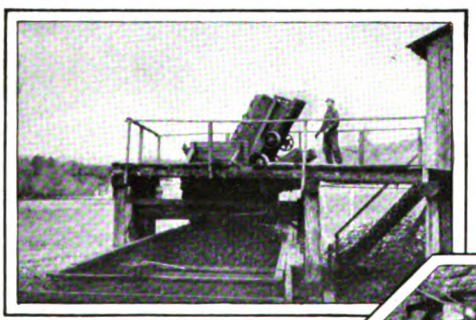


Could your haulage motors handle more coal if it were not for one or two steep grades they must climb? Then equip those motors with Exide-Ironclad Batteries and they won't stop for steep hills or extra-heavy loads. When extra power is needed, this battery has the peculiar ability to deliver current much faster than the normal rate.

Keeping the coal coming constant

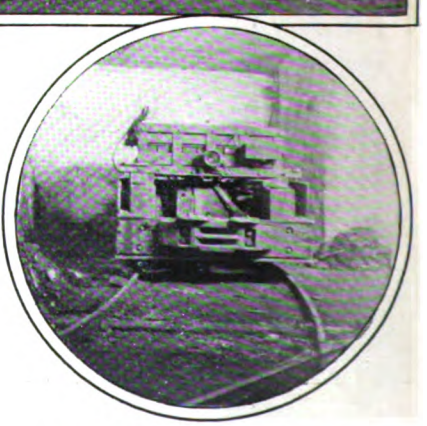


Do your motors always get back to the charging barn at night under their own power? Seldom if ever does an Exide-Ironclad-equipped motor have to be towed in. The voltage of this battery remains high, even when the battery is almost discharged. And so rugged is it that it almost never gets out of order.



Another car over the tipple! How many will there be at the end of the shift? One thing is certain. More cars will be loaded where the mine's haulage motors are equipped with Exide-Ironclad Batteries, for these batteries increase the speed, smoothness, and efficiency of any haulage system.





Exide IRONCLAD BATTERIES

This miner has shot down his coal and is waiting for the gathering motor to bring him an empty. Miners seldom have to wait for empties where the haulage motors are powered by Exide-Ironclad Batteries. The great speed and pep of this battery hustles the loads out and the empties in without delay. What is more, this speed holds up well all day long.

Send for a free copy of our booklet, "Facts for Consideration in Selecting a Battery for Locomotive Service." Form No. 1791.

The charging efficiency of an Exide-Ironclad is enough to delight the heart of any mine electrician. This battery takes current in quickly, easily and with very little waste.

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 29 — New York, May 27, 1926 — *Number* 21

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How Mines with Underground Dumps Are Trying to Eliminate Coal-Dust Hazard 753
BY C. W. OWINGS AND V. C. ALLISON.

Crozer Roadways Having Reached Boundaries of Property, Mines Now Work in Full Retreat 757
BY A STAFF CORRESPONDENT.

Fate of Proposed Coal Legislation Is Uncertain; Parker and Copeland Favor President's Recommendations 767

British Coal Strike Unsettled; Mine Workers and Owners Reject Premier Baldwin's Peace Proposals 769

Both Sides on Legislation in Washington Point to British Coal Situation 770
BY PAUL WOOTON.

Uniform, Acceptable Preparation of Anthracite Demanded by Retailers; Voice Opposition to Federal Control 771

Sloan Bans Further Mining at Cassidy Operation 768
Gealy Informs Engineers of Opportunities for Profits 768
Business Speaks Its Mind at Washington 768
New Haven R.R. Wants Coal 770
Burns Bros. Likely to Buy Rubel Coal Co. 770
Dalrymple Flouts Suspension; Incompetence Charged 770
Desist Order Issued to Midwest Retailers; Sanborn Co. Absolved 772
Sonman Shaft Coal Co. Sold 772
California Dealers Prepare to Combat Oil and Gas 772

Editorials 751
Underground Operation 761
Practical Pointers 763
Viewpoints of Our Readers 765
News Items from Field and Trade 773
Traffic News 777
Weekly Review and the Market 778
Foreign Market and Export News 782
New Equipment 783

Post-Convention Issue

The Convention draws to a close. It has been a striking exhibit of the interest of mining men in the technique of their industry and in the ability of manufacturers to supply tools and materials for their use.

Coal Age had no less than five editors present to record and to gather data. In the pages of next week's issue will be found a full account of the meeting which means so much to the industry. You will find a record in which you can read what you have heard, thus getting a second time the benefit of the meeting and the exposition. If your notes are incomplete, if attendance at the booths or discussions of problems with friends caused you to miss sessions, *Coal Age's* pages will make up for the deficiency.

And if the mines held you at home *Coal Age* will be of some assistance to you in retrieving what you have lost, and never forget it is a great loss you sustain by your absence. Many a man who has gone to such a meeting has learned how and where he can get information, has gained a knowledge of those who are authorities in the work of the industry, has met men who, at some time later, can be of assistance in solving the problems of his mines.

Here in *Coal Age* will be a permanent record to which you will have recourse in later months, when new developments at your mines increase your interest in some phases of the industry, or when your notes prove meager or are lost and memory wanes.

The Convention and Exposition will leave their impress behind. They are another big step in the progress of the industry, which is moving forward daily. In *Coal Age* week by week you will get additional data to add to what you have acquired.

You have met the men of the industry, and you will have a personal as well as a technical interest in their achievements that will aid your reading and deepen your understanding of the problems of the industry. To a man who attends a convention all its progress is dramatized. The *dramatis personae* being known, the play has thereafter a more direct appeal.

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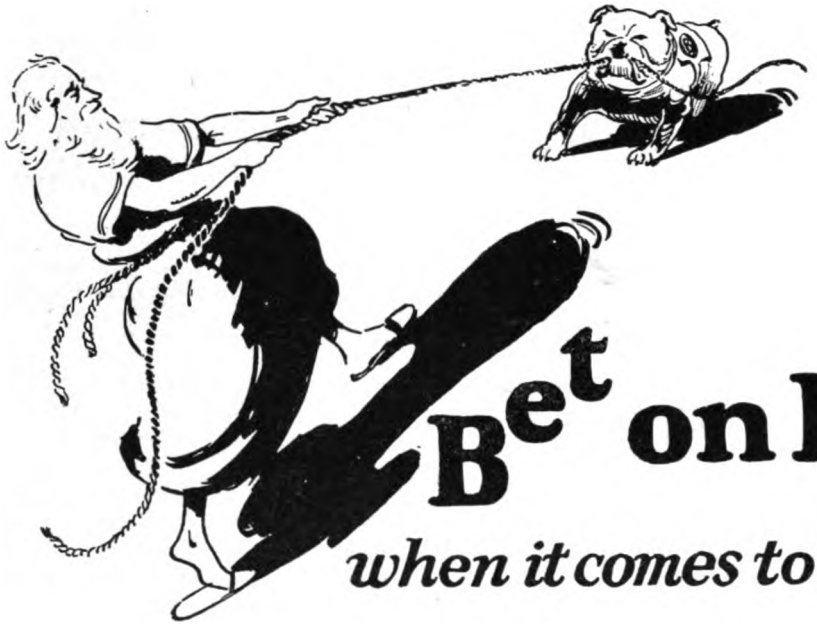

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COAL AGE

McGRAW-HILL PUBLISHING COMPANY, INC.
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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

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Where Statistics Would Help

AS TO HOW FAR, if at all, the federal government should go in setting up a system of compulsory fact-finding in the coal industry there is much honest difference of opinion. Even some of those who are most sympathetic toward the idea are in doubt as to the constitutionality of proposed legislation. Opponents who rely upon constitutional guarantees offer a formidable list of court decisions to bulwark their argument that such an innovation would be beyond the authority of Congress. At least until the Supreme Court of the United States shall have spoken in the *Claire Furnace* and *Maynard Coal Co.* cases, confusion and disagreement will continue.

There are, however, certain statistical activities that the federal government properly might expand or inaugurate. Concerning these there could be no challenge. These statistics relate to production, distribution and consumption. The government is, of course, and has been for some time, collecting and publishing weekly data on production. The only criticism which may be leveled against those figures is their lack of detail. A big step forward was taken when the production figures were broken down into tonnages by states. But the analysis should go further. The state figures should supply information as to the output of the important producing districts. The Bureau of Mines already is working on this particular problem, and it should be encouraged in its undertaking.

It is several years since any attempt was made to publish data on distribution. Yet such data are a necessary complement to the production figures. The latter tell only half the story. There are no insurmountable difficulties to the collection and compilation of distribution statistics. It is merely a question of setting the proper machinery in motion. For years the Illinois and Indiana Coal Traffic Bureau, a railroad organization, has been compiling such data with respect to the distribution of the production of those two states. The Ohio Bureau of Coal Statistics has been performing a similar but less voluminous service for certain other fields. In neither case, however, are these monthly reports available to the general public or to the coal industry at large.

The activities of these bureaus in their limited areas suggests how the problem of collecting statistics, national in scope, should be met. The railroads have the basic data. The task of assembling it from the carriers' records would be comparatively simple. The task of collating individual reports from thousands of operators every month would be almost impossible.

Moreover many producers selling through sales agencies do not know the final destination of part of their tonnage. The Interstate Commerce Commission might well issue an order requiring the railroads under its jurisdiction to furnish it with monthly distribution reports. In fact, no other agency is so well situated for the collection and publication of this information.

With complete data on production and distribution available, there still would remain statistics on stocks in the hands of consumers and consumption. These statistics are essential to a well-rounded picture. They are necessary if the industry is to conduct its business intelligently and if the consumer is to place his orders wisely. The coal industry cannot supply these figures. The consumer alone has the data. The Bureau of the Census, in co-operation with the Bureau of Mines, has made some studies of this situation, but the studies to date have been neither comprehensive enough nor issued with sufficient frequency to serve as a sensitive barometer of conditions. The work should be expanded and quickened.

Post-Convention Soliloquies

A CONVENTION is much what we make it. The seed is good if, as at Cincinnati, it is well chosen, but the growth depends on the soil in which it is sown. Quick planting stimulates growth. A convention a month old has little of its vitality left, so try and arrange affairs in a manner that will permit of quick action. Companies which have sent men should take care that the gain made is not lost by inaction.

There is need that the problems of the industry be seen in a large way. Little improvements in practice are good, but vital changes are better. Some striking development should be planned; further data should be accumulated; visits should be made to places where improved operation is in actual practice. The pile of letters on the desk should be promptly reduced, so as to leave the manager and superintendent time to plan. It is to be remembered that the business of an alert mine official is not to travel the old well-beaten paths of his predecessors, but to break a new road to efficiency.

Have you no reserve of imagination? Will you let your negations be more numerous and more potent than your affirmations? Have you attended the convention with a firm conviction that what is new is not true, and what is true is not new? If so the convention is lost to you. The world moves along. There have been hundreds who questioned all that was original, but the few who saw and believed what was worth seeing and believing advanced industry and profited, and with them the world.

In conventions the wisdom of many men is pooled. We learn what has succeeded, and if anything has failed why it did not succeed. From this we can chart a safe course to larger accomplishment, but no one succeeds who does not act. It is perhaps easier to rest immobile, but those who do so get nowhere. The convention at Cincinnati will move many men forward and leave the rest to muddle along unhappily toward

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failure and bankruptcy, for in a moving line those who stand still gravitate rapidly to the rear where are found the misfits and ne'er-do-wells whose lamentations would have us believe that the coal industry is without awards and opportunities for any.

Free of Detail

MOST OF THE men around a mining plant have a daily grind to perform, an endless succession of duties that makes them servants rather than masters of their jobs. The superintendent is responsible for everything. He must pull every string. Perhaps we hold him too closely for every fault that his subordinates make. In consequence he has no time to think, plan, read, visit other mines or attend conventions.

Some companies keep a research engineer to make inquiries into new methods of achieving results. He can spend a week or a month visiting the workings under consideration and other mines at remote points. He prepares estimates. He suggests the necessary surveys. He consults with manufacturers' representatives. He discusses the suggested improvement with men who have tried it, if any have done so, and in the end he gathers up his data and puts his conclusions into a carefully planned report, and then, after consultation, his chiefs decide on the merits of the suggested improvement, keeping in mind the return on the necessary capital investment, which should be about 15 per cent for safety and should have long enough life to return the capital expended. This is the modern way. Our coal mines have all too few research engineers.

A Virtue in Delay

EUCLID AVE., Cleveland, extends for over one hundred blocks. It was decided in an evil hour to regulate the signals at the various crossings by an electrical current, so that all would indicate "Stop" at one time. But when the scheme was tried, all the street cars on the avenue were stopped and started at the same moment and as there were many of them the starting brought such a heavy load on the substation that the plan was discarded. Furthermore, the city's plan tended to disrupt Cleveland's diversity factor.

Much the same effect is experienced when power fails in the mine and is suddenly restored. Every motorman, every machine cutter, every pumpman wants his motor, cutter or pump, whichever it may be, to get immediately into action. It takes more power to start than to run machinery, so the demand for power is abnormal for the first minute after the restoration of the current. The Davis Coal & Coke Co. has met the difficulty with its motormen by instructing half of them to wait one minute after power is restored before attempting to start. In consequence a power failure does not cause a heavy peak. The men respond quite readily, which perhaps is strange, because the average motorman irks at waiting and wants to be up and doing.

It has been suggested, however, that it might be possible to put a time-limiting relay on a locomotive that would make it dead till a certain fixed length of time after the power is re-established. That would, however, come into action every time the trolley wheel was adjusted to the wire. So perhaps it is best to leave the matter in the hands of the motormen and others.

Guessing or Knowing

TOO OFTEN the mine foreman does not know at anytime in the day just how many men there are in the workings and in what section these men may be found. How, then, can he arrange his trips and his gathering forces? In the early morning he assumes that all the places are cut that should have been cut and that every man who ought to be working is at work or that a certain proportion of the men are present, the number depending on the remoteness of a past, or the nearness of a coming payday, on the hunting season, on sheriff's sales, the circus, or other counter-attractions. As a result of the foreman's lack of knowledge, drivers and motormen travel through the headings, hunting in some places for coal to haul and at other times having more coal to haul than they can handle.

All this may be avoided if, early in the day, the telephone is used to advantage by someone who endeavors to ascertain how many men are out. Further information will be available if the men check into the mine and the night force leaves a record as to what has been done during that shift. Sometimes places are not cut, a switch is not laid, water compels a man to lay off, men are sick or have sickness at home. When these facts are ascertained, drivers can be dispatched here or there; roadmen sent to clean up; tracklayers directed to lay switches; bratticemen sent to mend a fallen stopping or build one in the nearest outby crosscut wherever a new crosscut has been completed.

After an hour's investigation, the mine force can be apportioned with efficiency. Perhaps the full complement of gathering units is not needed, and the foreman will be saved from the necessity of looking for a miner to replace some motorman or driver who has laid off for the day. Planning is necessary in directing anything so scattered as a mine, and how shall a man plan unless he knows the facts?

Obtaining that knowledge should be not the foreman's but a subordinate's duty. The foreman should be given the data so that he can act on them. Nothing aids morale more than a fast-working fact-finding arrangement. Many a man leaves the mine because he finds he cannot work as soon as he reaches his place and doubts if he will get service. He comes out to argue with the boss when he should know that he can stay in his place and get the service he needs. He should be told just when he will get it. Many a needless trip will be saved if someone is collecting facts and distributing word from the boss that the service will shortly be forthcoming.

Anything that prevents men from jumping loaded trips to come to the surface decreases the possibility of accident. Furthermore, when props are delivered promptly in answer to a telephone demand the miner is less likely to take a chance in an improperly timbered room. Many a word passed to a motorman fails to reach the right person at the surface and by appointing a man to receive such information action is made more certain. The telephone and a man to answer it having a pad on which he can take notes and a ruled and tabulated sheet on which he can correlate information will save a boss much annoyance and help him plan his work methodically. The mine foreman always has plenty to do and every assistance should be afforded him in the doing of it. Perhaps this service can be restricted in a small mine to certain hours, but in the early morning it should certainly be afforded.

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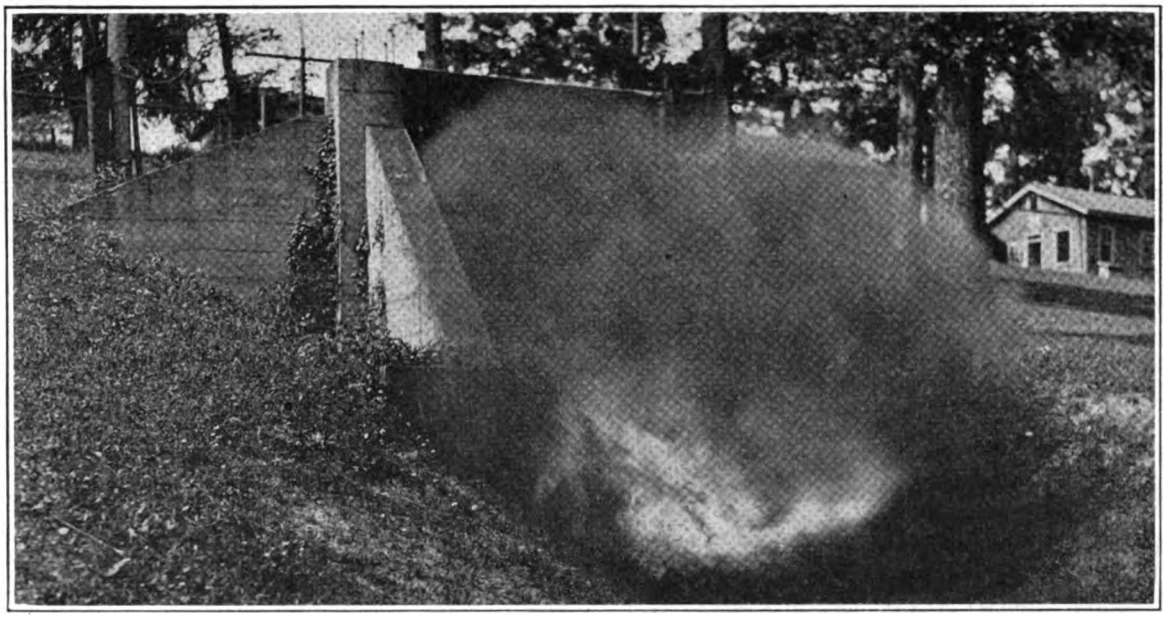

How Mines with Underground Dumps Are Trying To Eliminate Coal-Dust Hazard

No Complete Cure Has Been Found, but Shafts Are Being Made Dead as to Ventilation, Automatic Doors Installed to Keep Dust from Mine and Coal Is Being Wetted at Face and Dump

By C. W. Owings* and V. C. Allison†
U. S. Bureau of Mines, Pittsburgh, Pa.

IN THE LAST FIVE YEARS there has been a growing use of underground dumping in shaft coal mines where large production is desired. This is largely due to the economies resulting from dumping into underground bins and hoisting the coal with skips or conveyors and to the fact that more coal can be hoisted from a single opening in this way than is possible with the usual method of car hoisting. However, as many hoisting shafts are used as intake or downcast airways, the coal dust resulting from dumping operations is carried back into the mine, augmenting the ever-present danger of a coal-dust explosion, unless some provision is made to intercept the dust.

The danger from accumulations of coal dust is apparently fully realized by coal-mine operators and in every installation visited, provisions have been made to nullify this hazard. The Bureau of Mines has made a preliminary survey of a number of schemes for combating the coal-dust hazard that have been put into practice in mines equipped with underground dumping systems. The purpose of this paper is, by describing the methods now in use, to bring to the attention of operators contemplating the use of such a system some of the difficulties involved in its use.

The explosibility of coal dust when in a dense cloud is universally recognized by coal-mining men. For coal dust to ignite or explode, there are three necessary factors, namely, a source of ignition; a sufficient quantity of dry coal dust and an agent which will raise the coal dust into a dense cloud.

There are two general sources of ignition common to coal mines—open lights and arcs from electric wires or electrical equipment. According to Tracy in 1892, at Durham, England, a cloud of coal dust, raised by men shoveling pulverized coal in a coal bin, was ignited by open lights hung near the bottom of the bin. The resulting explosion killed three men. At a western coal mine material from an old dump was being loaded by steam shovels, and in order to loosen the material, shots were fired. This resulted in unburned coal dust, which had been loaded from the tipple onto the top of the rock pile, being raised in a dense cloud which, coming in contact with the flames of the burning refuse, ignited and burned nearby workmen.

The Bureau of Mines has repeatedly demonstrated that an open light will ignite a cloud of coal dust in the absence of gas. One method of making such a test is as follows: Near the portal of the main entry at the Experimental Mine, Bruceton, Pa., coal dust is piled on a V-shaped shelf laid across the entry near the roof. An open-flame lamp is suspended about 6 ft. outby the shelf. By means of compressed air the coal dust is blown in a dense cloud down upon the flame. Immediately the dust ignites and burns rapidly, a swirling, boiling mass of flame passing out of the entry. An observer standing inby the point of ignition is made

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The headpiece shows the flame emerging from the Experimental Mine of the Bureau of Mines at Bruceton, Pa., from an explosion caused by allowing fine coal dust to fall from a V-shaped shelf onto a flame or electric arc located about 6 ft. outby the shelf.

*Assistant mining engineer. †Assistant fuel chemist.

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fully aware of the pressure being developed by the crackling of his ear drums and by the way in which his body is swayed back and forth by the pressure wave developed.

A similar test is made, substituting an electric arc lamp for the open-flame lamp. The resulting ignition of the dust is similar to that obtained by using the open-flame lamp. In the headpiece the mass of flame from one of these tests is shown issuing from the mine mouth, the volume of this mass of flame being about 1,600 cu.ft.

The exhibition coal-dust explosion gallery of the bureau has been extensively used over the United States in the last two years in effectively demonstrating the

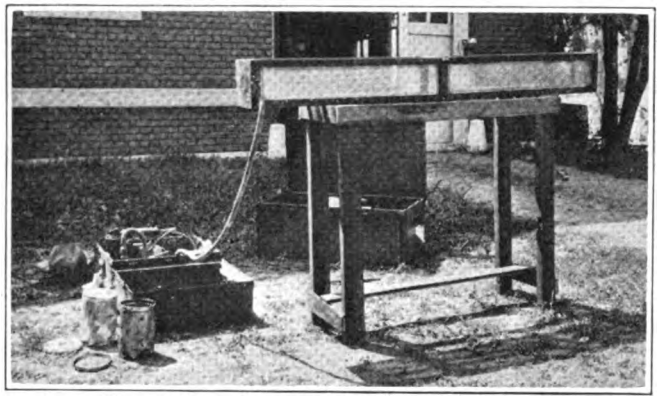

Fig. 1—Miniature Reproduction of Mine Gallery

This box, which is 6 ft. long and of 6x6 in. cross-section, is provided with means to blow compressed air into a pile of coal dust within the box thus raising a cloud. An open-flame lamp placed inside the "gallery" ignites the dust, causing an explosion which can be clearly seen through the glass walls. As no gas is present, the dust is demonstrated to be capable of causing an explosion without the aid of gas.

explosibility of coal dust from open flames in the absence of gas. This gallery is 6 ft. long and 6x6 in. square, with all four sides of glass; the rear end may be tightly closed. One-half oz. of coal dust is placed upon the floor of the gallery at the rear and blown by compressed air down over a carbide lamp placed 18 in. inby the open end of the gallery. The coal-dust cloud ignites and a mass of flame, sometimes of a volume of 200 cu.ft., issues from the mouth of the gallery. This miniature entry way is shown in Fig. 1.

These tests prove the probability that explosions will occur from the ignition of coal dust when no gas is present. They substantiate the conclusions reached after the Starkville (Colo.) explosion of 1910, the Dolomite No. 3 mine explosion at Dolomite, Ala., in 1922 and the Dawson No. 1 Mine explosion, Dawson, N. M., in 1923. The second explosion mentioned was caused by cars breaking loose, running down a slope, wrecking themselves and stirring up a coal-dust cloud, which was ignited by an electric arc of a ruptured power cable.

The first and third explosions were caused by wrecked trips knocking out timbers and also raising dense coal-dust clouds which were ignited by arcs from short-circuited trolley wires. These accidents confirm the experimental results, which show that coal dust can be ignited with open lights or electric arcs in the absence of explosive gas.

Underground dumping presents a similar hazard. In the dumping operation, frequently a dense cloud of coal dust is put into suspension. In many mines open-flame lamps are worn by the workmen. Electrical equipment for dumping is frequently installed and even where pneumatic dumps are employed, electrically driven car hauls are used nearby.

The mine may, therefore, have an extremely hazardous condition—a known source of ignition and the likelihood of a dense coal-dust cloud. It is a solution of this problem that confronts the coal-mine operators where underground dumping of coal is practiced or is in contemplation.

It is interesting to observe that every mine visited during this preliminary investigation had adopted some method to prevent the coal dust that is formed in underground dumping from traveling back into the mine workings. There are two predominating systems which are often combined. One is to put a dump on a separate split of air and the other to use a water spray.

A notable example of having the dump on a separate split is the Harmar Mine of the Consumers Mining Co., Harmarville, Pa. When the two-car rotary dump and skip hoist were first installed as the shaft was downcast, coal dust accumulated in dangerous quantities at the shaft bottom and on the intake airways. In order to overcome this condition, the hoisting shaft was made neutral and 12,000 cu.ft. of air per minute was passed over the dump, approaching it from both sides.

CUT A HOLE IN CONCRETE LINING

About 10 ft. inby the shaft a hole about 5x5 ft. was cut in the concrete lining, allowing the air to pass through a crosscut, over an overcast and thence to the fan shaft (Fig. 2). The cross-section of the crosscut is about 6x12 ft., and the sudden decrease in velocity of the air in passing from the smaller to the larger area causes a large quantity of the dust to settle on the floor. The air exhaust from the dump plays upon the threshold of the 5x5-ft. hole and thus prevents accumulation of dust there. Fig. 2 is a sketch showing the layout at the shaft bottom and the direction of the air through the bypass.

The shaft entry has been lined with concrete and thoroughly rock-dusted. Any coal dust settling on the white surface would be readily discerned, but only slight quantities were seen on the inby side of the dump. The atmosphere is very clear during dumping. In order to further remove the coal dust from the air passing through the bypass, the company is considering installing a water spray at the 5x5-ft. port.

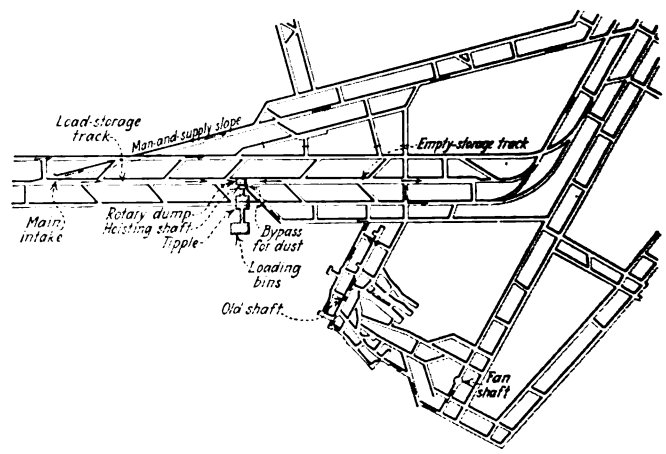

Fig. 2—Dust Prevention at Harmar Mine

The shaft has been made neutral as far as ventilation is concerned, but a hole 5x5 ft. in cross-section, has been cut in the concrete lining of the shaft bottom, which hole is connected with the return. Into it air is drawn from the mine. The air exhaust plays on the threshold of the hole and thus prevents dust from accumulating at that point.

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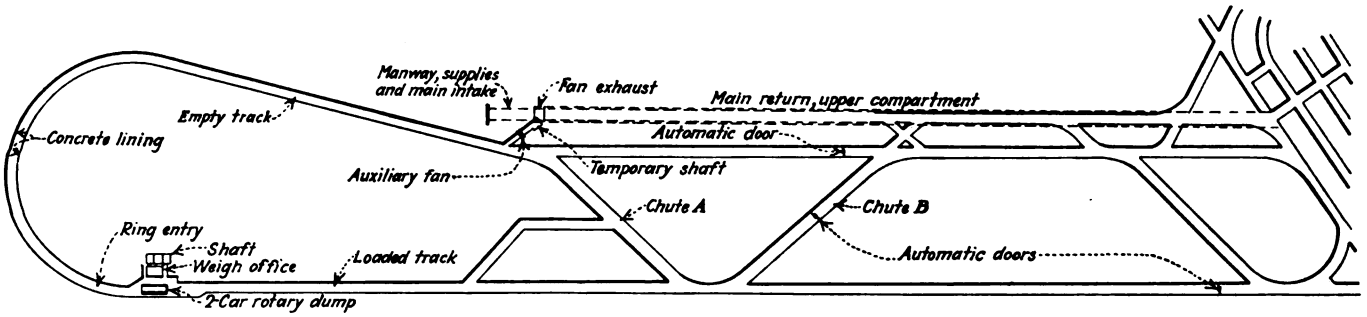

Fig. 3—Powhatan Dump Is at Foot of an Upcast Shaft; Much Dust Settles on Timbers

Three automatic mine doors have been introduced to prevent the dust from entering the mine when the air is reversed. An auxiliary fan of a capacity of 50,000 cu.ft. per minute causes air to flow along the empty track to the dump where it joins the air coming through chute *A* and through the trackway for loads. This air passes up the shaft. In this instance the dust accumulates on the stairway and buntons in the hoisting shaft as well as on all surfaces on the shaft bottom. The latter is flushed with water every night, and a water line is being laid for the flushing of the shaft from the surface.

The Springdale Mine of the Allegheny Pittsburgh Coal Co., Logans Ferry, Pa., is unique, in that the hoisting shaft is reached by a pair of entries driven under the Allegheny River. The coal is dumped by a two-car pneumatic rotary dump into chutes which load directly into a double-deck skip. A thick cloud of dust is raised during this operation.

An auxiliary fan, delivering 50,000 cu.ft. of air per minute ventilates these under-river entries the air passing up the hoisting shaft. At present only single doors are placed on the haulage roads at the beginning of the split. Whenever these doors are opened there is a reversal of the air current, which tends to draw the coal dust back into the mine.

Plans have been made to install automatic doors forming an air lock of sufficient length to accommodate a trip of cars, thereby eliminating the reversal of the air current. As the river entries are very wet, little dust passes into the main part of the mine, which is rock-dusted.

Automatic Doors Keep Dust from Mine

The Powhatan Mine of the Powhatan Mining Co., Powhatan, Ohio, dumps the coal into a skip hoist by means of a two-car rotary dump at the bottom of an upcast shaft. Much coal dust is raised into suspension while the coal is being dumped. In order to prevent this coal dust from returning into the mine, automatic doors have been installed on the two shaft entries and a connecting chute *B* (Fig. 3) and an auxiliary fan, delivering 50,000 cu.ft. of air per minute, causes air to flow along the empty track to the dump, where it joins the air coming through chute *A* and the loaded track, and from thence passes up the shaft. Much of the coal dust thrown into suspension when dumping accumulates on the stairway and buntons in the hoisting shaft, as well as on all surfaces at the shaft bottom. Every night the shaft bottom is flushed with water and on the surface a water line is being laid to the top of the shaft to provide a means of flushing out the shaft.

The shaft entries are rock-dusted. Coal dust accumulates on the surfaces of these entries, especially from the dump inby to chute *A*, due to the reversal of air whenever the automatic doors are opened.

Mine No. 3, National Mining Co., Cowden, Pa., which uses skip hoists, has a rotary dump at the bottom of a shaft, which is downcast. The dump is, therefore, on the intake air, but the air velocity over the dump is low. In an attempt to prevent the dust, formed in dumping the coal, from being carried back into the mine, water sprays were first tried but they were abandoned for the present method.

Steel plates saparate the shaft from the dump and in this plate have been cut two openings, 1 ft. 6 in. x 3 ft. Opposite the dump is a crosscut in which is placed a concrete stopping. A bleeder opening 15 x 22 in. permits a small quantity of air to short-circuit and pass into the return airway.

Rock Dust Sifts Down on Coal Particles

Directly over this opening is placed a steel hopper (Fig. 4) with a capacity of about 350 lb. of rock dust. A perforated iron strap, 2 in. wide is placed in the bottom of the hopper, to each end of which is attached a steel rope which passes over a pulley and thence to the weigh basket.

As the weigh basket moves, the iron strap also moves back and forth, the holes register with holes in the bottom of the hopper thereby causing rock dust to sift down over the opening and mix with the coal-dust cloud. It will be necessary, however, to install an agitator to prevent the rock dust from packing. The rock-dusted entry on which the dump is located shows that little coal dust passes back into the mine.

The installation of a single-car rotary dump and skip hoist in the Harwick Coal Co.'s mine at Harwick, Pa., immediately presented a great coal-dust hazard. In a single day coal dust would accumulate from ¼ to ⅜ in. thick for 100 ft. inby the dump. To overcome this condition a 12-in. pipe was connected to the upcast shaft and brought to the dump. A strong suction was obtained at the end of this pipe, but being located at the roof and against the left rib, considerable quantities of the dust passed into the entry beyond.

The dump is on a strong intake current, and the necessity of preventing the coal dust returning into the mine is fully appreciated. The pipe was not entirely successful, so arrangements have been made to install water-spray curtains. Also a canopy or hood may be placed over the dump and connected with the suction pipe or a horizontal slit run across the entry at the roof and connected with the upcast shaft through the pipe.

When the H. C. Frick Coke Co. consolidated its Colonial Nos. 1, 3 and 4 mines and installed the now-famous belt conveyor, 22,930 ft. long, means were taken to provide enough coal to keep the belts loaded at all times. Two rotary dumps, 374 ft. long were installed, with a capacity of from thirty-five to forty cars each. The coal dust formed in dumping such a large number of cars is not great. Red signal lights at one end of the dump may be easily seen from the other end, 374 ft.

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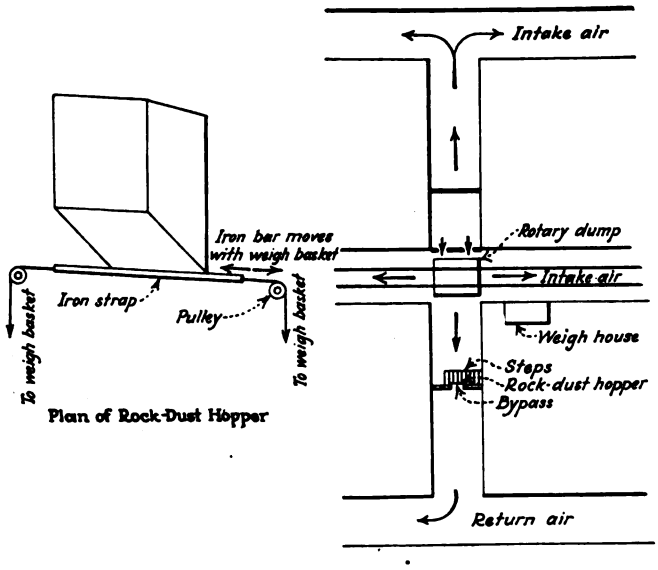

Fig. 4—In Downcast Shaft at National Mine No. 3 Return Air Is Bypassed Through Dump

The air velocity in the shaft is low and it was thought that water sprays would be adequate to prevent dust from entering the mine. These failed, however. So air was brought through a crosscut and through the steel plates between the shaft and dump, whence it passed into the return airway. The bin shown on the left is kept supplied with powdered rock. The movement of the weigh hopper opens holes in the bottom of this bin causing the pulverized rock to be sprinkled on the coal dust.

distant, while trips are being dumped. The small quantity of dust is due to the thorough wetting of the coal at the face by the miner.

However, to prevent any dust returning into the mine, about 26,000 cu.ft. of air is brought into the dump at each end and then passes upward and out of openings, three of them on the right side and four on the left, to the return airways. At each opening is installed a water spray to beat down coal dust from the air passing into the return.

Another mine in the same district also uses water on the cutter bars of the mining machines, and the miners sprinkle the coal before it is loaded out. As a further means of laying the coal dust, the rotary dump, which is used in connection with a skip hoist in a neutral shaft is covered with a steel hood.

Curtain Spray from Water Ring

As the cars are turned over the coal dust is beaten down by a curtain spray from a water ring composed of 2-in. pipe, placed on all four sides of the dump, in which ⅛-in. holes are drilled every 3 in.; the water is under a pressure of about 95 lb. per square inch. No dust was seen anywhere on the bottom. The walls, although whitewashed about nine months previously, were fresh and white.

Where the hoisting shaft is downcast and the dump is on the intake airway, as in the Harwick and National No. 3 mines, there is a great tendency for the coal dust to be carried back into the mine. The use of a single suction pipe with no special nozzle or no hood or canopy over the dump has failed at the former mine. The bypass in the National mine appears to remove the greater part of the coal dust from the air. In each case there was considerable coal dust on the floor and down in the chamber below where the weigh basket was located. This coal dust must be loaded out every night.

The Springdale and Powhatan Mines, by making the shaft upcast prevents the dust from returning into the mine, except when the connecting doors on the haulage roads cause a reversal of the air. Air locks will eliminate this feature, but accumulations of explosive dust in the shaft affect the most vital part of the mine. Danger would result from an explosion in the shaft. Dust accumulations at the shaft bottom and in the pit below the dump are added dangers. Some solution of the problem will doubtless be worked out.

A neutral shaft, as at the Harmar Mine, allows the dust to be collected through a bypass. However, here again we are confronted with dust accumulations on and below the dump. Undoubtedly the neutral shaft is the best means of providing for dust collection and elimination but a bypass with dry-collecting methods have not satisfactorily met the problem.

Water at Face at Colonial Mines

The Colonial Mines' use of water at the face, is a step forward toward the solution, but above, on and below the dumps, there is an accumulation of dry dust. The lessening of dust where water is used on the cutter bars of the mining machines and the sprinkling of the coal by the miner, as well as a strong water spray in an enclosed dump and a neutral shaft gives at least one solution of the problem. In the bins and the chambers surrounding them there was no dry dust, thereby reducing the dust hazard to a minimum.

Much dust is formed by cutting machines, by blasting and by the miner in picking down the coal and shoveling it into the mine car. The dust problem at the underground dump is materially helped by the application of water on the cutter bar and by the wetting the coal before it is loaded at the face. In the shaft the accumulation of dry dust may be much lessened by use of a water ring in connection with a neutral shaft, which, however, in winter would require a small split of warm return air to prevent the water from freezing.

The use of water may be impractical in some mines; more especially where the dump is on the downcast which may result in freezing the water in winter. Satisfactory removal of the coal dust formed in dumping may be obtained under these conditions if the shaft or slope be made neutral, a bypass be provided at or near the dump, and a water spray installed to remove the dust from the air in the bypass.

In addition, the bypassed air should be allowed to expand immediately after leaving the dump and before reaching the return air. This is done at the Harmar mine and the result of this sudden decrease in velocity of the moving air is to deposit about 75 per cent of its coal dust before reaching the return airway. This method prevents coal dust being carried back into the mine, but has the disadvantage of allowing dry coal to accumulate around the dump.

Several large coal companies are investigating the possibilities of a dust-collecting system which will remove the coal dust from the bypassed air and deliver the cleaned air to the return airway. It is the opinion of several well-known ventilating and dust-collecting engineers that some such system could be adapted to mine conditions, one which would be practicable, and would collect at least 85 per cent of the dust.

It will be seen that the coal-dust problem from dumping underground has not yet reached a fully satisfactory conclusion for all conditions of shaft and ventilation layout, but there is every reason to believe that in time the problem will be solved.

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Crozer Roadways Having Reached Boundaries of Property, Mines Now Work in Full Retreat

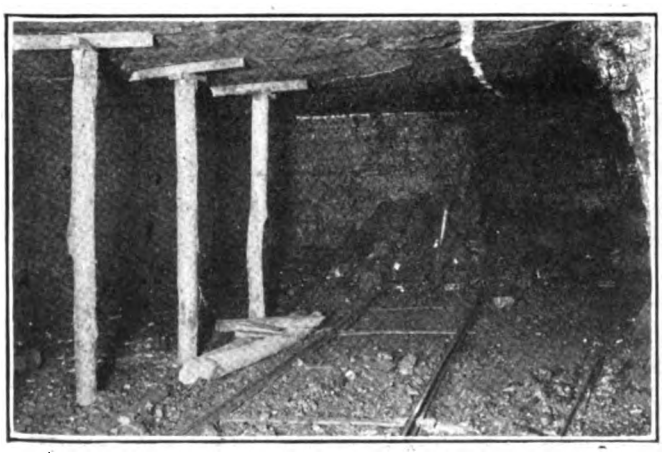


Drainage and Haulage Grades Planned Before Roads Were Driven — Advancing-Work Profit Paid Development Cost—4¼-Mile Haul—Track Laid Like Railroad as to Lines and Grades

By a Staff Correspondent

THE OPENING UP of the Crozer mines of the Crozer Coal & Coke Co., at Elkhorn, McDowell County, W. Va., which is midway between Bluefield and Welch, dates back to the early days of the Pocahontas field, when coal land sold for a song. At that time the Crozer Land Association acquired connected fee tracts aggregating over 10,000 acres underlaid with the Pocahontas No. 3 seam. This property has been mined for nearly forty years and will not be entirely exhausted a quarter century hence and perhaps not even then. The acreage is being mined by the Crozer Coal & Coke Co., the Upland Coal & Coke Co. and the Page Coal & Coke Co., all of which are subsidiaries of the land company. Several companies also have leased from the Crozer concern. It is with the systematic methods by which this property has been operated in the past, as exemplified by present methods at one of the plants, namely, that of the Crozer Coal & Coke Co., that this article deals.

The territory allotted to this plant consisted of 1,838 acres of thick coal belonging to the Pocahontas No. 3 seam. The mine started operations in 1887. Of this acreage, 1,064 acres have been mined out during the last thirty-eight years. Of the coal that remains 145 acres are in pillars and 629 acres in the solid. The average recovery during the past life of the property is 86.7 per cent, but in late years it has been about 90 per cent.



One of the Rooms in the Crozer Mines

The seam is 7 ft. 10 in. thick. Note that the sight line has been extended to the face and that a supply of timber, cap pieces and wedges are kept on hand. This place is 18 ft. wide.

The headpiece shows the town and plant of the Crozer Coal & Coke Co., at Elkhorn, W. Va. Most of the power consumed in the Crozer mine is generated in the steam plant shown. The office and store building occupies the center of this picture. The railroad in the valley is the Norfolk & Western which is electrified along this stretch.

The operation consists of five mines, all of which lie under one hill. A fingered hollow almost completely divides the property into two territories which are connected by a rather narrow neck. Of these two areas that which is adjacent to the Norfolk & Western R.R., which serves this operation, is by far the larger.

Within the boundaries of this larger territory are Mines Nos. 1 and 2. Mine No. 2 is exhausted to such an extent that in it the coal being mined is derived solely from the barrier and chain pillars of the main entry which is on the retreat. No. 3 mine is now entirely mined out. During its life coal from it was hauled through the narrow neck which joins the two main territories and through No. 2 mine to the tipple.

Decided to Advance Entries to Crop

No. 1 mine is depleted except for the barrier and chain pillars of the main entry and a few room pillars which are being mined in the final stages of the retreat toward this entry. As this main heading of No. 1 mine must serve as a part of the main haulway from Mines Nos. 4 and 5, the pillar coal which protects it will not be mined until after the latter operations are finished. Mines Nos. 4 and 5 which lie in the smaller of the two main territories already mentioned, are comparatively new operations.

The development of these two mines was started in 1915 and was continued through the years of the World War when most of the coal produced at this plant came from Mines Nos. 1 and 2. It was decided at the beginning of this period to advance the entries in these new mines, leaving the coal practically intact until the boundaries were reached, and then to remove by rooms and pillars the coal thus developed, working all the time on a full retreat.

The high prices for coal obtained during the last few years of the Twenties did not swerve the management from its predetermined plan. The company balanced the high cost of this development work in its two new mines by the lower cost of the coal from its old mines. During the prosperous years, while the old mines were on the retreat, the new mines were being developed on the advance.

Today, as already intimated, little coal is being produced by the old mines, but the plant nevertheless produces about 1,700 tons per day. Most of this coal is being won in the new mines which, having been de-

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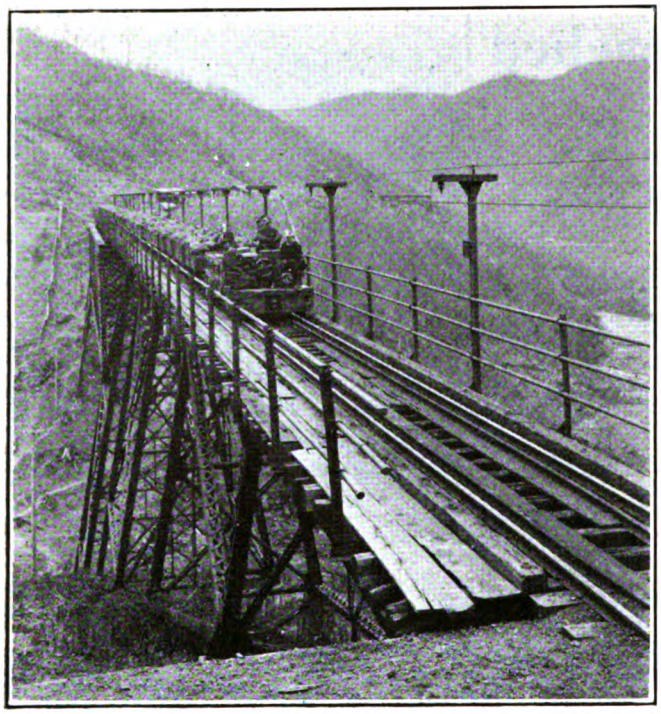


By This Bridge a Circuitous Roadway Is Obviated

This steel structure is 630 ft. long and incorporates a 210-ft. span. Its elevation above the bottom of the valley is 115 ft. By its erection the road was shortened and straightened. Had it not been built, the tramway would have been compelled to follow the outcrop up the ravine, tracing the contour of the hill in most of its many erratic turns.

veloped to their boundaries, are now on the retreat. In 1925 the Crozer plant produced 443,000 tons. In recent years prior to the last it maintained its standing as a big producer in the field, a fact which under the circumstances indicates the value of a nice balance between the high cost and lesser productivity of territory under development on the one hand, and the lower cost and greater productivity of territory being mined by rooms and pillars on the other.

PROJECTED LINES AND GRADES

Prior to the beginning of the development work in Mines Nos. 4 and 5, the area to be traversed by these mines was surveyed. Levels also were taken to determine what would be the most logical layout. This preliminary work was carefully collated so as to obtain in advance the data necessary for predetermining a layout with particular reference to grades and drainage and to the possibility of easy access to the areas lying within promontories in the crop line. Accordingly, entries were projected on the map, and this layout has since been followed to advantage with scarcely any variation.

The success of this scheme shows that it is good policy to plan a mining operation with almost the same exactness with which a surface development is designed. Many mines in regular seams are extended on short-time projections which are chosen without much regard for the future of the property. In contradistinction the program at Crozer embraced operations over long periods of time.

The Pocahontas No. 3 seam in these mines has an average thickness of 94 in. and contains two partings. One of these is a 2-in. hard shale occurring about 9 in. from the roof, which the miners call a sulphur band, and the other is a 4-in. bed of bony coal which occurs about 55 in. from the bottom. No attempt is made to remove these impurities at the face. The separation is made by hand picking at the tipple and by means of a Bradford breaker in accordance with a procedure which is described elsewhere in these pages.

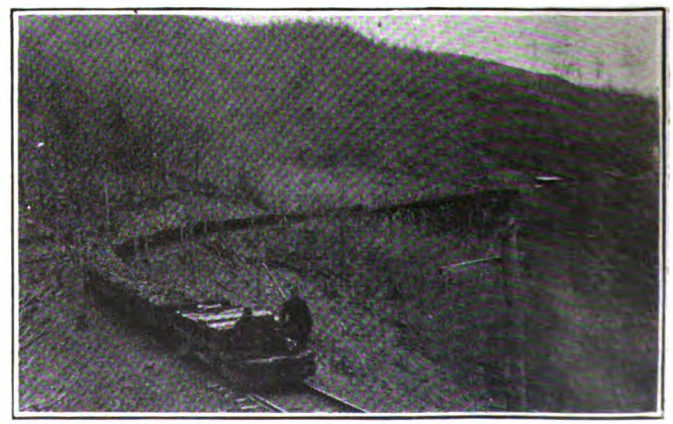
The mining system provides for the greatest possible degree of concentration in mining the rooms and pillars. Rooms are driven only as needed and the pillars are drawn immediately in a retreat from the limits of the property and on a 45-deg. extraction line. Each room entry provides an average of nine working places, of which five are advancing rooms and four are retreating room pillars. Rooms are driven 18 ft. wide on 70-ft. centers and are 330 ft. long. Entries are driven 12 ft. wide on 70-ft. centers. The major entries are protected by barriers which in width vary from 150 to 500 ft.

NINETY PER CENT RECOVERY

Although the necessity for concentration of working places in the room-and-pillar system of mining has for many years been realized, until recently few companies followed this practice. The Crozer Coal & Coke Co. is numbered among that few. By practicing concentration during the last 38 years, it has recovered 86.7 per cent of the coal in the area mined. Due to further refinements of its methods in recent years, its recovery has been about 90 per cent.

Practically none of the roof, which is of shale, is taken with the coal. The thickness of cover above these mines varies from 250 to 500 ft., of which 60 to 70 per cent consists of sandstone. The sandstone beds are more or less shaly, except the Eckman, which is massive. This bed varies from 20 to 50 ft. in thickness and occurs 75 to 100 ft. above the coal seam. Perhaps no other seam in the country breaks less readily. Nevertheless it is being controlled without much difficulty by concentration methods. This would not be the case, nor would the recovery be nearly as high, if the rooms had been driven promiscuously and pillars drawn irregularly.

The fact that a projection was determined before work commenced in Mines Nos. 4 and 5 has already been mentioned, but something should be said as to the accuracy with which the development is made in accordance with that plan and as to the manner in which that accuracy is attained. All entries and rooms are driven on sights. On the entries, sight spads are put



Loaded Trip En Route to Tipple

Coal from the face to the tipple at the Crozer mines is handled in two lifts. It is hauled one-third of the way by 15-ton locomotives to a sidetrack which adjoins the far end of the bridge and by 20-ton locomotives from this point to the tipple. Here is shown a 20-ton motor coupled to a standard trip of 40 cars. Each car holds 3½ tons of coal.

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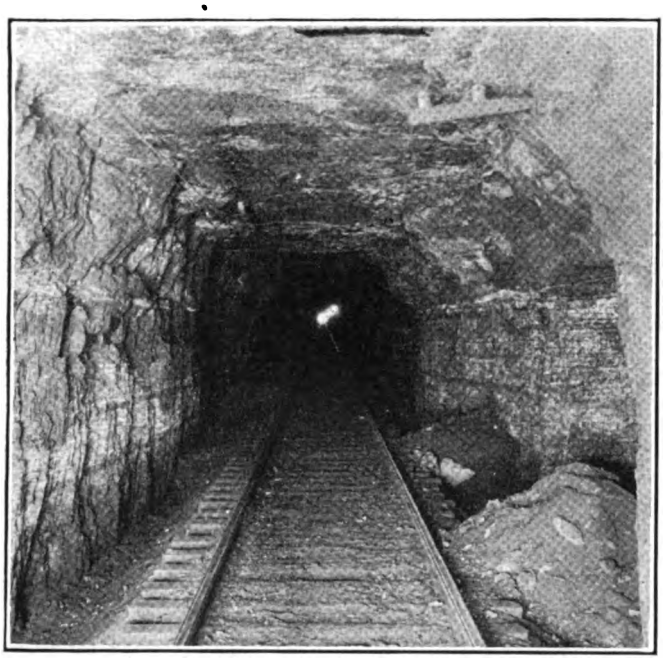
in place by the engineering corps at intervals of 200 to 250 ft. Sight lines in rooms are painted by the trackmen. Levels are run every three months to determine drainage and grades. These are taken at intervals of 50 ft. on all entries and in all rooms which dip to excess.

Such details as listed above are more or less the routine of the engineering corps at any modern mine. However, the duty and responsibility of the Crozer corporation does not stop here. The engineering department keeps in close touch with the operating management and keeps informed as to the "strategy" which must be followed in driving rooms and pulling pillars. The mine officials of course have their say in determining what this strategy shall be. The engineering corps not only locates proposed working places, but it also informs the underground officials as to when this or that room or entry shall be started and when work on a pillar shall be started or stopped.

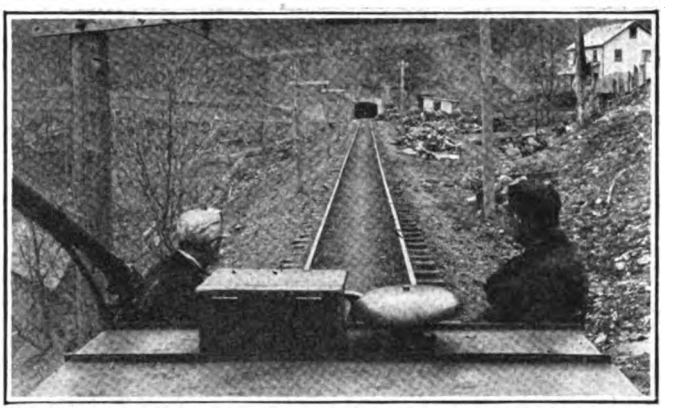
Between visits of the corps the underground officials naturally must have jurisdiction, and furthermore may make an appeal against any decision of the former with regard to the sequence of working. This three-sided arrangement gives each of the factions which compose it an opportunity to make suggestions and obtain a clear knowledge of the purposes underlying the system of extraction.

At the beginning of a retreat from the boundaries, the hauls must of necessity be unusually long. The distance from the innermost point on the main haul in No. 4 mine to daylight is about 5,000 ft.; in No. 5 mine this distance is about 7,200 ft. From the main portal of No. 4 mine, which also serves as an exit for trips from No. 5 mine, the haulage to No. 1 mine consists of an outside tram road, 3,100 ft. long, which spans by a bridge the mouth of a deep hollow. This bridge is a steel structure which is 630 ft. long and lies at a maximum level of 115 ft. above the hollow. Without this bridge the haulage would have been compelled to follow a circuitous path along the crop line of this ravine.



A Long Straight Haul Through No. 1 Mine

Derailments on the main haulageroad in the Crozer mines are practically unknown. This stretch of straight track is 5,800 ft. long. The rails weigh 56 lb. per yard and are laid on 6x8-in. oak ties. A uniform grade of 0.7 per cent against the loads has been established on the stretch. Note the track cleanings on the side, which is a further indication that every precaution is taken to make haulage efficient and safe.



Good Track Makes Derailments Infrequent

From face to tipple on the main haul, through a distance of about 4 miles, the track is as good as that here shown. Note how carefully the trolley wire has been hung and aligned.

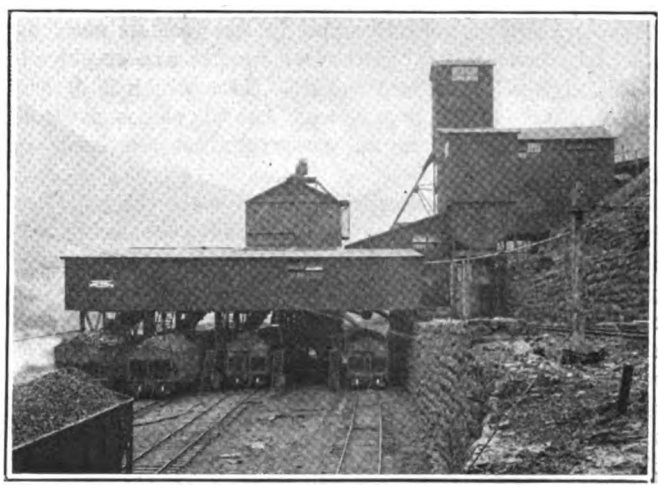
The length of the main haul through No. 1 mine is about 8,300 ft., and from this mine to the tipple along an outside tram road the distance is about 3,750 ft. The maximum haul from No. 4 mine to the tipple, therefore, is 20,150 ft. or 3.81 miles and from No. 5 mine to the tipple 22,350 ft. or 4.23 miles.

Long Haul But Few Derailments

Generally speaking, the chance of derailments is proportional to the length of the haul. Conditions being the same in a haul of one mile as in a haul of two, derailments in the latter are likely to occur twice as often as in the former. In the Crozer mines derailments on the main 4-mile haulways are indeed rare.

The tracks in the rooms are laid with 20-lb. rails and rest on steel ties; room entries are tracked with 30-lb. rails and the main haulways with 56-lb. rails. The heavy rails in the latter case are laid on 6x8-in. oak ties spaced at 15- to 18-in. centers. These main tracks are ballasted with cinders from the boiler house, the company generating the larger portion of the power used at its mines.

As shown by several accompanying illustrations of stretches of track, inside and outside the mine, the rails are aligned and ballasted with a precision which rivals that of steam railroads. Grades are flattened out as much as possible over long stretches which are generally



Tipple Recently Built to Replace Older Structure

Lump, egg, nut, pea and slack are prepared in this tipple. Refuse is handled from a mine track which has been built on the embankment between the two-stepped stone walls.

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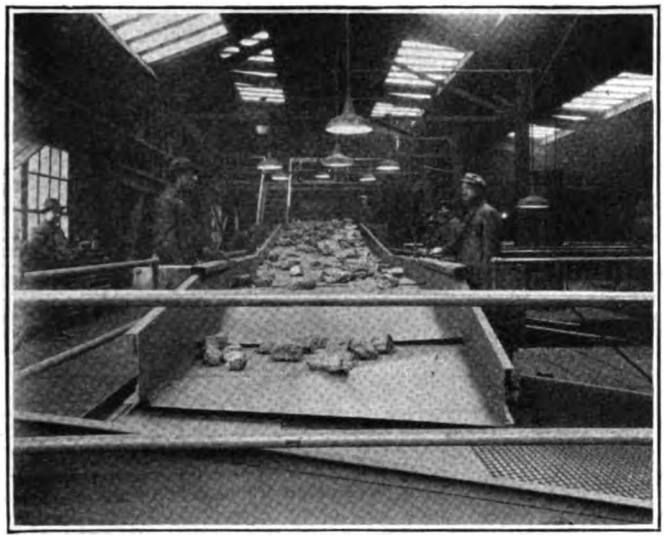


Picking-Table Floors in Crozer Tipple

This illustration is from a photograph taken during a short shutdown of the tipple equipment for which reason some of the pickers are absent. Note the simplicity of the screen and picking facilities and the abundance of light.

straight. One stretch of faultlessly straight track in the No. 1 mine is 5,800 ft. long, the grade being 0.7 per cent against the loaded trips.

Where curves are required they are described on a long radius. On the main haulways leading to No. 5 mine are two curves, one of 500-ft. radius and the other of 400 ft.

The mine sidetracks are of such length as to accommodate 20 mine cars. They are so located as to be not more than 1,000 ft. and not less than 600 ft. from the working places they serve.

LOCOMOTIVES BETTER THAN MULES

Coal, in the concentrated workings of Nos. 4 and 5, is gathered by seven 6-ton, storage-battery and one cable-reel locomotive. What little pillar coal is now being mined in Mines Nos. 1 and 2 is being gathered by mules. In 1925 the average daily duty of each of the storage-battery locomotives was 45 cars of 3½ tons capacity. The cable-reel locomotive last year gathered on average only 36 cars per day, due to the fact that the working places which it covered were scattered.

Four single teams and one double team of mules each gathered an average of 28 cars per day. The grades, which at most mines would not be considered heavy, are approximately equal in the various sections in which these several gathering agents are employed. The maximum grade in a working place which is driven on the dip is about 3 per cent, but as places are not thus driven the maximum grade against the loads is less.

The duty of the gathering locomotives in the past has not been high, because as the entries were being advanced to the boundaries in all directions their faces were widely scattered. Now that the limits of the property have been reached and the direction of mining has been turned from an advance to a retreat, the management is in a fair position to derive those advantages which go hand in hand with concentration. In consequence the day's work of the gathering locomotives should be measurably increased.

From the underground sidetracks in Mines Nos. 4 and 5 loaded cars in trips of twenty are hauled by two 15-ton locomotives to the "daylight sidetrack." This parting is about 800 ft. long. At this point two 20-ton locomotives operating individually haul trips of 40 cars to the tipple, these trips arriving at the dump at 25-min. intervals. A third 20-ton locomotive is maintained as a spare.

Will Test Value of Roller Bearings for Locomotive Armatures

The Pennsylvania Coal & Coke Co., of Cresson, Pa., is testing the application of tapered roller bearings to the armatures of its locomotives and will make careful study of their availability for this service. Play caused by radial and end-thrust wear will be taken up as is done with the bearings of automobile wheels.

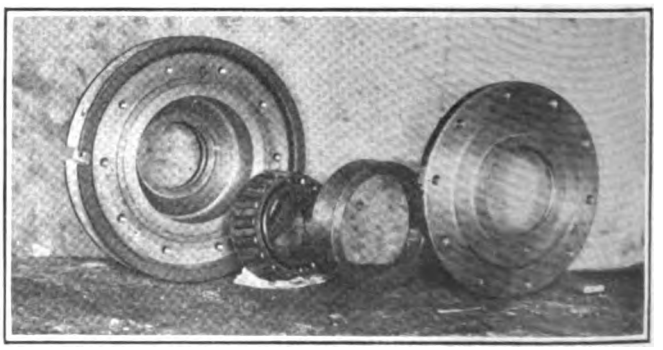
J. F. MacWilliams, the electrical engineer of the company, has worked out an assembly which he believes makes it possible to use the housings now in place. The chief advantages claimed for this design are ease in assembling and taking apart, a provision for adjustment, and ruggedness of the retaining plate and locking device. The accompanying illustration shows the application of the bearing to 10-ton locomotives.

On the commutator end, the armature shaft is left the same size as that which was formerly used. The shoulder on this shaft, however, is turned farther back and this portion of the shaft threaded for the bearing sleeve. This sleeve carries a shoulder against which the inner race of the bearing fits, and is locked by a ¼x¼-in. key fitting in a slot cut in the end of the shaft. A locknut holds this key in place.

The inner race is renewed by unscrewing the sleeve from the shaft. It is the intention to apply the inner race to the sleeve only at the main shop, thus avoiding possible abuse of the race in the hands of unskilled repair men. A retaining plate is fastened over the end of the bearing by six studs which extend through holes drilled in the housing and are electrically welded at the rear end. When a new bearing is applied filler shims are placed between the retaining plate and the housing. These can be removed to take up bearing wear.

Arrangement of the pinion-end bearing is somewhat similar to that on the commutator end. A steel sleeve is put on the shaft and a cast-steel bushing is pressed into the housing. This bushing is necessary because the bearing formerly used was of larger diameter than the roller bearing. The retaining plate on this end of the shaft is made from a piece of 1¼-in. boiler plate. Ten ½-in. cap screws hold it in place.

The company now has three locomotives operating with roller-bearing armatures.



Pinion-End Roller-Bearing Parts

In case the "fit" of the old housing is worn it is built up by means of the oxy-acetylene torch and a manganese-bronze filler rod, after which it is machined to proper size. The housing cap is held firmly in place by means of cap screws.

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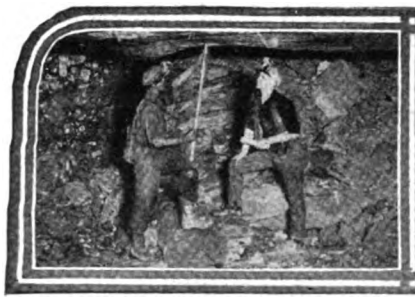
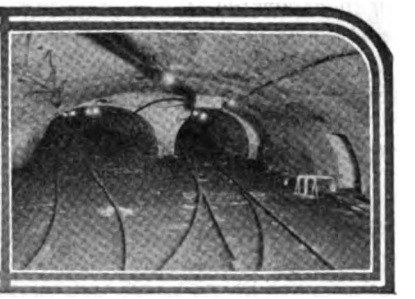


Underground Operation



What Concrete-Block Stoppings Cost And What They Achieve

Average Cost Under Forty Dollars—Each Stopping Holds 100 Cu.Ft. of Air That Wood Brattice Had Been Passing — Blocks Made in Mine

By G. N. Pfeiffer
Consulting Engineer,
Herrin, Ill.

Cement-block stoppings have proved their value at No. 5 Mine of the Franklin County Coal Co., Herrin, Ill. They prevent losses of air where wood brattices gave no direct evidence of leakage, were found ineffective. The following data regarding their method of construction and cost have been supplied by T. Pilkington, the mine manager:

Cost of Cement Blocks at a Herrin Mine

Material		Cents per Block
Cement, 10 blocks to a sack	7.50	
Sand, 360 blocks to a cubic yard	0.56	
Coal oil for molding plates	0.05	
		8.11
Hauling		
Water	0.50	
Ashes, sand and cement	1.65	
		2.15
Labor		
Screening and loading ashes	3.04	
Making blocks	8.33	
		11.37
Depreciation of machine and tools		1.37
Cost per block in cents		23.00

Cost of Cement-Block Stopping

		Cost, Average Stopping
Blocks 85@23c. each		$19.55
Mortar		
Lime, ½ bbl.	$1.10	
Sand, ½ yd.	0.51	
Cement, 1 sack	0.75	
		$2.36
Hauling water and material		2.38
Labor		
Hitches and cleaning	$3.75	
Mason	11.25	
		$15.00
Total		$39.29

The blocks which are solid and measure 8x8x16 in. are hand-tamped in a small machine. The mixture by volume consists of 1 part cement, ¾ part sand, 6 parts of ashes and 1½ parts of water. The cement costs 75c. a sack at the mine. Ordinary river sand is used which costs $1.50 a ton delivered at the mine. The ashes, from the mine boilers, are screened by hand over a ¼-in. screen, the cost of the operation being on an average $3.50 for 115 blocks. It takes a trifle more than 2½ cu.yd. of screened ashes for 115 blocks.

This high cost is due to the fact that the ashes made from the coal at this mine are relatively free from clinker. Even when the refuse from the picking tables is burned the ash seldom fuses so as to cause trouble. The cement, sand and screened ashes are loaded into mine cars during the day.

Send Blocks Down at Night

These cars are lowered into the mine on the night shift when the regular mine material is sent down. The labor of delivering the material to the point where the blocks are made is the equivalent of two hours' work for one man. The cost of delivery of the material, therefore, is about $1.90.

The location selected for making the blocks is a room not yet abandoned and located nearly a mile from the shaft. No extra track has had to be laid and no new timbering has been necessary. When the room is abandoned it will be easy to move the equipment.

The temperature and humidity of the air is practically the same, winter and summer. Consequently there is no danger that the blocks will freeze in the winter or dry too fast in the summer; considerations that might be harassing if the blocks were made on the surface.

With good mine tracks and delivering other mine supplies on the same trip the cost of hauling the materials is practically the same whether the location selected is a mile or a thousand feet from the shaft. The illumination in the improvised block factory is furnished by the carbide lamp of the man who makes the blocks.

The only place in the mine where water is pumped to the surface is at the shaft. Some of the working places, it is true, make a small quantity of water. This is baled into barrels and hauled away to the shaft or old workings by the night shift. In some cases the water is used for sprinkling the roadways.

Use as Little Water as Possible

The water used for the blocks and for building the stoppings really costs nothing, but a charge has been made for water in figuring the cost of both manufacturing the blocks and building the stoppings. This water contains 2 to 3 per cent of salt. It is not acid, at least not to the extent that it will corrode pipes or a pump.

The quantity of water used depends upon the dryness of the sand and ashes as received in the mine where the mixing is done. The mixture is kept as dry as possible consistent with the need to make a block so coherent that it can be removed from the machine without breaking.

Blocks Set on Bottom Plate

A bottom plate is placed in the machine for each block, and the product is removed from the machine resting on the plate on which it is allowed to remain for 24 hr. during which time the cement takes its permanent set. After this the blocks are cured for 9 days. The plates are wiped with coal oil. This makes them separate easily from the concrete.

In the process of manufacture, the material for the blocks is well tamped by hand into the mold so that the block will be so dense that the air will not leak through it when it

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is incorporated into a stopping. As a tight joint between the blocks and the coal is necessary, the practice is to clean away the accumulated gob and to cut hitches 6 in. deep into the solid coal for the blocks and mortar.

Such stoppings are highly efficient. Ordinary wood stoppings are usually erected when the entries are driven, block stoppings being added when more air is needed at the face. The block stoppings are erected without disturbing the old wood brattices which, on examination, appear practically tight.

Air Goes Through Wood Stoppings

When, however, a block stopping is erected in front of one of them the mason frequently is annoyed in placing the last block or two because of the high velocity of the air passing through the uncompleted part of his work.

The efficiency of the block stoppings is well proved by the air readings taken before and during erection. As a result of such readings it has been determined that if a pair of entries is passing 20,000 or 25,000 cu.ft. of air per minute, the air at the last crosscut under average conditions will be increased 1,000 cu.ft. per minute for every ten block stoppings erected—quite a sizeable gain in ventilation.

Should Make 45,000 Blocks

In figuring cost no allowance was made for superintendence, as the mine manager and other bosses are on a salary basis and the supervision of the construction of the stoppings is considered a part of their routine work. The allowance for depreciation is at best a guess. The machine now used has already made 4,500 blocks. For this mine alone the machine is expected to make 40,000 more. It cost $250. To be on the safe side the depreciation was based on the assumption that the machine would make 25,000 blocks without replacement.

Sounds Alarm if Methane Or Bad Air Is Present

Many have been the attempts to devise equipment for detecting the presence of dangerous gas in a mine. In this country the flame safety lamp is the all but universal means employed for this purpose. It is subject to many shortcomings, however, and in other countries trials are constantly being made of other devices. One of the latest of these is known as the Czechie-Sliva firedamp indicator and alarm. This is described by the *Iron and Coal Trades Review* in part as follows:

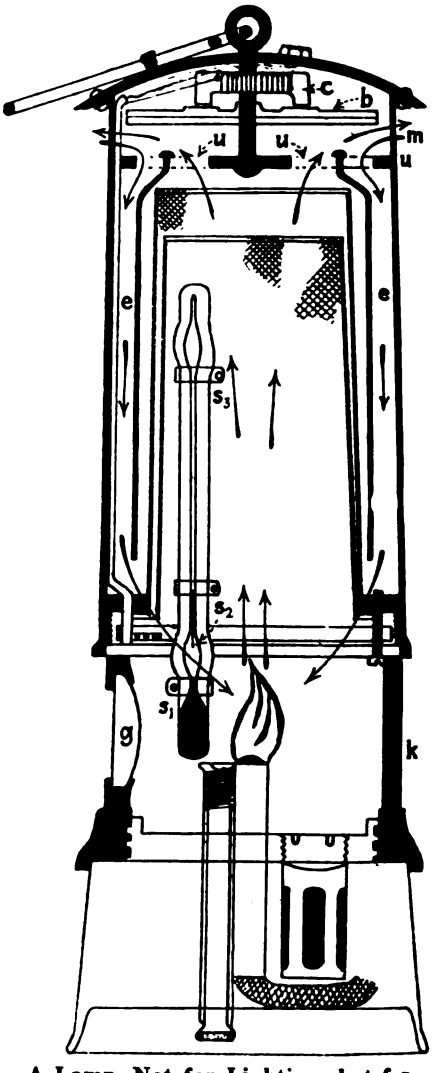
This device, invented by Milosh Sliva, a Czech miner, now in France, consists of two fairly distinct elements, the one serving as an indicator and the other as an alarm. The two are connected electrically. The indicator portion resembles a Wolf bottom-feed safety lamp and burns benzine. Both the air inlet and exit are placed in the uppermost portion of the outside cover of the lamp (see *m*, in the accompanying cross-section). Air entering at this point travels down the outside of a sheet-iron tube *e* placed between the gauze bonnet and the outside lamp casing. Below the air inlets is a perforated cover *u*, above which is suspended by means of a small solenoid *c* an asbestos-lined sheet-iron plate *b*. If this plate drops it cuts off the air supply to the flame.

Beside the flame is a thermometer fitted with three electrical contacts. The bulb of this thermometer is on a level with the flame and its distance from it governs the speed of operation of the alarm. At a mean temperature of 260 deg. C the indicator records the presence of gas in not to exceed 15 sec. The glass chimney of the ordinary safety lamp is replaced in this device with a metal cylinder *k* in the side of which is placed a lens *g* for purposes of observation.

Alarm Separate from Lamp

The alarm portion of this device is a separate appliance being connected to the indicator by means of a 3-conductor cable. When the lamp is lighted the mercury in the thermometer expands until it touches the electrical contacts S_1 and S_2. The current thus flowing from the battery in the alarm box energizes the solenoid *c* which holds the plate *b* in suspension and allows the lamp to burn. Should flammable gas be encountered the extra heat generated within the lamp causes the mercury to rise in the thermometer until the contact S_3 is reached. This short circuits a fuse in the alarm box and burns it off. The solenoid is thus demagnetized dropping the disk *b* which cuts off the air supply to the lamp extinguishing it, as well as the burning methane. Should the lamp be extinguished from the presence of an inert gas a signal light shows in the alarm equipment and a buzzer is sounded.

Tests have been conducted on this apparatus at the French National Mining Institute's station at Frameries. In a current of air containing 9 per cent of methane moving at the rate of 6 ft. 7 in. per second the lamp was extinguished, and the alarm device came into operation in from 10 to 15 sec. In a second test the percentage of gas was so regulated as to cause the flame to be elongated until it reached the gauze. After about two minutes the mercury short-circuited the apparatus and sounded the alarm.



A Lamp, Not for Lighting, but for Indicating Gas Electrically

This portion of the apparatus much resembles an ordinary safety lamp. If a dangerous quantity of methane is encountered the flame is extinguished and a warning sounded in the other element or alarm box. If inert gas is entered the flame is smothered, an electric bulb lights up and a buzzer is set in operation.

As a result of these and other trials the appartus was modified somewhat in detail with the idea of making its action somewhat more positive.

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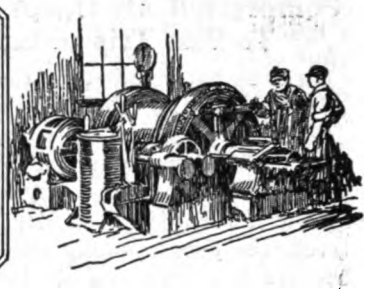
Practical Pointers For Electrical And Mechanical Men



Seamless Tubing and Arc Makes Bearings

In a period of six or seven years electric welding has come into such general use at coal mines that the lack of a welder in a repair shop of any size is a matter of comment. When a shop has a lathe and a power drill press, one expects to find that some sort of electric welding equipment is also provided.

The combination of an arc welder and a lathe makes possible the handling of a wide range of work. This may vary from complicated repair jobs, to the manufacture of parts in an emergency or in cases where a saving can be effected.

Two arc-lathe jobs photographed in the central repair shop of the Pennsylvania Coal & Coke Corp., near Cresson, Pa., are shown in the accompanying illustration. At the left are two solid bearing boxes and at the right is the field frame of a mine locomotive motor.

Seamless Steel Tubing

The boxes were made by welding short pieces of seamless steel tubing onto pieces of bar steel. A hole was then drilled through the bar, the tubing bored out, faced and fitted with a bronze bushing. It is by this same plan that the boxes are made for the portable 20-ft. belt conveyors which the company uses in several of its mines. By keeping in stock a few short lengths of tubing of various sizes, bearings can be made on short notice.

The motor field frame in the photograph has had the worn fits of the axle boxes and the bearing housings filled ready for machining. This finishing is done by means of a special boring bar set up in a lathe. The motor frame is clamped on the carriage during the boring process.

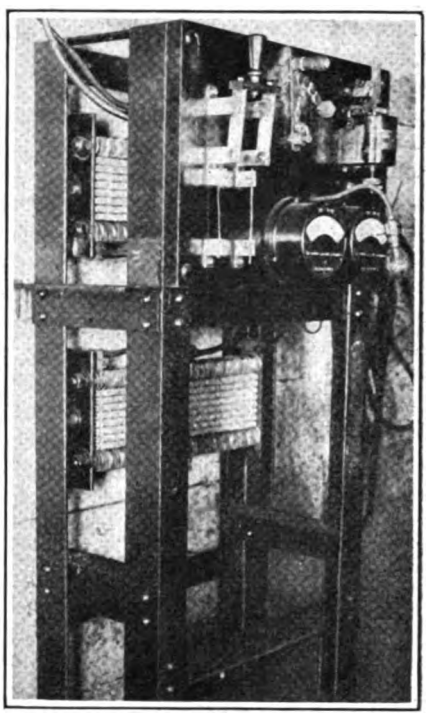
The numerous welding jobs to be seen in this shop show how J. F. MacWilliams, the electrical engineer, utilizes to the full the possibilities of autogenous welding. In addition to the electric welder, an oxy-acetylene outfit is used for welding cast iron and on other jobs where a manganese-bronze filler rod is considered best.

Charging Panels Constructed Specially for Mine Use

Mine equipment should be built sufficiently rugged for the rough service expected of it. This need for more rugged equipment was kept in mind by the Kingston-Pocahontas Coal Co. when they built their panels for charging battery locomotives in the Exeter mine, at Hemphill, near Welch, W. Va.

It was desired also to have panels which were semi-portable, for the reason that as charging is done from the 275-volt trolley circuit the stations can be, and often are, moved to suit the progressive development of the mine. One of the homemade panels, mounted in the combination pumproom and locomotive-charging station, is shown in the accompanying illustration.

The panel proper, which is 20x30 in., is made of 1¼-in. asbestos board and is painted black. The knife switch, instruments and automatic-



This Panel Will Not "Get Wobbly"

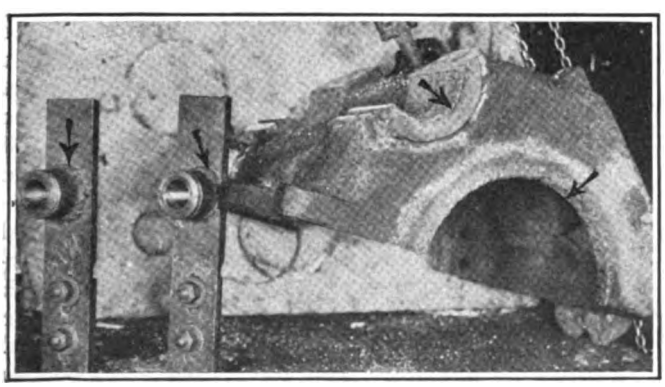
The corner angles are 4x4x⅜ in. and rivets are used in the assembly. Asbestos board 1¼ in. thick forms the panel on which the switches and indicating instruments are mounted.

reclosing breaker are standard parts, but the dial switch was made in the company's machine shop.

Standard Material Used

Resistors for limiting the charging current are made from grids and other parts regularly kept in stock for use in the mine locomotives, which feature is advantageous from the standpoint of maintenance. The four corner members of the frame are 4x4x⅜-in. angles and the bracing is such as to make the assembly quite rigid.

Although the panels are of a liberal design in so far as weight of material is concerned, it is reported that the cost of assembling in the company shop was not in any way excessive.



Welded Parts

The solid boxes are made by welding short pieces of seamless steel tubing to a flat bar. The motor field frame will be like new after the welded fill is machined. Arrows show welds.

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Compressed Air Opens Door To Pass Trip or Car

In a recent number of the *South African Mining and Engineering Journal* is described an air-operated door. The mine gangway is closed by a pair of doors set at right angles and at an angle of 45 deg. to the track, the doors coming together at the track center. A double-acting cylinder controlled by a four-way valve operates two radius rods which are attached to the doors. A spring supported ramp between the rails is depressed by the mine car, and this by a system of levers operates the four-way valve admitting compressed air to one side of the air-cylinder piston and opening the doors. The ramp is extended on both sides of the opening so that as the car or trip leaves the ramp, the depressed springs restore it to its original position and close the doors. The cylinder is attached to the top and center of the gangway. Strips of discarded belting are attached to the outer surface of the doors to serve as buffers when the doors are opened and pressed back against the timbers.

MADE IN TWO SECTIONS

F. C. Isaac, resident engineer of the Modder Deep, designed the door. Making it in two sections reduces the size of the parts to be opened and thus makes the contrivance more readily operated. The 45-deg. angle of the doors reduces the swing to 45 deg., but other angles appear to be worthy of consideration. For example, a pair of doors set at an angle of 15 deg. to the track gives a swing of 75 deg. With gangway 6 ft. wide, each door will have a width of 3¼ ft., whereas the 45-deg. door has a width of slightly more than 4¼ ft.

Assuming radius rods 3½ ft. in length and attached to the center of each door near the top, a cylinder stroke of 2¼ ft. would be required as against a cylinder stroke of 1⅞ ft. for the 45-deg. door. A door placed at an angle of 30 deg. would have a swing of 60 deg. and would require a cylinder stroke of 2 ft. and a width of 3½ ft. With the 30-deg. door there would be a saving of 1½ ft. of door width for both doors. The smaller doors are easier to construct and without doubt can be more easily operated.

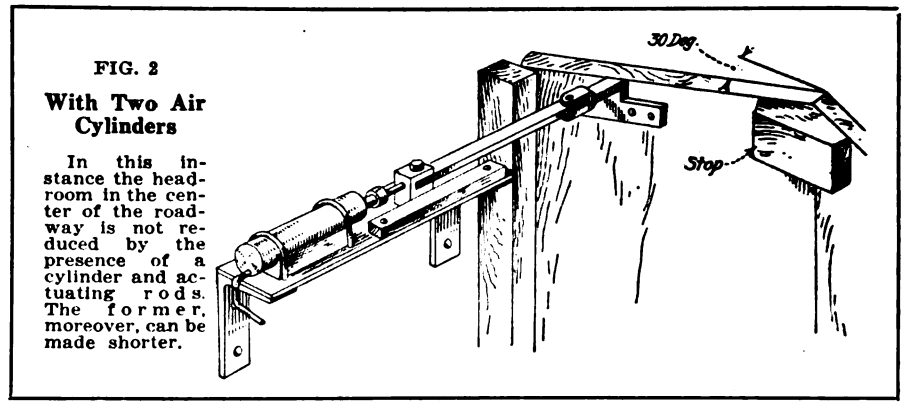


FIG. 2

With Two Air Cylinders

In this instance the headroom in the center of the roadway is not reduced by the presence of a cylinder and actuating rods. The former, moreover, can be made shorter.

CAN AVOID SKIMPY HEADROOM

In Fig. 1, a cylinder rig is sketched for the 30-deg. door. An objection that might be made against this arrangement is the restriction of headroom in the center of the gangway. To avoid this objection a pair of cylinders, one for each door, could be arranged as shown in Fig. 2. A comparatively short cylinder and link would be required for this design, the details of which can be readily worked out. The operation of the four-way valve can be controlled by wire-rope pulls instead of a ramp, which has the advantage of automatic operation and would be especially suitable for one or a few cars, but would not be especially advantageous for train operation. As an alternative to the ramp and to the wire-rope pulls, an electric solenoid rig could be devised to operate the four-way valve from either side of the door.

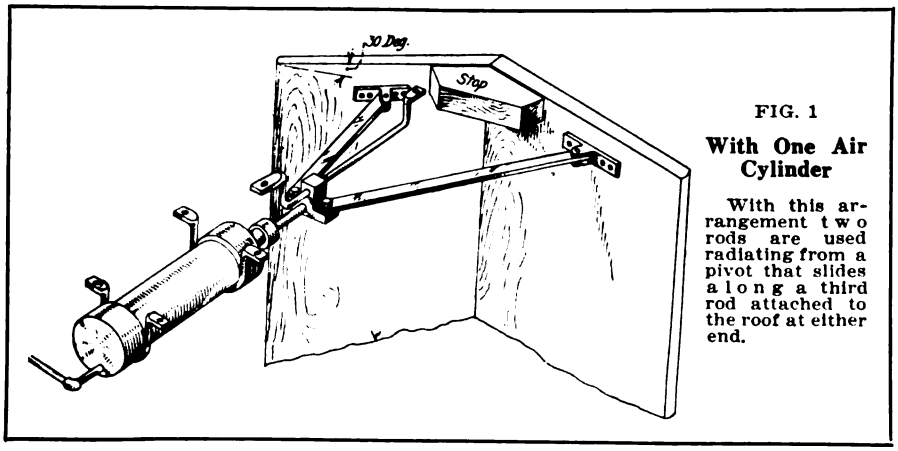


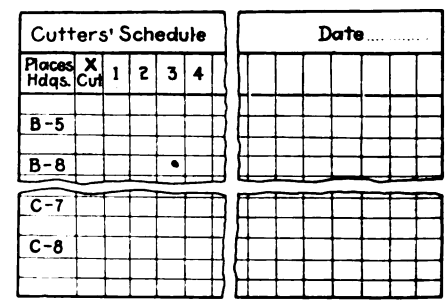
FIG. 1

With One Air Cylinder

With this arrangement two rods are used radiating from a pivot that slides along a third rod attached to the roof at either end.

Dispatch Board Saves Time Of Cutting Crews

A board such as illustarted will be found useful in giving cutting crews, when the cutting is done at night, information as to the location of places ready to be cut. One of these boards is placed at the entrance to each section of the mine, at the main entrance or at some location that all the loaders pass.



Blackboard for Recording What Places Await Cutting Crew

This is placed near a mine or a section entrance to inform the cutting crews as to the location where places are ready to cut. It is useful whenever the cutting is to be done at night. Such a board saves the time of cutters and prevents their overlooking any rooms needing their services.

The miner on his way home marks the board at the point corresponding to his working place if it is ready to cut. If it is not ready he does not make any mark. As every miner is anxious to have his place cut ready for work on the next working day he is not likely to fail to make the necessary mark on the board.

He is far more disposed to do his part than would be the foreman to do it for him, for he is the person most at interest. The foreman, furthermore, is at a disadvantage in routing cutters because he cannot tell just what places have been cleaned up and he must depend on the uncertain information of drivers and motormen, who look upon the collection of such data as a duty in which they have little interest and for which they have no time to spare. Those who have used such boards have found them satisfactory.

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Viewpoints of Our Readers

Mine Locomotives Will Give Poor Service If Not Given Special Attention

Any Equipment on Wheels Is Subject to Constant Shocks Which Cause Looseness of Parts and Misalignment—Failure of One Part Affects All

By O. E. Kenworthy
Electric Field Engineer, Lehigh Valley Coal Co.
Wilkes Barre, Pa.

TOO many believe that an electric locomotive is a rugged piece of equipment. Possibly this is so, but it cannot be denied that a locomotive possesses some characteristics which put it into another class. It does not possess the ruggedness of a hoist despite opinions to the contrary. To prove that this is true, let us compare the two.

First of all, locomotives are mounted on wheels, and the journal bearings have to carry their weight and to take the shocks due to their inertia. This is a considerable disadvantage which cannot be overcome by any design, however careful. It will wreck the machine if the proper alignment of bearings is not maintained.

HOIST BEARINGS ESCAPE SHOCKS

A hoist, on the other hand, has the greater part of its weight rigidly supported on a firm and immovable foundation, and its bearings are not subjected to repeated shocks. Only wear is likely to destroy the hoist. The attention necessary to keep a hoist bearing in alignment is almost negligible compared with that which will keep in condition the bearings of an electric mine locomotive.

The costs of maintenance and operation of an electric locomotive are large because its weight rests on wheels rather than on solid ground under them. This statement is the gist of the whole story. If the reader were to make a detailed analysis of the cost of operation he would find that the items of "sets of wheels and axles," "rear-axle brasses," "gears," "pinions," "journal brasses," "journal boxes," and "journal-box guides" all rise together. This is true because the wear on any one of these parts affects the wear on all the rest. The wheels and axles, of course, are the most expensive parts to replace, and worn journals are to be avoided as much as possible because with new journals axles must be purchased.

Gears and pinions do not always wear out. Sometimes they are pounded to pieces and teeth broken, because the rear-axle brasses are not kept tight. This is easy to understand, and it is just as easy to realize that motor casings will have to be renewed or rebuilt because of the pounding action between the gear and the pinion. The loosening of the studs in the brass caps of the rear axle causes a backlash between the gear and pinion which in turn transmits a shock to the stud. These shocks sometimes break the studs and then the flapping of the cap wears the armature casing at this point. Worn gears and pinions cause backlash, and when this occurs the condition is aggravated.

MISALIGNMENT CAUSES TROUBLE

It is not difficult to visualize the multiplicity of troubles that will be occasioned by misalignment of these parts. For example, journal boxes and journal-box guides have to take the shock of the inertia of the locomotive whenever it rounds a curve or strikes a latch. Should the side play between the axles and guides of the journal be too great, it is obvious that the boxes and guides of the journal brasses will be pounded rather than worn. The inertia places a thrust on the wearing plate which is transmitted to the guides.

Further trouble can develop by letting bumpers get out of condition. Loose bumpers will in time wear the studs which hold the corners of the frame and this in turn will throw the whole locomotive out of alignment. A locomotive should never be allowed to travel with a loose bumper even for a short time.

Thus far, only the mechanical "running gear" of the locomotive has been discussed. It is only a step further to visualize the effect that a bad condition of "running gear" will have on the electrical parts of the locomotive. The pounding of gears against pinions is further responsible for increased cost of armature bearings and if these bearings are not properly maintained burned-out armatures may result. Vibration, which also attends misalignment, has a bad effect on field coils.

Not only is pounding responsible for damaged armature bearings and burned-out armatures, but it also increases friction, overloading the motor. It means heavier currents through the controller with the consequent burning of fingers and segments. In most cases of trouble with the electrical equipment of a mine locomotive, the fault lies with the mechanical parts.

FOLLOW MAKER'S ADVICE

In the operation of a mine locomotive it is well to consider the advice given in the instruction books of every locomotive manufacturer as to the care and maintenance of such equipment. Rigid inspection of mine locomotives is indeed imperative.

The following is a quotation from an instruction book published by a prominent manufacturer: "Give special attention to the examination of all bolts and nuts to see that they are kept tight. Mine locomotives, perhaps more than any other class of equipment, are subject to severe shocks and vibration. Bolts, nuts, etc., are, therefore, liable to get loose and for that reason, should be given painstaking care. Failure to give thorough attention to this point may involve costly repairs and sometimes serious accidents, particularly in connection with brake rigging and motor-suspension parts."

Batteries on Line Are New Only at Coal Mines

Mr. Edwards' article on the use of storage batteries to reduce power peaks in the April 22 issue of *Coal Age* shows that others have recognized the advantage of an installation such as I have had in my mind for some time. It is gratifying to see that the Pond Creek Pocahontas Coal Co. has utilized one of its batteries in this way, and many other companies could, in a similar manner, smooth out their peaks and reduce their current bills appreciably.

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A number of the public-utility companies are using storage batteries for standby service, including such concerns as the New York Edison Co., New York; the Commonwealth Edison Co., of Chicago, Ill.; the Edison Electric Illuminating Co. of Boston, and others.

The batteries used are of different sizes, but a typical installation may be considered as 150 cells of from 77 to 141 plates per cell, each plate measuring 30⅛ x 5⅞ in. The Consolidated Electric Light & Gas Co., of Baltimore, has in service a 170-cell standby battery with a capacity of 10,500 amp.-hr. at the one-hour rate.

W. VAN C. BRANDT.
Philadelphia, Pa.

Too Early to Make Standards For Face Conveyors

Wherever face conveyors are being used successfully, working areas have been concentrated so that equal tonnage is produced with fewer men, mining hazards have been lessened, a larger percentage of the coal available in the seam mined has been prepared for market, the mining force has been kept under more adequate supervision, men of a higher degree of intelligence have been willing to engage in loading and, most important of all, the cost of coal has been sufficient to permit active competition in the market.

But unless careful forethought is given to the needs of face conveying, the same difficulties which have retarded the progress and application of the loading machine will hinder the advance of the face conveyor. Whenever and wherever the loading machine has failed, that failure has retarded the initiative of those who purposed the introduction of these machines into their mines, though any one of them might have made a success of the same machine, operating under nearly, if not quite, the same conditions. This fact has not only militated against a more rapid development in design by the manufacturer. But against a more general use of the machine by the industry.

FLEXIBLE STANDARDS NEEDED

The loading machines we have today have been developed more or less with a sense that standardization should be immediately attained. Their makers have attempted to produce a loading machine that could be used everywhere. They have sought to create a single standard for an industry that by the very nature of the elements with which it works cannot use a single standard but must have several.

Many years ago conveying was reduced from an art to a science. There are many companies which have engineers in their employ who are capable of designing the right type of conveyor to accomplish any kind of work. However, this does not mean that these conveyor engineers also are mining engineers. They cannot and should not be expected to submit a mining plan to be used in connection with a face conveyor of their design.

To date no one, in or out of the industry, has been able to devise a system of mining, using hand, loading machine or face conveyor, which would be applicable to even a small minority of the mines. Each mine presents an individual problem, and every mine needs to apply a form of mechanism for gathering and transferring the product appropriate to its needs.

Therefore, face conveyors cannot be standardized until such time as they have been successfully applied to conditions sufficiently varied to permit of such a course. The coal operator who tries to apply a standard unit built to fit general conditions, should prepare for trouble, unless his property is exceptionally well suited for the equipment available.

CAN CORRELATE EFFORTS

Many operators are insistent on the purchase of standard units. If the manufacturer, however, is not asked to show how standard equipment can be made to give best results under the mine conditions existing, but to design equipment that will best meet those conditions of operation, then the chances for a successful installation will be greatly enhanced.

Many will say that such a plan is impracticable and, if not impracticable, too costly. But it has been proved that the initial cost of a specially designed conveyor is little greater than that of those that are called standard. The difference in cost is a low price to pay to insure success.

Some day face conveyors and loading machines will be numerous enough so that standards can be made for them, but until that time more progress will be made and more benefits will accrue to the industry if face conveying is treated as an engineering problem and not one to be standardized for the benefit of the manufacturer.

Chicago, Ill. REX MARTIN.

Does Oxidation of Face Cause Increased Movement?

On p. 436 of your issue of March 25, F. C. Cornet refers to the increase of temperature in certain coal mines which becomes quickly apparent when the ventilating current is interrupted and which is accompanied, at least at times, by a more rapid transpiration of gas, than is normal to the mine. Mr. Cornet's explanation of this rapid evolution of gas is that the increase of temperature accelerates the expansion of the seam and that this movement accompanied by cracking causes the increased outflow of gas. All that seems to be lacking is an explanation of the increase in temperature.

TEMPERATURE RISES—WHY?

This rise in the temperature of the seam may be due to the more rapid absorption of oxygen which follows a smaller increase of temperature due to the stopping of the ventilating current. So long as this current is moving the surface of the coal is slightly cooled, and this is especially apparent if moisture is present. Even a slight increase of temperature results in a more rapid absorption of oxygen, which in turn raises temperature and further increases oxygen absorption. As is well known this process, in the case of coal stored in piles, frequently continues until active combustion occurs.

Unless the evolution of gas is so rapid as to prevent the entrance of oxygen into the fissures of the coal, the existence of gas in these fissures will not be an obstacle to oxidation because the diffusion of gases will permit penetration of oxygen into the crevices. It has been demonstrated that the evolution of gas from coal is increased by a rise of temperature as well as by the increase of surface due to the cracking of the coal. It would seem therefore justifiable to assume that the phenomena described by Mr. Cornet may be due to the increase of temperature consequent upon oxidation of the coal face.

C. M. YOUNG,
Professor, Mining Engineering.
University of Kansas,
Lawrence, Kans.

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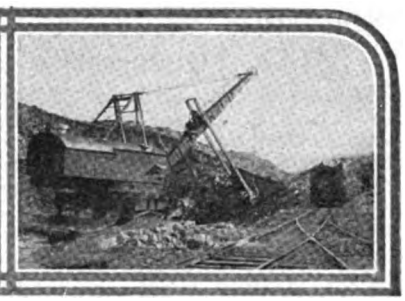
News Of the Industry



Fate of Proposed Coal Legislation Is Uncertain; Parker and Copeland Favor President's Recommendations

The fate of the proposed federal coal legislation in this session of Congress is very much in doubt.

There is a strong sentiment among some members of the House committee on interstate and foreign commerce, which gave the better part of two months to hearing advocates and opponents of federal control, to postpone consideration of the question until the next session of Congress. Representations to that effect have been made to the President.

On the other hand, Chairman James S. Parker has several times announced that his committee would report out a bill before the expiration of the present session of Congress and that he entertains hopes that the House, at least, will pass the committee's bill. Early last week there was talk of having the powerful rules committee give the measure a preferred place on the legislative program, but nothing further has been heard along that line in the past few days.

President Desires Action

The President, too, has indicated his desire for some action upon the recommendations which he has twice made in messages to Congress. It is understood, however, that the Chief Executive is not disposed to force the issue to the point of demanding that the party leaders drive the bill through before adjournment. But proponents of regulation continue to carry their pleas to the White House. In the past week Senator Copeland of New York and Representative Treadway of Massachusetts have seen Mr. Cooldige on this matter. Representative Fish of New York added his voice to these pleas in a White House conference on May 24.

Representatives Merritt of Connecticut and Wyant of Pennsylvania have appeared as spokesmen for a policy of delay. After a conference with the President on May 21 these two members of the House committee expressed the opinion that legislation at this time would have a bad effect upon the industry now struggling to recover from the losses caused by the anthracite strike. With 75 per cent of the bituminous production non-union and a four and one-half year agreement in the anthracite region, there is little danger, said these Congressmen, that labor disturbances can menace the coal supply. The manner in which the railroads are handling traffic offered them eliminates the possibility of a runaway market caused by a car shortage.

Mr. Treadway, one of the most persistent advocates of regulation, insists that his position is in accord with the recommendations of President Coolidge. Senator Copeland, after a White House visit last Thursday, said that he "was pleased to find that President Coolidge has no objections to any features of my bill. The President looks upon the measure as one which carries out his recommendations in his last two messages to Congress."

The Senator from New York seems determined to force action on his bill, which already is on the Senate calendar. It came up in the regular order on May 18, but was passed over at the request of Senator Willis of Ohio, who stated that the Senator from Pennsylvania objected to consideration of the measure in his absence. Senator Neely of West Virginia interrupted the brief debate that day to insert into the record two newspaper articles hostile to government regulation.



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Representative James S. Parker

Chairman of the House committee on interstate foreign commerce, who has announced that his committee would report out coal legislation before the expiration of this session of Congress. He has hopes that the House will pass the measure.



Photo International

Senator Royal S. Copeland

After a visit to the White House last Thursday the New York Senator expressed gratification that President Coolidge "had no objections to any features" of the Copeland bill. The doctor apparently intends to bring pressure for action on his measure.

The Copeland bill, S. 4177, was offered as a measure "to regulate interstate and foreign commerce in coal and to promote the general welfare dependent on the use of coal, and for other purposes." The Parker bill, H. R. 12209, is entitled a bill "to protect the government and the public from shortages of coal." Its purpose, as stated in the enacting clause, is "to protect the government and its agencies, the instrumentalities of interstate or foreign commerce, and the public from shortages of coal, and to have adequate and necessary facts available, in the event of an emergency, for the immediate enactment of such further legislation as Congress may deem advisable and for the proper execution of existing law."

In this clause it is apparent that the author of the bill has endeavored to incorporate every justification which witnesses before the committee conceded might possibly exist for the exercise of fact-finding powers. Unlike the Copeland bill, however, there is no specific authorization giving the Bureau of Mines, as the proposed government fact-finding agency, "access to and the right to copy any book, account, record, paper or correspondence relating to any method which the Bureau of Mines is authorized to investigate." On the other hand, the Copeland bill names no penalty to be inflicted upon persons or corporations refusing to give information or make reports requested.

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Sloan Bans Further Mining At Cassidy Operation

William Sloan, Minister of Mines for British Columbia, has ordered the permanent closing of a large section of the Granby Consolidated Mining, Smelting & Power Co.'s Cassidy colliery, near Nanaimo, on Vancouver Island, because of the danger of "blowouts," one of which caused the death of two miners on April 6, last. There were two fatalities from this cause also in 1921. The company is to be allowed to withdraw all coal that has been mined from the condemned area, but must not mine any more coal.

The colliery has been a poor investment for the Granby company. Harassed for a supply of coke for its smelter by strikes and lockouts in the Vancouver Island mines, the company purchased the coal lands about ten years ago, and proceeded to develop the colliery. As soon as the colliery had been put into operation the company's title to the land was questioned by Canadian Pacific Ry. interests, which had received large grants of land on Vancouver Island as a consideration for constructing the Esquimalt & Nanaimo Ry. A series of costly law suits followed, in which the Granby company ultimately was successful. Then it was found that the Cassidy coal failed to make a satisfactory metallurgical coke, and about 35 per cent of coal from mines in Alberta had to be blended with it.

The company now has developed a large hydro-electric plant at its smelter, which entirely eliminates the use of coal for power purposes, except during one or two months in unusually cold weather, when the creeks supplying the water become frozen, and the elaborate series of reservoirs that it has built are not sufficient to carry the company over the period of water shortage. Thus, it is expected that by the time the coal already mined has been raised the company will be fairly independent of other collieries, having substituted other things for that one-time cheap and useful commodity, coal.

Gealy Informs Engineers of Opportunities for Profit

At Wilkes-Barre, Pa., May 20, E. J. Gealy, of *Coal Age* described to the Engineers' Society of Northeastern Pennsylvania the results of his inquiries into the possibility of making savings in the production of anthracite, the outcome of a survey of conditions in hard- and soft-coal mines. He cited many cases in which savings had been made, without, however, violating confidences by naming the mines or the companies by which those reductions in cost had been achieved. As this paper will be published later it will not be necessary to describe it at length in this notice.

In discussion of the paper, C. R. Seem, president of the society, who acted as chairman, said that the use of oil had made inroads into the anthracite market, even though oil was a more expensive fuel. He added that electric drives necessitated much less steam energy in electric turbines than for supplying steam direct to mine steam engines. Good steam-driven machinery at most mines requires more than 40 lb. of steam per horsepower-hour, whereas the amount required to do the same work by electricity generated in a modern turbo-generator was about 8 to 9 lb. per hour. When electrical energy is generated in turbo-generators, he pointed out, steam can be bled from the turbine to heat the buildings.

R. D. Hall made a few remarks on the past services of the mining engineer, declaring that in early days the mining engineer led in almost all mechanical progress, but said that modern industry had done much to advance all the developments that the mine industry had initiated. It was time for mining engineers to add to their originating ability a power to borrow from other industries, notably the public utilities and the electric railroads, and thus decrease costs. By establishing engineers with limited ranges of service, such as ventilation, turbine and pump engineers, men could be chosen with special aptitudes who would be able to follow developments in their respective lines, not only in coal mines but in all related lines.



Rock Springs (Wyo.) Landmark Disappears

Entrance to the manway of old No. 1 mine of the Union Pacific Coal Co. being filled in. It was one of the old familiar sights of the town, having stood for nearly fifty years.—*Courtesy Union Pacific Coal Co.*

Business Speaks Its Mind at Washington

Where the associated business interests of the country stand on the important economic and social problems of the day was disclosed at Washington, D. C., May 10-13, when 3,000 delegates attended the fourteenth annual convention of the Chamber of Commerce of the United States. After listening to addresses, committee reports and discussions from the floor, the committee on resolutions summarized the opinions expressed in a series of resolutions, which were unanimously adopted in the closing session of the convention. According to these resolutions, business stands for:

(1) Full co-operation in crime prevention.

(2) Continuation of the Federal Reserve System.

(3) Co-operation with farmers in solving farmers' problems.

(4) Refusal to recognize Soviet Russia.

(5) Permanent establishment of a federal foreign commerce service under the Secretary of Commerce.

(6) Simplification of customs formalities.

(7) Change in methods of conducting tariff investigations abroad..

(8) International highway conferences.

(9) Removal of restrictions on parcels post with Cuba.

(10) Issuance of certificates of arrival to immigrants, but no compulsory registration of all aliens in the United States.

(11) The budget system for state and local government expenditures.

(12) A substantial reduction in the existing federal corporation income taxes.

(13) Changes in methods of forest taxation for the purpose of promoting conservation and reforestation.

(14) Opposition to control of coal and other industries by governmental agencies.

(15) Proper control and utilization of the forage resources of the public domain.

(16) Performance of public construction projects, wherever possible, by contract and not by hiring day labor.

(17) Promotion of civil aeronautics, with reasonable federal regulation.

(18) Reasonable federal regulation of radio service.

(19) Creation of government radio facilities where private service is not available, but discontinuance of such service upon the establishment of adequate privately owned facilities.

(20) Opposition to compulsory automobile accident insurance.

(21) Opposition to regional appointments to the Interstate Commerce Commission.

(22) Compilation of vital statistics and a uniform system for recording such statistics.

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British Coal Strike Unsettled; Mine Workers and Owners Reject Premier Baldwin's Peace Proposals

The deadlock in the British coal strike is unbroken.

While industry generally is trying to repair the damage done by the general walk-out of May 3, both the mine owners and the mine workers have rejected the peace proposals put forward by Premier Baldwin.

The owners objected to the government program because of the constitution of the proposed national wage board and also took exception to the use of the March quarter in fixing rates of pay.

The miners attacked the proposals because they involved an immediate wage reduction of approximately 10 per cent. They contend that the general reorganization of the industry outlined in the recommendations of the Royal Coal Commission should precede such a reduction. They are equally firm in rejecting the owners' proposals for a longer working day. "Not a penny off, not a minute more," is their rallying cry.

The Premier, in letters sent to the representatives of both parties to the controversy last Saturday, warns the miners that the government's offer of a temporary subsidy will be withdrawn with the end of the month and accuses the owners of uncompromising obstinacy.

"The Premier," said the letter to the mine owners, "profoundly disagrees with your association in attributing the troubles in the mining industry to 'political interference.' The government repeatedly has made it clear that they do not desire to interfere in trade disputes where there is indication the parties are able and willing to settle the disputes for themselves.

Interference Due to Incapacity

"But the Premier would point out that what is called political interference in the mining industry has been entirely due to the incapacity, now again so conspicuously shown, of that industry, unlike other industries, to settle its disputes for itself.

"He deplores your association's apparent inability to recognize it was quite impossible for any government to have stood aside in matters where the national well-being was so vitally and disastrously affected.

"The essential feature of the proposal laid before you by the government was that both sides should agree to leave the crucial point of the dispute—the figure of the minimum percentage on a basis in various districts —to be determined in last resort by arbitration. This is a principle that has been accepted over and over again by other great industries.

"It is true the attitude of the other side makes it impossible of application in the present dispute, but the Premier cannot refrain from the comment that, in summarily rejecting this proposal as one that 'seeks to impart an element of coercion into the machinery of the negotiations,' your association appears to show an inadequate appreciation both of the nature of the proposal and of the gravity of the present situation."

Further attempts to effect an agreement probably will be made as soon as the Whitsuntide celebrations are over.

In the meantime there have been some sharp exchanges between union leaders and government officials. The executives of the Trades Union Council are under attack for their action in calling off the general strike. A. J. Cook, secretary of the Miners' Federation, accuses them of a betrayal, and advocates nationalization.

Three members of the Council charged Sir Herbert Samuel with giving them definite assurance that his peace proposals would be accepted as a basis of negotiation by the government. Sir Herbert retorted that, to the best of his recollection, the protestants had not been present at the conferences, and that he had made it plain at those parleys that he was acting in an unofficial capacity.

Von Giesche Mines in Poland Now in American Control

Control of the Polish holdings of the George von Giesche heirs passed to the Anaconda Copper Mining Co. and W. A. Harriman & Co., American bankers, last week after negotiations lasting since last November. The Von Giesches control 10 per cent of the world's zinc production and own some of the finest coal mines in Germany, besides lead and silver smelting works, brick factories and porcelain works, three basalt quarries and artificial silk and sulphuric-acid factories.

George von Giesche founded the firm in 1704, and the shares in the concern have been handed down from generation to generation. Outsiders were barred for a long time, but recently the former German Crown Prince was permitted to become a shareholder.

In 1913 the Von Giesches valued their possessions at 300,000,000 marks, the highest valuation of any undertaking in Germany, not excepting the Krupps. When the World War broke out the concern bought German war bonds for 100,000,000 gold marks.

The partitioning of Upper Silesia when Germany lost the war found four-fifths of the Von Giesche possessions under the Polish flag. The 100,000,000 marks invested in the war loans became almost worthless, the cash reserves melted away, and the Von Giesches had to go borrowing.

The offer of the Americans for the Von Giesche property in Poland was heartily welcomed by the Polish Government and the shareholders approved the proposition, but it took six months to iron out the legal, financial, political and administrative problems.

At the request of the Prussian State Government, the Harriman-Anaconda representatives agreed not to interfere with the ore exploitation operations of the Von Giesche properties in Germany.

American Mining Congress And Machinery Exposition Opens with Big Attendance

With thirty principal speakers, an equal number pledged to contribute discussion and ninety-two exhibiting companies the National Exposition of Coal-Mine Equipment of the American Mining Congress opened auspiciously May 24 at the Music Hall, Cincinnati, Ohio. A large number of members and delegates were in attendance.

The first session culminated in a request to the chairman, S. A. Taylor, to nominate a committee to plan a course of action relative to water pollution for the coal and metal industries. J. F. Callbreath, secretary of the Congress, stated that in Idaho the courts had decided that water removed from streams must be returned to them in the same condition as when removed. This would destroy the whole lead industry of the state, which is the main source of income of that commonwealth. The coal and metal men, said Mr. Callbreath, should fight their battles together, with a proper conception, however, as to the ends rightly to be attained. H. N. Eavenson, H. I. Young and J. J. Rutledge were nominated on this committee.

Reforestation and conservation of timber are to be standardized for coal mines by a new subcommittee, No. 6, of the mine timbering committee, standardization division. R. E. Krape, in charge of timber and supplies, Rochester & Pittsburgh Coal & Iron Co., becomes chairman, mine timbering committee, in place of R. L. Adams. J. D. Snyder, division engineer, Consolidation Coal Co., becomes chairman subcommittee on use of structual steel for mine timbers. George M. Hunt, chairman, preservation of mine timbers subcommittee, is abroad studying preservatives not involving the use of creosote.

At a luncheon held Tuesday L. E. Young, Union Colliery Co., St. Louis, Mo., was elected chairman of mining and loading equipment standardization subcommittee. At the meeting of the manufacturers' division on Monday H. K. Porter, Hyatt Roller Bearing Co., was elected chairman; H. A. Buzby, Keystone Lubricating Co., and F. J. Maple, John A. Roebling's Sons Co., vice-chairmen, and J. C. Wilson, Ohio Brass Co., and N. S. Greensfelder, Hercules Powder Co., honorary chairmen. Porter, Wilson and Callbreath were appointed on the convention committee of this division.

Summer Course at Carnegie Tech

Carnegie Institute of Technology, Pittsburgh, Pa., announces a four weeks' summer course in coal mining beginning June 14. Sessions at Carnegie Tech in the morning will include studies of mine laws and regulations, mine ventilation, mine gases, safety lamps, methods of working mine explosives, mine timbering and mine arithmetic. In the afternoons at the U. S. Bureau of Mines station the subjects will include mine-rescue and first-aid training, coal-dust explosion and permissible-explosives demonstrations at the experimental mine, and lectures and motion pictures on mine safety.

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Both Sides on Legislation In Washington Point to British Coal Situation

By Paul Wooton

Washington Correspondent of *Coal Age*

Interest in Washington continues to center on the British situation, despite the effort being made on each side of the Capitol to obtain coal legislation. Many expect to see the British work out a plan for cheaper coal for use at home rather than try to dominate the world's sea-borne trade. Any such adjustment naturally would have an important bearing on our export trade in coal, and for that matter on our trade in other commodities and on our merchant marine problem.

It long has been accepted that the availability of coal for outbound cargo has been the principal element in the great export trade of Great Britain, tending to keep low the inbound freight on foods and raw material.

As some analyze Britain's foreign trade, there is no such close relationship between outbound and inbound cargoes. The great bulk of British exports go to France and the Netherlands and to points on the Rhine and on the Baltic. Heavy shipments to those destinations would have no effect on the inbound freight rates on wool from Australia or wheat from Argentina. There is some movement of coal to the Argentine, but not sufficient to balance the inbound movement of meat, grain and other commodities. A large proportion of ships leave in ballast for River Plate points. The balance is not between particular ports, such as those on the Tyne and on the Bristol Channel, on the one hand, and Buenos Aires and Calcutta on the other. It is rather between Western Europe and South America.

Coal Trade Traditions Upset

This view is upsetting to the notions of most persons interested in the world coal trade, particularly to the British themselves, but in the reorganization of the industry in the United Kingdom this phase of the situation is certain to be considered. The British may find it more to their advantage to shrink their production to the capacity of their lower cost mines and use a larger proportion of that coal at home, so that the outbound cargoes will consist more of manufactured material rather than raw material which has to be sold at small profit.

The British situation also is furnishing ammunition for each side in Congress. Those who are urging coal legislation see in the unrest of the British miners proof that trouble of the same character lies ahead in this country. Attention is called to the approaching end of the Jacksonville agreement, which leads to the demand that legislation be provided to meet a possible strike.

Spokesmen for the industry and others who oppose such legislation see in the British trouble the consequences of the government in business. They point out that since the war the British Government has not withdrawn definitely and completely from the field of private industry. As a consequence it cannot avoid taking part in the recurring crises.

From parliamentary intervention for the fixing of the length of the working day the government has been drawn into arbitration, into subsidy payments and finally was forced to break a strike. Had the government never placed itself in a position of quasi-responsibility the general strike never would have been called, argue the opponents of coal legislation for this country.

Industrial Board Observes Tenth Birthday

The tenth anniversary of the founding of the National Industrial Conference Board was celebrated May 20 at a meeting in New York City. Frederick P. Fish, chairman of the board since its organization, has declined re-election and has been elected honorary chairman. He has been succeeded by Loyall A. Osborne, president of the Westinghouse Electric International Co. Magnus W. Alexander continues as president.

Reporting on the ten years of activity Mr. Alexander pointed out that the board now spends approximately $300,000 a year in getting facts regarding industry and related business and social conditions. The results of the board's work have been given to business through 115 research and 35 special reports and many monographs. Sixteen bulletins have been issued on industrial-economic conditions in the United States, 132 charts on current economic trends and conditions here and abroad, and a graphic analysis of the growth of manufacturing from 1849 to 1920. In addition much special service has been rendered to subscribers of the board, governmental organizations and others through the exhaustive files of non-published material.

Investigations of the Board have covered such subjects as wages and hours of work, cost of living, industrial pensions, employment of young persons, cost of government, tax burdens and public expenditures, the economic significance and legal status of trade associations, public regulation of competitive practices, interallied debts, and the agricultural problem as related to industrial activity.

New Haven R. R. Wants Coal

The New York, New Haven & Hartford R.R. requests bids for 360,000 to 400,000 net tons of high-volatile bituminous mine-run coal required on the east end of its line, or on 200,000 to 225,000 tons for the Boston district. Deliveries are to be made alongside the company's coal-discharging plant at South Boston in approximately equal monthly quantities between July 1, 1926, and July 1, 1927. Complete specifications may be obtained at the office of the company's fuel agent, J. F. Manning, New Haven, Conn. Bids will be opened at noon on June 4.

Burns Bros. Likely to Buy Rubel Coal Co.

Negotiations now said to be under way foreshadow the early acquisition by Burns Brothers of the Rubel Coal & Ice Corporation, one of the largest distributors of coal in Brooklyn and adjacent sections of Long Island.

Sanders Wertheim, president of Burns Bros., refused to confirm or deny reports of negotiations for the purchase of the Rubel company. "I do not want to make a statement about it now," he said, but did deny a report that the deal had been closed, saying positively, "We have not bought them."

Samuel Rubel, president of the Rubel Coal & Ice Corporation, when asked about the report, answered through his secretary that he knew nothing about it. From other quarters, however, it is learned that conferences on a proposed merger of the two companies have been held and it is believed that a consolidation is likely soon.

The Rubel Coal & Ice Corporation has expanded rapidly from the days when it was started by Samuel Rubel, a poor Russian emigrant, with a coal peddling wagon. In the past year it has had a particularly rapid growth. About a year ago Mr. Rubel acquired a large number of independent coal and ice companies in Queens County. More recently his company bought the Commonwealth Fuel Corporation, one of the leading distributors in Brooklyn with large pockets strategically located both on the waterfront and alongside railroads.

The Burns Bros. company last year added to its facilities in Brooklyn by the acquisition of the Wyoming Valley Coal Co.

Dalrymple Flouts Suspension; Incompetence Charged

Fort Smith, Ark., May 24.—District No. 21, United Mine Workers, has two presidents, but the muddle may be cleared up here when William R. Dalrymple, supposed to be suspended, is tried on charges alleging incompetence in office. Gomer Jones, vice-president of the district, has been appointed acting president by the Executive Board, which suspended Dalrymple. Dalrymple has ignored the action of the board, however, and has retained charge of the Muskogee district headquarters.

George Patterson, secretary, said that Dalrymple regards the board as a "rump" organization and that he has refused to turn over the office to Jones without instruction from international President John L. Lewis, who never has recognized Jones as acting president.

According to Patterson, only five of the seven members of the board were present when Dalrymple was suspended, making the action illegal, according to interpretation of the by-laws. All five voted for Dalrymple's suspension, however.

"The rump board meeting charges Dalrymple with everything in the world," Patterson said. "Their main grievance, however, is his refusal to meet with the coal operators and discuss wage reductions."

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Uniform, Acceptable Preparation of Anthracite Demanded by Retailers; Voice Opposition to Federal Control

Strict maintenance of uniform and acceptable standards of anthracite preparation was demanded by the National Retail Coal Merchants' Association at its ninth annual convention, held at the New Willard Hotel, Washington, D. C., May 17-19. Producers also were asked to inform each distributor of the standards in force so that dealers may "test all shipments and obtain proper adjustment on all tonnage that does not conform to the standards so established."

The association, in a resolution adopted the closing day of the convention, reiterated its opposition to government control. Attempts to regulate mine labor, it declared, are futile. To single out coal would not only be discriminatory but dangerous in that it would "create a precedent for the injection of government and a federal bureaucracy into the field of business, which should not be allowed to become a battle ground of politics."

The stand taken on anthracite preparation was foreshadowed the first day of the convention, when a majority of the delegates agreed that most producers were shipping coal containing more than the permissible maximum percentage of undersize. "In the old days," said Roderick Stephens, chairman, government relations committee, who opened the attack, "we heard a lot about 'flexible standards of operation.' Whenever the situation arose where it seemed necessary to 'ease the situation,' it was done, and no operator felt that he was guilty of any improper or unethical standard if he adjusted his production. However, it seems to me that an operator, generally speaking, would look down with scorn on any dealer who mixed pea coal with chestnut and sold it as nut, or sold buckwheat and mixed rice with it. I submit that that practice on the part of the retailers is equivalent to fraud. I do not charge the operators with fraud because I do not think we have put it up to them right, but I think it is up to us to do it, and I think we can with the buyer's help."

General Complaint of Undersize

The resolution as reported to the convention stated it had been "the general experience of the retail trade since the termination of the strike that a large amount of chestnut, pea and buckwheat had contained a greater quantity of undersize than authorized under the new standards." This was modified to read: "It has been the general complaint." In indorsing this change, Mr. Stephens said he believed the retailers could develop specific facts to warrant their accusations, but that it might be unfair to make the flat assertion in a formal resolution until supporting data had been put on record. There was, however, no question that "complaint" had been general.

Part of the present difficulties confronting the dealers in moving anthracite, in the opinion of some of the New York State groups, lies in the trade nomenclature. These groups urged that the operators abandon the name "chestnut" and give a new designation to that size. The suggestion was referred to the resolutions committee, headed by W. A. Clark, president, New England Retail Coal Dealers' Association. That committee, however, took no action in the matter, preferring to leave the question for the consideration of the incoming board of directors.

The first session of the convention was devoted to the presentation of reports of officers and standing committees. President Samuel B. Crowell pointed to the English situation as a warning against government regulation of coal and declared an unhampered industry could function best in the public interest. Joseph E. O'Toole, resident vice-president, urged greater financial support of the organization. Mr. Stephens reviewed the legislative situation. There is, he said, no justification for omitting coke and fuel oil from a regulatory program, but the public interest will be best served if there is no regulation of any kind.

Operators Seek Good Will

Daniel T. Pierce, vice-chairman, Anthracite Operators' Conference, said "there never was a time when the operators were so anxious to discharge their responsibility, so eager for the good influence of the public, for the cooperation and the help of the dealers, and generally so determined to maintain their position in spite of every obstacle." The producers proposed to use the four and one-half years' freedom from labor troubles under the new agreement to engage in an intensive merchandising campaign.

Mr. Pierce expressed the hope that the industry, "within a short time," would adopt standards under which certified coal "will be sold by dealers handling only certified coal." With such machinery in operation, "it would not be a question of putting it up to the dealer to 'kick' about coal he thought was not up to specifications." The coal "would be subject to inspection that would dispose of that and relieve the dealer of any embarrassment in dealing with such cases."

Disclaiming any intention of uttering a threat, the speaker asked the retailers what they would do if they had $750,000.000 invested in the business, "and the dealers who were distributing the products were, in a good many cases, quite as much interested in soft coal." He was certain, he said, that the anthracite operators "are not going to allow this product to be handled as the adjunct of an oil business or as the tail-end of a soft-coal business." Retailers who would co-operate with the anthracite industry, he declared, would find the door wide open. "If you don't know us better, if you don't get out of us what you want, it is going to be very largely your own fault."



Photo Underwood & Underwood

James C. Tattersall

Newly elected president of the National Retail Coal Merchants' Association.

"Trade-Marked Coal" was the first topic of discussion at the meeting on May 18. Mr. Pierce thought it impossible to physically brand the coal, but agreed there should be some protection which would assure the dealer he was actually receiving what he purchased. Stanley C. Higgins, secretary, New River Coal Operators' Association, said that one shipper actually labeled some of the coal.

Mr. Clark decried the policy of many coke producers who distributed their product direct to the consumer. Lester C. Bosler, of Madeira, Hill & Co., and D. H. Pape, assistant to the executive secretary of the National Coal Association, discussed methods of meeting fuel-oil competition.

Domestic Future for Smokeless

W. C. Atwater, president, Pocahontas Operators' Association, the principal speaker on May 19, predicted a big domestic future for screened smokeless coal. He cited the growth of deliveries of that fuel in his own retail business at Fall River, Mass., to support his belief. Low-volatile coal, he said, was too good to burn under steam boilers. "In New England, so far as our coal is concerned, it is entirely in your hands. You can make us or you can break us. We are here; we have a fine product and we are going all the while. We are not afraid of gas; we are not afraid of oil; we are not afraid of anthracite. If you could visualize twenty-five or fifty years from now you would see in New England a place where coal from southern West Virginia is known in every household."

James C. Tattersall, Trenton, N. J., was elected president, succeeding Mr. Crowell, who declined to consider another term. Rudolph Reimer, Brooklyn, was chosen as treasurer. Milton E. Robinson, Jr., Chicago; J. Maury Dove, Jr., Washington, D. C. (re-elected); W. A. Clark, Boston, Mass. (re-elected); G. W. Malcomson, Detroit, Mich.; C. B. Staats, Albany, N. Y. (re-elected), and George T. Kinney, Kansas City, Mo., were elected vice-presidents.

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Desist Order Issued To Midwest Retailers; Sanborn Co. Absolved

The Federal Trade Commission has issued a cease and desist order directed to the Mid-West Retail Coal Association, formerly known as the Missouri State Retail Coal Merchants' Association, its officers and members. The respondent association, according to its constitution, made eligible for membership those engaged in the business of selling coal, coke or other fuel at retail with facilities and stocks sufficient to meet the reasonable demands of the public in their respective communities. The association's office is in St. Louis.

The proceedings against the J. B. Sanborn Co., of Chicago, Ill., named as a respondent in the complaint, were dismissed by the Commission.

The Commission found that the respondents, co-operating together and acting in concert, hindered and prevented the purchase of coal in interstate commerce by and between producers, jobbers and wholesale dealers and individuals by various unfair means.

Cites Alleged Unfair Practice

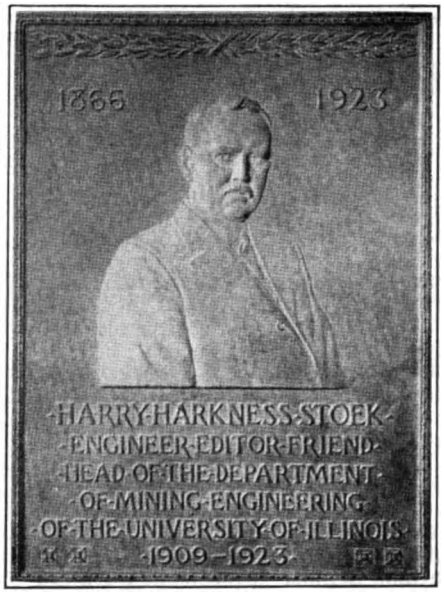
The unfair methods used by the respondents, according to the Commission, and which the order specifically prohibits, are indicated by the terms of the order, which state that the respondents must discontinue:

(1) Arbitrarily classifying sellers and purchasers of coal and shipments thereof as "Snowbird" shippers, "Snowbirds" and "Snowbird" shipments, respectively, or by any similar or other terms because of or according to the extent or degree of equipment owned by the said purchasers or employed by them in the sale, movement or distribution of coal, or causing any such classification to be published in any trade paper or other publication, or to be communicated to others or among themselves, in that or any other manner.

(2) Designating or causing to be designated, in articles or editorials in any trade paper or other publication, or in any other manner or by any other means, any individual, firm, corporation or association, or groups thereof, as the vendor or purchaser of coal, or their shipments of coal by using or causing to be used denunciatory, scurrilous, abusive or derogatory language of and concerning them or either of them.

(3) Soliciting or receiving between or among themselves or with others and or circulating between and among themselves or with others communications or reports, either printed, written or verbal, having the purpose, tendency or the effect of inducing, coercing or compelling producers, jobbers or wholesale dealers in coal, their agents or their brokers, directly or indirectly, to refuse to deal with or to sell coal to any person, firm, corporation or association.

(4) Threatening with loss of patronage or custom, any producer, jobber or wholesale dealer in coal, or his agent or broker, for selling or agreeing to sell to any person, firm, corporation or association, or from persuading any such producer, jobber or wholesale dealer in coal not to sell coal to any person, firm, corporation or association.



Memorial Tablet to Professor Stoek

Friends Present Stoek Tablet To Illinois University

Memorial exercises in honor of Prof. Harry Harkness Stoek, who died on March 1, 1923, were held in the engineering library at the University of Illinois on May 2, when a tablet in commemoration of his work was presented to the university.

Prof. A. N. Talbot, head of the department of theoretical and applied mechanics, presided. E. A. Holbrook, dean of the School of Mines of Pennsylvania State College, delivered an address emphasizing the work of Prof. Stoek as engineer, editor and educator. Prof. S. W. Parr's topic was "Professor Stoek —Friend."

The tablet, which is of bronze, about 42 by 60 in. in size, was the gift of nearly two hundred friends of Prof. Stoek. It was presented to the University on behalf of the Stoek Memorial Committee by Prof. A. C. Callen, head of the department of mining engineering, and was accepted for the university by Prof. A. P. Carman, head of the department of physics. The memorial tablet is the work of the noted sculptor Lorado Taft, of Chicago.

Sonman Shaft Coal Co. Sold

One of the most important coal deals in central Pennsylvania in several years has just been closed, through which the Sonman Shaft Coal Co., with holdings at Sonman, Cambria County, has been sold by Thorne, Neale & Co., of Philadelphia and New York, to A. H. Powell & Co., Inc., of New Haven, Conn. The new owners will take over the property on June 1. J. Malcolm MacDougall, of Johnstown, general superintendent, and all of the other officials will be retained.

The Sonman Shaft Coal Co. property comprises more than 3,000 acres of coal. At the present time the company is working three seams and has a capacity of 750,000 tons a year. The operation employs more than 750 men when the mines are working at capacity. At present 600 men are at work.

California Dealers' Prepare To Combat Oil and Gas

California railroads, gas plants and manufacturing establishments largely rely upon petroleum for fuel. Hydroelectric power development has grown to a noteworthy extent and transmission lines lead to every important center. Marine bunkering has shrunk to insignificant proportions. Solid fuel has been displaced by liquid fuel until practically only the house-heating field remains and even in this the competition of both gas and oil is keenly felt. Although population has doubled in the past ten years, the solid-fuel business has remained practically stationary in aggregate sales and has diminished in number of distributors. Active selling campaigns by gas- and electric-appliance men have made inroads upon the field of solid fuel.

To study to conserve their market, the retail coal dealers formed the California Retail Fuel Dealers' Association, which held its annual meeting at Del Monte April 24 to 26. R. E. Wilcox is president of the Association and J. B. Muir, secretary.

In the report of the executive committee, it was stated that progress has been made in obtaining correct weight and less spillage on coal deliveries; the need for statewide advertising of better appliances for burning coal was touched upon; a summer storage advertising of better appliances for burning coal was touched upon; a summer storage advertising campaign was stated to have been successful; advertising coal on its merits was advocated; better preparation of coal by the mines was discussed and the need of co-operation between coal operators and dealers was stressed.

See Chance for Lower Rates

In the report of the traffic committee, J. C. Ewing stated that a new freight rate from Utah to Pacific Coast points to encourage the movement of pig iron has been made and as this is lower than that prevailing for coal, efforts were being made to obtain a similar rate for coal.

A paper by Louis Ross on the psychology of advertising was read by Secretary Muir. Mr. Ross said that coal merchants have not advanced beyond the point of telling the public that they have the coal for sale. The use of coal has many possibilities—the public has to be convinced that it needs coal and that there are many advantages attendant upon its use.

B. D. Myers, district freight agent of the Southern Pacific Co., who addressed the convention on the general subject of co-operation, made the announcement that the Southern Pacific was converting 48 freight locomotives from oil to coal burners and would return to coal on its El Paso division. M. F. Murry discussed the efficiency of coal furnaces and showed the necessity for good furnace construction and proper flue proportions. J. F. Mullen presented a report on the efforts now being made to amend the building ordinances by providing minimum flue dimensions for different situations as well as adequate chimney extensions.

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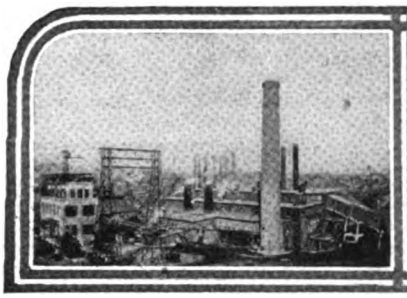
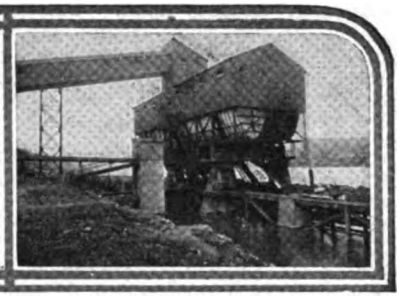


News Items From Field and Trade



ALABAMA

The Southeastern Coal Co. is building fifty 5-room dwellings for its employees at Gorgas, or Winona, formerly operated by the Winona Coal Co. This mine is located in Walker County, on the Warrior River, adjacent to the Gorgas steam plant of the Alabama Power Co., which consumes the output of the mine, the operating company being a subsidiary of the power company.

Output High in Alabama.—Alabama produced 20,408,656 tons of coal during the calendar year 1925 according to official figures of State Mine Inspector Charles H. Nesbitt. This represents a gain of 792,725 tons over the output of 1924, which was 19,615,931 tons, and has been exceeded only twice before in the history of the industry in this state, 20,413,811 tons being mined in 1917 and 20,919,303 tons in 1923. Production to date this year is showing about a 5 per cent gain over 1925. Other statistics on the industry for 1925 are not yet available.

The commissary, office and supply houses of the Pratt Fuel Corporation at Dora No. 1 mine were destroyed by fire which started in the store building May 5. The loss is estimated in the neighborhood of $50,000. Walter Moore is president of the company, the offices of which are in Birmingham.

Dedicate Stadium.—The large new stadium of the Tennessee Coal, Iron & Railroad Co., recently completed at Fairfield, was formally opened May 19, with the spring festival of the social science department of the corporation. About 3,000 employees of the company were in attendance. The stadium is of concrete and steel construction and will accommodate about 10,000 people.

Construction by the Frisco line of the connecting link between its main line at Aberdeen, Miss., and Kimbrough, Ala., the northern terminus of the Muscle Shoals, Birmingham & Pensacola R.R., recently acquired by the Frisco, for which permission is now pending before the Interstate Commerce Commission, would afford a direct route from the coal fields of Walker County to the Port of Pensacola. It is planned to eventually construct a line from Bessemer, in the Birmingham district, to Magnolia, where it will tap the new line.

Railway Fuel Tipple Completed.—The new steel tipple of the Railway Fuel Co. at its Parrish Mine, in Walker County, has been completed and placed in operation. The cost of the structure was approximately $50,000. Two rotary dumps were installed and other improvements made which will allow an increased production from this operation, which is one of the largest in the Walker County field. The operating company is a subsidiary of the Southern Railway Co., the total output of which, around 2,500 tons per day, is used on the lines of the railroad system.

Mill Creek Washery Open.—A new washery has been completed at the Chickasaw mine of the Mill Creek Coal Co., near Carbon Hill, Walker County. This is an opening on the Jagger seam and is served by the Frisco railroad. The company also operates the Mill Creek mine, in the same vicinity.

Suspected Firebugs Caught.—According to reports from the State Fire Marshal's office in Montgomery, two men are under arrest in connection with the mysterious destruction by fire recently of the tipple and washer plant of the Galloway Coal Co. at Holly Grove, Walker County, which entailed a loss of about $75,000, with insurance of only $30,000. The fire is believed to have been of incendiary origin.

ILLINOIS

Kathleen Mine Mechanized. — The Kathleen mine, at Dowell, five miles south of Duquoin, is again operating after a period of no work and is now producing coal which is mechanically cut, loaded and hauled. While the mine was idle arrangements were made to bring into use a large number of loading machines which were already installed in the mine but had never been put into practical operation. With the machines in use fewer men are employed than formerly.

After a long period of idleness three hundred men have returned to work at Paulton No. 3 mine, near Marion, owned by the Cosgrove-Meehan Coal Co.

The Coal Belt Electric Ry., a short coal road in Williamson County, has filed a petition with the Illinois Commerce Commission for permission to discontinue operation of its line which runs from Marion to Energy, Energy to Carterville, and Energy to Herrin, a distance of 13.46 miles in all. The petition of the company states that it has not made operating expenses for the past ten years. In recent years it has suffered increasing loss owing to greater traffic by truck and autmobiles.

Peabody Mine No. 6 hoisted 4,727 tons of coal in one day recently, which broke the record of the Springfield subdistrict.

A company is being formed at McLeansboro to open coal mines in and around McLeansboro in Hamilton County, it has just been announced. Shaft mines will be driven.

Catlin Mine to Resume.—The Taylor-English Coal Co. is making preparations to reopen its mine at Catlin, a few miles from Danville. The mine has not been in operation for the last twelve months.

Involuntary bankruptcy proceedings have been begun against the Earl Mapleton Co-operative Coal Co., at Peoria, by creditors whose claims are $1,000. The company has assets of $15,000 and liabilities of $22,000.

Seven hundred men have been thrown out of employment by the shutdown of Peabody Mine No. 8, at Tovey. The mine, which had been working steadily for some time, will be closed until next November.

The closing down of Wasdon Coal Mine No. 1, east of Harrisburg, has been followed by the opening of Wasson Mine No. 2, just west of Carrier Mills. This mine had been closed about two years.

INDIANA

Modernization Advances.—The Knox Consolidated Coal Co., which owns the Indiana Creek, the Westphalia Fifth Vein and other mines in Knox County, is building a new steel tipple at the Indian Creek shaft and is converting the Westphalia mine into an electrically operated plant. Work at the latter place has gone on without interrupting the mining. The Indian Creek has been idle several months, due to destruction of the old tipple by fire. The new one is to be completed by July 1. It is to be fireproof and have two tracks. It will load four kinds of coal at the same time. The company employes about 2,100 men normally, excluding the Bruceville mine, which has been idle several years.

One of the most disastrous mine fires in the history of Indiana was sealed in the depths of the Ebbwvale mine, three miles south of Sullivan, last week after efforts to extinguish it proved unavailing. One hundred volunteers had fought the flames five hours. Three men who were in the mine when the fire broke out escaped unharmed.

Charles W. Cook, wealthy ice manufacturer of Evansville, has acquired an interest in the Stock coal mine, at Chandler.

Twenty-two union miners indicted for rioting at the Hampton-Schimmel mine near Newburg, on Feb. 16, were acquitted by a jury in Warrick County Circuit Court, at Boonville, May 15. Perjury charges may grow out of certain testimony offered by some of the defendants, Prosecutor Warren Martin declared. A grand jury will be asked to make an investigation, Circuit Judge

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Caleb J. Lindsey said. Thirty-eight union miners were found guilty of assault and battery in the court three weeks ago on charges growing out of demonstrations at other southern Indiana mines on the same date.

The third mysterious fire in properties of the Knox Consolidated Coal Co. this year occurred May 13, when the tipple of the Fourth Vein coal mine, near Vincennes, burned. The loss is estimated at $50,000. Between 200 and 300 men were thrown out of work by the fire. The tipple will be rebuilt immediately, it was announced at headquarters of the company, at Indianapolis.

While pulling into the "high bank" under heavy strain the boom of one of the steam shovels at the mine of the Pike County Collieries broke, causing a repair job that may last 30 days. The men working on the shovel and in the coal pit below escaped injury.

IOWA

Work on the coal mine at Eldora is progressing steadily. Two shifts are now at work. The shaft is to be sunk 125 ft., where a good seam of coal is located.

KANSAS

Sinking New Mine. — The Pittsburg Coal Co. has begun sinking a new mine a mile south of Cherokee. Drillings show that the coal, which is at a depth of 120 ft., is of good quality and ranges from 3 to 4 ft. in thickness. The company plans to equip the mine with electric hoist, mining machines, electric haulage and other electrical equipment. When the shaft is fully developed it will employ 100 men. The company has operated extensively in the northern part of the Pittsburg field but this mine is its first development in the southern part.

KENTUCKY

Pays $23,300 for Coal Property.— W. O. B. Wright, president of the Cedar Creek Lumber Co., at Pineville, has purchased for $23,300 the bankrupt Kentucky Elkhorn By-Products Co. mines at Dorton, which were closed on Jan. 6. The properties three years ago were valued at $300,000, and $225,000 was refused. Improvements represent an outlay of $247,000. There is a tipple, side tracks, 41 miners' homes, commissary and a large coal tract including 221 acres in fee simple. One seam has 500 acres of 6-ft. coal; another 1,000 acres of 4-ft. coal and a third seam, unworked, has 1,110 acres. The buyer plans to start operations within thirty days, operating as the Wright-Elkhorn Coal Co.

Indications are that the Federal Power Commission will refuse the application of the Cumberland Hydro-Electric Co. for a permit to harness the Cumberland Falls, on the Cumberland River, as the result of a wave of protest against destroying a thing of beauty. The company, which is a subsidiary of the Kentucky Hydro-Electric Co. and the Kentucky Utilities Co., would supply current to a network of lines that carry current to many mines and towns over the state.

The State Tax Commission has reduced the recent 20 per cent special raise on Henderson County coal right assessment to 10 per cent. The original increase was $56,000, but as it now stands it will be only $28,000.

Elk Horn Coal Corporation reports for the quarter ended March 31, 1926 net profit of $61,653 after depreciation, depletion, interest and federal taxes. The company reported a deficit in corresponding period a year ago.

Ready for Heavier Loads.—W. F. Sheridan, superintendent of the Louisville division of the Louisville & Nashville R.R., reports that the road has started using much larger locomotives in the western Kentucky fields, due to replacement of some trestles with heavy fills and reduction of the grade over Muldraugh Hill, about forty miles south of Louisville.

L. & N. Surveying Coal Lands.—Surveying crews are reported to be working up the Middle Fork of Kentucky River, near Krypton, in Perry County, past Hyden and as far as Greasy Creek, on the southern edge of Leslie County, where there is much fine coal land, but no railroads. It is understood that the Louisville & Nashville R.R. is making the surveys.

The machine shop, supply houses, commissary, etc., of the Southeast Coal Co., at Seco, in Letcher County, near Whitesburg, was burned on May 16, in a $40,000 fire. The building will be rebuilt at once.

NEW YORK

More Semet-Solvay Ovens.—Semet-Solvay Co. has announced that construction of an additional battery of coke ovens which will result in doubling the capacity of its present plant near Buffalo is to begin soon. It is expected that the new ovens will be in operation in about a year.

Coal Maintenance Corporation, New York City, has filed a certificate in the Office of the Secretary of State at Albany increasing its number of shares from 500 shares preferred stock of $100 par value to 1,000 shares preferred of $100 par value and 100 shares common stock of no par value to 2,500 shares common of no par value. Max Silverstein, 305 Broadway, New York City, is attorney for the corporation.

The four steamers of the Eastern Grain, Mill & Elevator Co., of Buffalo, built in Scotland for the coal and grain trade are about ready for business from Buffalo. The "John S. Pillsbury" recently unloaded a cargo of coal at Toronto, and the other three, with two cargoes of coal and one of fluorspar, are at Montreal on the way in.

OKLAHOMA

Earl Wells and Frank Barrow, of Henryetta, have acquired the Sorrels coal mines, at Poteau, and will develop them.

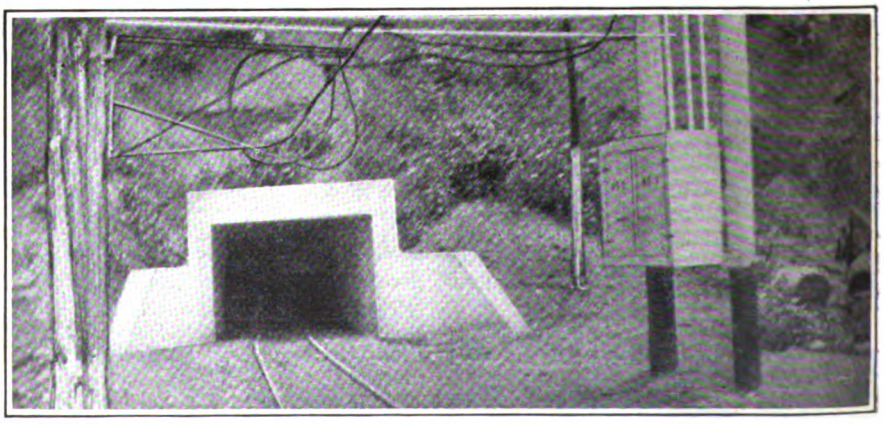
PENNSYLVANIA

Gas Blast Injures Three.—An explosion of gas at 8 a.m., May 14, in the Red Ash vein of the Nottingham colliery of the Lehigh & Wilkes-Barre Coal Co., at Plymouth, resulted in three mine workers being injured, one seriously burned about the head, face, hands and body, and the other two sustaining scalp wounds and bruises about the ribs. Assistant Superintendent Ted Griffith found that the blast occurred in the face of a chamber in No. 12 slope, 11th East Red Ash Vein. A pocket of gas was ignited, but just what set it off is not known.

The Vesta Coal Co., a subsidiary of the Jones & Laughlin Steel Corporation, has contracted for the erection of 150 dwelling houses for the new development being started in Greene County.

The Republic Iron & Steel Co. coal mines in the Connellsville coke region, which had been working nearly full for several weeks, are laying off one or two days a week.

Union Grip Waning.—Eighty per cent of the coal now being produced in central Pennsylvania bituminous district is being mined on a non-union



Anna Louise Portal, Plymouth Mines

Operation of the Hatfield-Reliance Coal Co., at Plymouth, near Winfield, W. Va., in Putnam County just below Charleston on the Kanawha River. Coal is loaded on the Kanawha and on the Kanawha & Michigan R.R. tracks. The track gage is 30-in.

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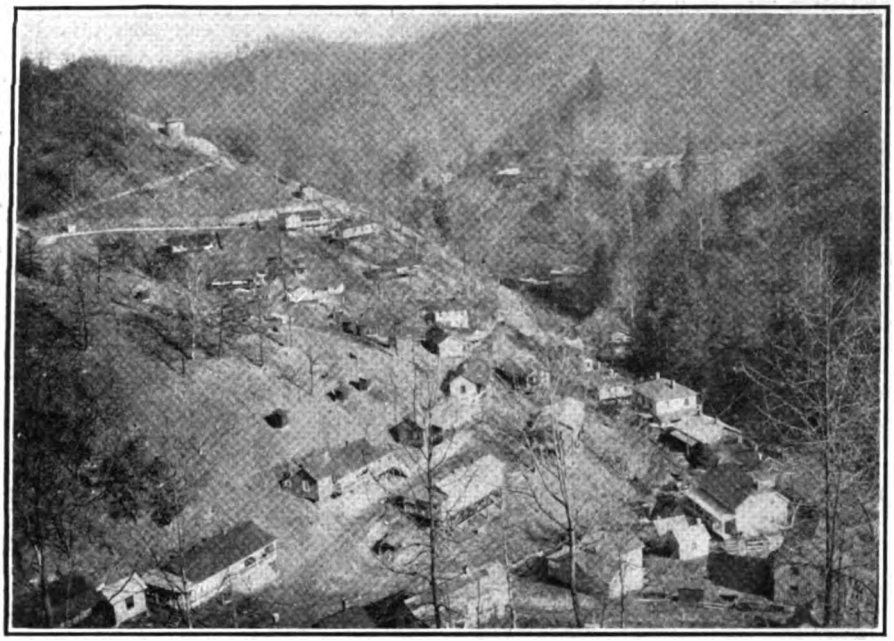

Portion of the Mining Town of Six, W. Va.

The narrowness of the valley made it necessary to build some of the houses on the mountain side. Storage for the town water supply is in the tank at the upper left. In the center background are a dumphouse and retarding conveyor.

basis, Charles O'Neil, secretary of the Central Pennsylvania Coal Producers' Association, said. "Cambria is the only county among the 14 comprising the district that has retained the union scale and it is believed the mines there will soon be obliged to follow the other counties in order to sell in competition with sections east of the Ohio River," he said.

City Gets Bargain Coal.—The Philadelphia Board of Education has awarded a contract for delivery of 60,000 tons of buckwheat to Frank F. Mathers at $4.87 delivered in the cellars of the schools. The price has caused endless comment in the trade on account of its extreme lowness when compared with current company quotations. Based on the contract price of $2.50 of the biggest company shipper, plus freight of $2.14, on one-car price would be $4.64. As no one presumes that delivery can be made for 23c., it is conjectured that some large producer rather than store buckwheat on the ground at a cost of $1 a ton to lay it down and pick it up again, not to mention interest charges, simply deducted this charge from the price of the coal, which would give the dealer delivering it a margin of about $1.23.

Wooden Breaker for Hazle Brook.—A contract has been awarded for the erection of a new breaker at Keffers for the Hazle Brook Coal Co. It is understood that 1,000,000 ft. of lumber will be used in the new structure, which will be one of the few modernly equipped breakers in the anthracite field in which lumber will be used in preference to steel. The Hazle Brook company also is planning to construct sidings leading from the new breaker to the Philadelphia & Reading Ry.

Stripping Uses Big Blast.—One of the largest test blasts of dynamite in the history of the Shenandoah region was set off recently at the Shenandoah City colliery stripping when 7,000 lb. of dynamite lifted 12,000 cu.ft. of rock and earth and bared a long stretch of available coal. The dynamite was discharged from 36 holes varying from 25 to 50 ft. in depth. The charge exploded with a loud roar but the work was not spectacular for the rock and dirt appeared to be gently lifted a few feet into the air and then rolled down to the base of the stripping hole.

Idle Washery Destroyed.—Fire recently destroyed a washery at Dunmore owned by the Quinn Coal Co. The plant had been idle for several months, but the owner intended to resume operations.

Abandoned Breaker Burns.—Fire recently destroyed the abandoned breaker of the Madeira-Hill Coal Co. at New Boston. Fireman saved a valuable exposed coal vein, a culm bank and also prevented the flames from starting a forest fire in Broad Mountain.

WEST VIRGINIA

Production Report Nearly Ready.—The state Department of Mines announces that coal production in West Virginia in 1925 was approximately 122,000,000 net tons. These figures are in sight with only two reports lacking to complete the tabulations.

Rock-Dust Four Miles at Eccles.—No. 5 mine of the Crab Orchard Improvement Co., at Eccles, Raleigh County, where an explosion occurred in March, now has four miles of the entries rock-dusted.

Safety day will be observed in the mines of West Virginia on Aug. 31, according to Robert M. Lambie, chief of the state Department of Mines. Safety meetings will be held all over the state on that day, it is reported.

Modernizing Red Jacket.—The Red Jacket Consolidated Coal & Coke Co., Inc., Red Jacket, Mingo County, is rebuilding its tipple at No. 5 mine and is installing screens and making other improvements. At the No. 6 mine a new gathering motor recently was installed.

Postpone Institute Meeting.—Instead of holding the semi-annual meeting of the West Virginia Coal Mining Institute on June 1 and 2 as originally planned, Robert M. Lambie, chief of the West Virginia Department of Mines and president of the institute, announces that the meeting will be held on July 13 and 14. Inasmuch as many meetings are scheduled to be held in various parts of the state during the early part of June, postponement of the meeting of the institute was thought to be desirable so that the attendance might not be adversely affected.

Four hundred miners and their families attended a safety meeting at Havaco, McDowell County, on April 23, which was one of the largest of the present series. Addresses were made by Robert M. Lambie, chief of the state Department of Mines; W. H. Forbes, division engineer of the U. S. Bureau of Mines, and others. The mine of the New River-Pocahontas Consolidated Coal Co. is located there.

CANADA

To Merge River Hebert Mines.—A merger of coal operating companies in the River Hebert region is being effected under the title of the Canadian Coal Co. Randolph Emmerson, who is active in the negotiations, predicts the arrangement of final details within a few weeks. The intention is to float a bond issue of approximately $1,250,000, all of which to be placed in England, Ireland and Scotland. New shipping piers will be erected at Joggins, which would reduce the cost of shipping the coal by water. According to Mr. Emmerson, the new company will absorb practically all the companies operating in the River Hebert area except the Maritime Coal, Railway & Power Co., which will continue as a unit.

The Bras d'Or Coal Co., operating in the Bras d'Or Lakes territory, has placed a fleet of steam and a sailing craft in commission between the mines of the company and ports in the maritime provinces, New England and Newfoundland. George Burchell, president of this company, recently added the schooner "Arabia" to the fleet, and the fleet is now complete for the shipping operations of this year. Mr. Burchell expects the company's own fleet to create a big reduction in the cost of shipping the coal from the Bras d'Or pits this year. Hitherto, the company had to depend on chartered vessels and on the railroads.

Lowest Alberta Rate Is $9.—The Canadian National Rys. will not change its stand that $9 per ton is the lowest rate at which Alberta coal can be brought east, Sir Henry Thornton, president of the road, said on his arrival in Toronto. If instructions were issued that a lower rate should be fixed, Sir Henry said, it would be done, but, he added, someone would have to pay the cost.

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Among the Coal Men

B. E. Riggs, mining engineer, who has been chief inspector for the Central Pocahontas Coal Co. at Welch, W. Va., will take a fling at the sales end of the business. He succeeds F. E. Yarnell as representative of the company at Fort Wayne, Ind. Mr. Yarnell some time since purchased a sand and gravel business in Philadelphia, which now requires his whole attention. He formerly was mining engineer and chief inspector for the company.

Lester E. Westenfelder, principal of mining at the U. S. Marine Corps Institute, Washington, D. C., announces the recent graduation of the following students in the firebosses' course: First Lieutenant Carl Gardner and Corporals Oliver Pauley, Frank D. Quinn and John Nagy.

Ben H. English, formerly superintendent of the Pemberton Coal & Coke Co., with headquarters at Affinity, W. Va., has assumed the duties of superintendent at Ashland, in the McDowell County field. He had been connected with the Pemberton company for the last five years.

Earl Harmon, formerly of the Carnegie Coal Co., Pittsburgh, Pa., has become associated with the General Fuel Co. of Philadelphia and Pittsburgh, in charge of the Pittsburgh office.

Francis Winslow, who has been in charge of the metal-mining branch of the Natural Resources Division of the Chamber of Commerce of the United States, will hereafter also direct the coal activities of the Chamber. This work previously was in charge of Major C. T. Starr, who recently resigned to accept the post of assistant to the president of the Pittsburgh Terminal Coal Corporation, with headquarters in Pittsburgh, Pa.

Leonard E. Adams, purchasing agent for the Knight Fuel Co., Salt Lake City, Utah, for the past decade, has been appointed general sales manager, succeeding J. A. Stallings, who died some months ago after holding that position for several years. The new purchasing agent is **D. Vern Shurtliff**.

A. D. Grasso, who left Buffalo about two years ago to become sales manager of the Valley Coal Co., at Brockway, Pa., which he had represented at Buffalo for some time, has organized a new coal company bearing his name, and takes over the Liberty mine in that vicinity with present output of about 400 tons. He has become president of the company. The Valley Coal Co. mine is shut down.

Col. C. W. Watson, president of the Consolidation Coal Co., with headquarters at New York, and other executives of the company inspected the mines of the Pocahontas and New River division of the company, on May 10. Others in the party were G. J. Anderson, executive vice-president, New York; F. R. Lyon, operating vice-president, Fairmont; G. W. Hay, general manager of operations, Fairmont; R. E. Rightmire, engineer of tests, Fairmont; C. S. Moss, general manager of stores, Fairmont; A. T. Watson, director of purchases and stores, Fairmont; H. T. Giffin, architect, Fairmont, and R. S. Melendy, New York. F. K. Day and other officials of the Pocahontas-New River division accompanied the executives on their tour of company properties in the southern West Virginia field.



Photo by Harris & Ewing

Wayne P. Ellis

Wayne P. Ellis was appointed Northwestern sales agent of the Berwind Fuel Co., with offices in Minneapolis, Minn., on May 1. Mr. Ellis organized the Ellis Coal Bureau nearly a year ago, previous to which time he was secretary of the Northwest Coal Dock Operators' Association. During the strike of 1922 he was in the employ of the U. S. Government, following two years as secretary of the Davis Coal & Coke Co.

Frank M. Davis, long connected with the Buffalo & Susquehanna Coal & Coke Co., has been made vice-president and manager of sales of the company. Dynamiters have lately tried to blow up the company's mine at DuBois, Pa., which is operating at a reduced wage rate.

"It's a good year for coal; I can't say much about steel," said **J. E. McLurg**, vice-president in charge of British Empire Steel Corporation operations, after a conference with President R. M. Wolvin. The vice-president would say nothing about rumors in circulation concerning a reorganization of the British Empire Steel Corporation.

J. G. Puterbaugh, president of the McAlester Fuel Co., McAlester, Okla., who is interested in a number of producing companies in Oklahoma and Arkansas and is a director of the National Coal Associaton, addressed the Texas Retail Dealers' Association, at Dallas, on May 17; the Oklahoma Retail Dealers' Association, at Enid, Okla., on May 18 and also talked to the Mid-Continent Retail Coal Dealers' Association at Kansas City, Mo., on May 25.

A. B. Lemmon, formerly Chicago manager of the Consolidation Coal Co., has been appointed Western sales manager of the Cleveland-Cliffs Iron Co., with headquarters at Green Bay, Wis. Mr. Lemmon is a son of Captain T. A. Lemmon, formerly connected with the Chicago, Wilmington & Vermilion Coal Co., predecessor of the Chicago, Wilmington & Franklin Coal Co.

Charles A. Cabell, president of the Carbon Fuel Co., Charleston, W. Va., has gone to Micco, Fla., to recuperate. He became ill with influenza at his home in Charleston and was threatened with pneumonia, being confined to his home for almost a month.

Harold Butt was appointed controller of the Colorado Fuel & Iron Co. and its subsidiaries effective May 1.

Obituary

Daniel F. Lepley, 64 years old, president and general manager of the Connellsville Manufacturing & Mine Supply Co., Connellsville, Pa., and an authority on mine machinery and mine equipment, died May 17 in the Connellsville State Hospital. His death was due to heart trouble, pneumonia developing. He organized the mine supply company in 1901 and became its general manager, succeeding to the presidency about three years ago, when Rockwell Marietta died. Mr. Lepley was considered one of the greatest mechanical engineers of this country. He had a very wide acquaintanceship with the leading engineers in his field. Machinery from his plant is to be found in all mining regions of this country and in the biggest mines in this country as well as in many foreign lands.

James C. Schallcross, president of the American Cannel Coal Co., of Cannelton, Ind., died at a hospital at Louisville, Ky., on May 12. He had been in the hospital for about three weeks. Mr. Schallcross was born in Kentucky, but had lived in Cannelton most of his life. Early in life he became interested in coal mining and for many years had been president and general manager of the American Cannel Coal Co. and for the past several years had had complete control of the management of the affairs of the company.

James R. Barnes, who was active in the development of the Klondyke and Greene County coal fields of western Pennsylvania, died May 8 in Hopwood, near Uniontown, Pa., in his 66th year. He worked in the mines with his father in early life, but, realizing the value of undeveloped fields, transferred his activity to the marketing of acreage.

Jacob F. Straight, former secretary and treasurer of the Rivesville Coal Co., Fairmont, W. Va., and for the last three years interested in the coal and real estate business in Florida, died May 17 in Jefferson Hospital, Philadelphia, as a result of diseased glands of the neck, resulting from pneumonia and influenza.

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Traffic News

Illinois Rate Differentials Re-established

The Illinois Commerce Commission has vacated its suspension order on the re-establishment of freight differentials on coal traffic in Illinois, as authorized by the Interstate Commerce Commission a year ago last February. Revisions in rates from all fields to northern Illinois points were immediately made by railroads, which became effective last Thursday.

The case is known as the Illinois Blue Book Docket No. 14891 and tariffs under suspension were originally filed to restore recognized relationships as between various origin groups, effective Feb. 19, 1925. The effective date of these tariffs was postponed from time to time, and the expiration date of the last suspension was May 20, 1926. Hearings were held before the Illinois Commerce Commission on Nov. 10, 1925, Jan. 12, 13, 14 and 15, and Feb. 8, 9 and 10, 1926.

The Commission in its decision found that its order of suspension should be vacated and that the proposed rates should be permitted to become effective. The finding was made with the express understanding that consideration at a later date will be given to the complaint of the northern Illinois operators and to protests filed by consuming interests at Dixon, Rockford and Freeport, Ill.

In its order the Commission also stated that the recent revision in rates from all Illinois mines to East St. Louis and from the Danville group to Chicago made pursuant to its orders, should remain as now published.

In 1920 the Interstate Commerce Commission decided to make an investigation of the differential rates. Five years later the Commission authorized the railroads to promulgate what were considered more equitable rates.

Immediately the Illinois Commerce Commission suspended the rates on intrastate traffic, which gave Saline County operators in southern Illinois an advantage over other shippers in and outside the state. The new rates correct this situation and restore a differential from southern Illinois to northern Illinois destinations of approximately 70c. a ton as against $1 which previously applied.

Iowa Operators Lack Interest In Rate Question

Lack of interest on the part of Iowa coal mine operators stands in the way of the calling of a hearing by the state Railroad Commission to investigate intrastate freight rates on coal, as requested by Governor Hammill's Agricultural and Industrial Commission. This was revealed by Dwight Lewis, of Des Moines, chairman of the commission, four months after questionnaires were sent to every mine owner or operator in the state. Only five operators have replied, and none of the replies, Lewis said, contains any evidence that Iowa coal mines are being prevented from moving coal to the home market by freight rates.

The Governor's Agricultural and Industrial Commission, investigating the coal industry, suggested the rate probe, in a preliminary report to the Governor, showing that many miners are unemployed because of the comparatively small demand in Iowa for the home product.

Hard-Coal Rates to Iowa Held Unreasonable

The Interstate Commerce Commission has found that rates on anthracite from mines in Pennsylvania to points in Iowa are unreasonable as compared with the rates to Chicago and Peoria, Ill.; St. Louis, Mo., and St. Paul, Minn.

The Commission ruled that through rates on prepared sizes on anthracite from the Pennsylvania mines to Iowa points should be reduced where the present rate per ton is $7.20 or $7.33 to $6.81; from $8.22 to $7.40; from $8.34 to $7.66; from $8.46 to $7.86; from $8.58 to $8.06; from $8.71 to $8.26; from $8.83 to $8.38; from $8.75 to $8.50. For the smaller sizes of anthracite the roads were ordered to maintain the same spread under the rates for the prepared sizes as now exist.

Rates on Colorado Coal to Kansas Unreasonable

Reductions in rates from Colorado and northern New Mexico to local points in Kansas on the St. Louis-San Francisco, Midland Valley and Missouri-Kansas-Texas railways are ordered by the Interstate Commerce Commission in *Public Utilities Commission of Kansas vs. Atchison, Topeka & Santa Fe Ry. Co. et al.* The Commission finds that the rates on lump from the Walsenburg district should not exceed $4.60 to local points on the Frisco between Ellsworth and Augusta, $4.85 to local points on the Frisco between Augusta and Arkansas City, and to local points on the Midland Valley between Wichita and Arkansas City, and $5 to M.K.T. local points in Kansas and to certain Frisco local points in Kansas.

Rates on lump coal also are found unjust, unreasonable and prejudicial to the following extent: From the Canon City district to the extent that they exceed or may exceed the rates prescribed from the Walsenburg district, and from the other districts named to the extent that they exceed or may exceed the Walsenburg rates prescribed by more than the existing differences between the rates maintained from Walsenburg and the other districts to junction joints in the same general territory.

Charge of Discrimination in Car Supply Upheld

The Interstate Commerce Commission, in a second report in *A. Spates vs. Baltimore & Ohio R.R. Co. et al.*, decided May 10, holds that the Baltimore & Ohio, in according Western Maryland Ry. service to mines of the West Virginia Coal & Coke Co. on the Coalton branch of the B. & O. from Oct. 14, 1922, to April 1, 1923, while failing to accord similar service to complainant's mine located intermediate thereto unduly prejudiced the complainant in the matter of car supply. To this extent the previous findings of the Commission, 192 I. C. C. 19, are reversed, and the case is held open to permit complainant to file a petition for a further hearing on the question of damages.

Bituminous Coal Loaded Into Vessels at Lake Erie Ports During Season to End of April

(In Net Tons)

Ports	Railroads	1926 Cargo	1926 Fuel	1926 Total	1925 Cargo	1925 Fuel	1925 Total	1924 Cargo	1924 Fuel	1924 Total
Toledo	Hocking Valley	392,605	12,754	405,359	739,538	21,879	761,417	449,041	12,390	461,431
	Big Four	60,894	356	61,250	138,101	.....	138,101	.....	.....	.....
	N. Y. C.-Ohio Central Lines	58,236	3,594	61,830	64,280	6,204	70,484	4,505	227	4,732
	Baltimore & Ohio	138,743	3,115	141,858	219,566	7,021	226,587	71,371	2,280	73,651
Sandusky	Pennsylvania	160,352	4,863	165,215	246,473	7,267	253,740	35,123	909	36,032
Huron	Wheeling & Lake Erie	46,768	1,754	48,522	115,037	5,056	120,093	81,668	3,188	84,856
Lorain	Baltimore & Ohio	36,830	7,787	44,617	21,848	10,308	32,156	42,739	7,976	50,715
Cleveland	Pennsylvania	.....	3,924	3,924	5,870	8,796	14,666	19,887	6,271	26,158
	Erie	.....	.....	.....	16,544	933	17,477	14,315	555	14,870
Fairport	Baltimore & Ohio	8,198	2,414	10,612	13,037	6,187	19,224	7,921	3,595	11,516
Ashtabula	New York Central	11,341	2,307	13,648	52,180	5,800	57,980	30,397	4,063	34,460
	Pennsylvania	54,310	2,952	57,262	36,048	2,554	38,602	26,666	4,630	31,296
Conneaut	Bessemer & Lake Erie	47,587	6,065	53,652	19,683	9,935	29,618	101,272	8,475	109,747
Erie	Pennsylvania	.....	1,123	1,123	5,589	5,064	10,653	4,343	5,654	9,997
Total		1,015,864	53,008	1,068,872	1,693,794	97,004	1,790,798	889,248	60,213	949,461
Storage loading		.....	.....	.....	*33,017	1,048	34,065	*182,060	4,940	187,000

* Coal loaded into vessels in December, of previous year, after close of navigation and forwarded from Lake Erie ports during year indicated.
Compiled by Ore & Coal Exchange, Cleveland, Ohio; H. M. Griggs, manager.

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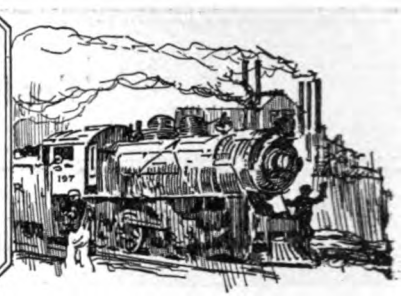
Production And the Market



Prevalence of Seasonal Elements in Coal Market Robs Spot Trade of Notable Features

The bituminous coal markets of the United States are running true to seasonal form. That means that a good volume of tonnage is moving every day, but that the spot markets lack those elements of surprise and suspense which make for feverish trading. Even the British strike—for the time being at least—has lost its power to jar the soft-coal business on this side of the waters out of its unemotional routine.

The preponderance of non-union tonnage entering into the channels of commerce, however, is reflected in further declines in average spot prices. *Coal Age* Index of spot bituminous prices on May 24 stood at 157. The corresponding price was $1.89. The week previous the figures were 159 and $1.93, respectively. Sharp declines in quotations on low-volatile coals for New England, a weaker market at Pittsburgh and an easier tone to certain sizes of Kentucky and West Virginia coals were the underlying causes of the lower figures.

In the Middle West there has been a greater steadiness in prices. This has been achieved at the cost of drastic curtailment in production. Seaboard markets other than Boston also have shown more price stability, but the menace of distress coal still lurks in the background. An unbalanced demand as between sizes is a handicap under which almost every producing field in the country labors at the present time.

Slight Drop in Lake Loadings

Lake loadings at the lower ports showed a slight drop during the week ended May 23. The total tonnage dumped as cargo fuel was 993,444 tons. In addition, the vessels took on 40,300 tons for bunker purposes. For the season to date the total dumpings were 3,824,362 net tons, as compared with 4,161,821 tons a year ago.

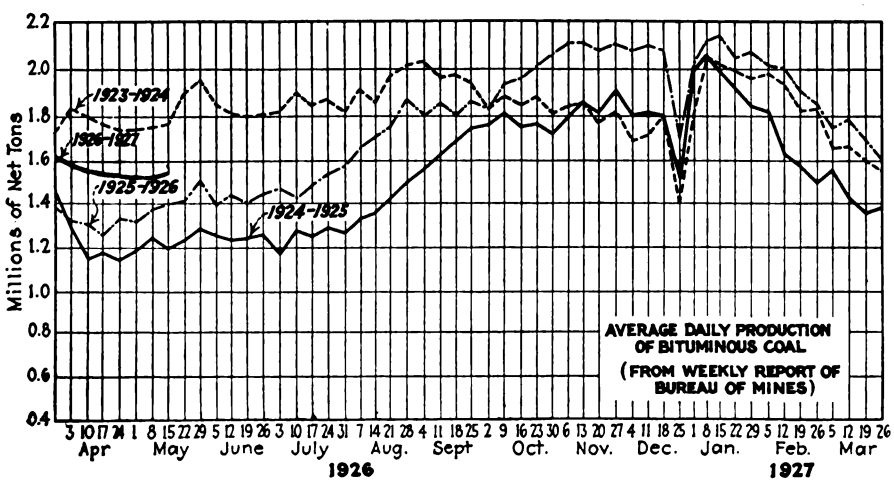
Production for the country as a whole took a slight upturn during the week ended May 15. The total for that week is estimated at 9,289,000 net tons, an increase of 2.8 per cent over the preceding week and the largest weekly output since mid-April. This upswing follows the rhythm of production in preceding years. The actual rate of output lies between that of 1923-24 and 1925-26.

Anthracite Output Declines

The disinclination of the public to stock heavily with anthracite coal finds statistical confirmation in recent figures on hard coal production. During the week ended May 15, according to the Bureau of Mines, the tonnage produced fell to 1,904,000 net tons, as compared with 1,985,000 tons the week preceding and 2,098,000 tons the week ended May 1.

Sales resistance in anthracite territory is increasing. There is little doubt that the consumers welcomed the return of hard coal at the close of the strike. But with winter behind them, the householders, in many cases, are willing to let somebody else carry the load of stocking. There are many retailers who feel that there are definite limits to what they can do. As a result premium coal is moving with difficulty and buyers are more discriminating in their choice of sizes.

The Connellsville coke trade weakens with the passing weeks. Spot prices on furnace coke are easier and little spot foundry coke moves at more than the minimum quotations on that grade. Production, too, is declining. Byproduct output, which reached its peak for the year in January, also is diminishing. The estimated production last month was 3,602,000 net tons, as compared with 3,777,000 tons in March.



Estimates of Production

(Net Tons)

	1925	1926
BITUMINOUS		
May 1	7,987,000	9,125,000
May 8 (a)	8,277,000	9,039,000
May 15 (b)	8,350,000	9,289,000
Daily average	1,392,000	1,548,000
Cal. yr. to date (c)	179,003,000	205,770,000
Daily av. to date	1,559,000	1,791,000
ANTHRACITE		
May 1	1,936,000	2,098,000
May 8	1,987,000	1,985,000
May 15	1,950,000	1,904,000
Cal. yr. to date (c)	32,858,000	23,463,000
BEEHIVE COKE		
May 8 (a)	143,000	212,000
May 15 (b)	136,000	204,000
Cal. yr. to date (c)	4,387,000	5,374,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

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Non-Union Coal Holds Down Prices

Heavy shipments of western Kentucky coal into Chicago and other markets of the Middle West are keeping down prices in the face of a steady demand for steam coal. Some western Kentucky mine-run is selling at 80c. Producers of high-grade southern Illinois coal, on the other hand, are trying to maintain $1.50@$2 on screenings and at times are slashing prices on "no bill" lump to clear their tracks for the shipment of steam sizes.

Domestic business is quiet. In the southern field few shaft mines are doing better than three days a week and most of these are depending upon railroad fuel orders. There is a steady accumulation of "no bills." Railroad business also is the saving factor in the Duquoin and Jackson County field. Mt. Olive, too, looks to railroad tonnage for its chief support. Domestic demand is so light that some producers are crushing coal to fill steam contracts. The standard district is hard hit on all sides.

The central Illinois and Indiana producing districts also suffer from the diminished demand for prepared sizes. For the most part, however, prices are well maintained. Breaks come when it is necessary to dispose of this coal to take care of steam business. The local St. Louis market has been helped by chilly weather, but there is little forward buying. Steam business is active because buying is on a hand-to-mouth basis.

Sun Shines Brighter on Kentucky

Low temperatures have turned the thoughts of domestic consumers in Louisville territory toward coal and there has been some buying for fall and winter use. Spot steam demand holds up, although general industrial consumers still fight shy of contracts. Railroad and public utility buying is on a seasonable basis. A number of state and municipal contracts are about to be placed on bids recently submitted.

With the opening of the lakes, eastern Kentucky operations find their prospects improved. Western Kentucky is moving considerable coal to northern industrial markets. Screenings top the list in the matter of strength to such an extent that mine-run and prepared sizes have been sacrificed to make way for the fine coal. Both fields are asking $1@$1.25 for slack, but western Kentucky mine-run has sold down to $1 and eastern Kentucky to $1.25.

Some western Kentucky block has been moved at $1.50, but the general range is $1.65@$1.85. Lump, egg and nut are $1.35@$1.65; mine-run and screenings, $1@$1.40. Eastern Kentucky block is held at $1.75@$2.25, with occasional sales of special grades at $2.50. Lump, egg and nut bring $1.75 @$2; slack, $1@$1.25; mine-run, $1.25 @$1.65.

Northwestern Buying Light

Patrons of the docks at the Head of the Lakes are confining their buying to immediate requirements. Contract renewals have been held back by an unsettled spot market in which cuts up

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	May 25 1925	May 10 1926	May 17 1926	May 24 1926†
Smokeless lump	Columbus	$2.85	$2.85	$3.10	$3.00@$3.25
Smokeless mine run	Columbus	1.85	2.00	2.05	2.00@ 2.15
Smokeless screenings	Columbus	1.45	1.25	1.25	1.15@ 1.35
Smokeless lump	Chicago	3.00	3.10	3.10	3.00@ 3.25
Smokeless mine run	Chicago	1.85	2.00	2.00	2.00
Smokeless lump	Cincinnati	2.85	3.00	3.10	3.00@ 3.25
Smokeless mine run	Cincinnati	2.00	1.80	1.80	**1.75@ 2.00**
Smokeless screenings	Cincinnati	1.30	1.35	1.30	1.25@ 1.35
*Smokeless mine run	Boston	4.25	4.60	4.85	*4.35@ 4.60*
Clearfield mine run	Boston	1.85	1.90	1.85	*1.65@ 2.00*
Cambria mine run	Boston	2.10	2.10	2.10	*1.90@ 2.25*
Somerset mine run	Boston	1.95	2.00	1.95	*1.75@ 2.10*
Pool 1 (Navy Standard)	New York	2.55	2.60	2.60	2.50@ 2.75
Pool 1 (Navy Standard)	Philadelphia	2.60	2.80	2.80	*2.60@ 2.80*
Pool 1 (Navy Standard)	Baltimore	1.85	1.95	1.95	1.90@ 2.00
Pool 9 (Super. Low Vol.)	New York	2.00	2.10	2.10	2.00@ 2.25
Pool 9 (Super. Low Vol.)	Philadelphia	2.00	2.35	2.35	*2.00@ 2.25*
Pool 9 (Super. Low Vol.)	Baltimore	1.75	1.75	1.75	1.70@ 1.80
Pool 10 (H.Gr.Low Vol.)	New York	1.85	1.85	1.85	**1.75@ 2.00**
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.70	2.05	2.05	*1.75@ 2.00*
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.60	1.60	1.60	1.55@ 1.65
Pool 11 (Low Vol.)	New York	1.55	1.60	1.60	1.55@ 1.70
Pool 11 (Low Vol.)	Philadelphia	1.55	1.70	1.70	*1.45@ 1.70*
Pool 11 (Low Vol.)	Baltimore	1.40	1.45	1.45	1.45@ 1.50
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.55	1.40	1.40	1.30@ 1.55
Pool 54-64 (Gas and St.)	Philadelphia	1.50	1.45	1.45	1.35@ 1.55
Pool 54-64 (Gas and St.)	Baltimore	1.45	1.25	1.25	1.25@ 1.30
Pittsburgh scr'd gas	Pittsburgh	2.40	2.30	2.30	*2.20@ 2.30*
Pittsburgh gas mine run	Pittsburgh	2.15	2.05	2.05	*1.90@ 2.10*
Pittsburgh mine run (St.)	Pittsburgh	1.95	1.80	1.80	1.75@ 1.90
Pittsburgh slack (Gas)	Pittsburgh	1.55	1.55	1.50	*1.35@ 1.40*
Kanawha lump	Columbus	2.10	2.05	2.05	1.85@ 2.25
Kanawha mine run	Columbus	1.40	1.55	1.55	1.40@ 1.75
Kanawha screenings	Columbus	1.10	1.00	.95	*.85@ 1.00*
W. Va. lump	Cincinnati	2.15	1.85	1.85	1.75@ 2.00
W. Va. gas mine run	Cincinnati	1.50	1.55	1.50	*1.40@ 1.50*
W. Va. steam mine run	Cincinnati	1.35	1.40	1.30	1.25@ 1.35
W. Va. screenings	Cincinnati	1.15	1.00	1.05	1.00@ 1.10
Hocking lump	Columbus	2.25	2.35	2.35	2.25@ 2.50
Hocking mine run	Columbus	1.50	1.55	1.55	*1.40@ 1.70*
Hocking screenings	Columbus	1.30	1.05	1.05	1.00@ 1.15
Pitts. No. 8 lump	Cleveland	2.25	2.15	2.10	1.75@ 2.50
Pitts. No. 8 mine run	Cleveland	1.90	1.80	1.65	**1.70@ 1.75**
Pitts. No. 8 screenings	Cleveland	1.45	1.35	1.30	*1.00@ 1.40*

Midwest	Market Quoted	May 25 1925	May 10 1926	May 17 1926	May 24 1926†
Franklin, Ill. lump	Chicago	$2.60	$2.60	$2.60	$2.60
Franklin, Ill. mine run	Chicago	2.35	2.40	2.40	2.35@ 2.50
Franklin, Ill. screenings	Chicago	2.10	1.90	1.90	1.85@ 2.00
Central, Ill. lump	Chicago	2.35	2.30	2.30	2.25@ 2.40
Central, Ill. mine run	Chicago	2.10	2.05	2.05	2.00@ 2.15
Central, Ill. screenings	Chicago	1.85	1.55	1.70	**1.60@ 1.90**
Ind. 4th Vein lump	Chicago	2.60	2.40	2.40	2.25@ 2.60
Ind. 4th Vein mine run	Chicago	2.35	2.15	2.15	2.10@ 2.25
Ind. 4th Vein screenings	Chicago	2.00	1.80	1.80	1.75@ 1.90
Ind. 5th Vein lump	Chicago	2.25	2.15	2.15	2.00@ 2.35
Ind. 5th Vein mine run	Chicago	1.95	1.95	1.95	1.85@ 2.10
Ind. 5th Vein screenings	Chicago	1.60	1.35	1.35	1.30@ 1.45
Mt. Olive lump	St. Louis	2.50	2.50	2.35	2.25@ 2.50
Mt. Olive mine run	St. Louis	2.25	2.15	2.15	2.15
Mt. Olive screenings	St. Louis	1.75	1.40	1.55	1.50@ 1.60
Standard lump	St. Louis	2.25	2.50	2.25	2.25
Standard mine run	St. Louis	1.80	1.80	1.80	1.75@ 1.85
Standard screenings	St. Louis	1.70	1.15	1.30	1.25@ 1.40
West Ky. block	Louisville	1.65	1.75	1.75	1.65@ 1.85
West Ky. mine run	Louisville	1.35	1.25	1.25	*1.00@ 1.40*
West Ky. screenings	Louisville	1.20	1.10	1.10	1.00@ 1.25
West Ky. block	Chicago	2.00	1.75	1.75	1.65@ 1.85
West Ky. mine run	Chicago	1.30	1.15	1.15	.80@ 1.50
South and Southwest					
Big Seam lump	Birmingham	2.30	2.15	2.15	1.90@ 2.40
Big Seam mine run	Birmingham	1.75	2.00	2.00	1.75@ 2.25
Big Seam (washed)	Birmingham	1.85	2.00	2.00	1.75@ 2.25
S. E. Ky. block	Chicago	2.25	2.40	2.40	2.10@ 2.75
S. E. Ky. mine run	Chicago	1.70	1.65	1.65	1.50@ 1.85
S. E. Ky. block	Louisville	2.20	2.05	2.05	1.85@ 2.25
S. E. Ky. mine run	Louisville	1.30	1.50	1.50	1.35@ 1.65
S. E. Ky. screenings	Louisville	1.10	1.05	1.05	**1.00@ 1.25**
S. E. Ky. block	Cincinnati	2.30	2.50	2.35	*2.00@ 2.25*
S. E. Ky. mine run	Cincinnati	1.45	1.55	1.50	1.25@ 1.75
S. E. Ky. screenings	Cincinnati	1.15	.90	1.00	**.90@ 1.15**
Kansas lump	Kansas City	4.25	4.00	4.00	4.00
Kansas mine run	Kansas City	2.85	3.00	3.00	3.00
Kansas screenings	Kansas City	2.60	2.50	2.50	2.50

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**; declines in *italics*

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	May 25, 1925 Independent	May 25, 1925 Company	May 17, 1926 Independent	May 17, 1926 Company	May 24, 1926† Independent	May 24, 1926† Company
Broken	New York	$2.34	.....	$8.05@$8.60	.....	$8.25@$9.25	.....	$8.25@$9.25
Broken	Philadelphia	2.39	.....	8.60	$9.25	9.00@ 9.25	$9.25	9.00@ 9.25
Egg	New York	2.34	$8.40@$9.25	8.35@ 8.60	8.75@ 9.00	8.75@ 9.25	**8.75@ 9.25**	8.75@$9.25
Egg	Philadelphia	2.39	8.60@ 9.30	8.40@ 8.60	9.25@ 9.75	9.15@ 9.25	9.25@ 9.75	9.15@ 9.25
Egg	Chicago*	5.06	7.86@ 8.50	7.44@ 8.18	8.48	8.13	8.48	8.13
Stove	New York	2.34	8.75@ 9.25	8.85@ 9.10	9.25@ 9.75	9.25@ 9.50	9.25@ 9.75	9.25@ 9.50
Stove	Philadelphia	2.39	9.20@ 9.75	8.85@ 9.00	9.60@10.00	9.35@ 9.50	9.60@10.00	9.35@ 9.50
Stove	Chicago*	5.06	8.22@ 8.70	7.92@ 8.10	8.84	8.33@ 8.58	8.84	8.33@ 8.58
Chestnut	New York	2.34	8.25@ 8.50	8.35@ 8.60	8.75@ 9.25	8.75@ 9.15	8.75@ 9.25	8.75@ 9.15
Chestnut	Philadelphia	2.39	8.60@ 9.45	8.50@ 8.60	9.25@ 9.50	9.00@ 9.15	9.25@ 9.50	9.00@ 9.15
Chestnut	Chicago*	5.06	8.14@ 8.35	7.69@ 8.00	8.71	8.38@ 8.50	8.71	8.38@ 8.50
Pea	New York	2.22	5.00@ 5.50	5.00@ 5.60	6.25@ 7.25	6.00@ 6.25	**6.50@ 7.25**	6.00@ 6.25
Pea	Philadelphia	2.14	5.40@ 5.75	5.00@ 5.40	6.50@ 7.00	6.00@ 6.50	6.50@ 7.00	6.00@ 6.50
Pea	Chicago*	4.79	4.91@ 5.36	4.69@ 5.00	6.03	5.65@ 5.80	6.03	5.65@ 5.80
Buckwheat No. 1	New York	2.22	2.00@ 2.50	2.50	1.70@ 2.50	3.00@ 3.50	*1.70@ 2.25*	3.00@ 3.50
Buckwheat No. 1	Philadelphia	2.14	2.25@ 2.75	2.50	2.00@ 2.50	2.50@ 2.75	2.00@ 2.50	2.50@ 2.75
Rice	New York	2.22	1.70@ 2.00	2.00	1.40@ 2.00	2.00@ 2.25	*1.50@ 1.85*	2.00@ 2.25
Rice	Philadelphia	2.14	1.90@ 2.00	2.00	1.75@ 2.25	2.00@ 2.25	1.75@ 2.25	2.00@ 2.25
Barley	New York	2.22	1.35@ 1.50	1.50	1.25@ 1.50	1.50@ 1.75	1.25@ 1.50	1.50@ 1.75
Barley	Philadelphia	2.14	1.50	1.50	1.50@ 1.60	1.75	1.50@ 1.60	1.75
Birdseye	New York	2.22	1.60@ 1.85	1.60	1.30@ 1.60	2.00	1.30@ 1.60	2.00

*Net tons, f.o.b. mines. †Advances over previous week shown in **heavy type**; declines in *italics*

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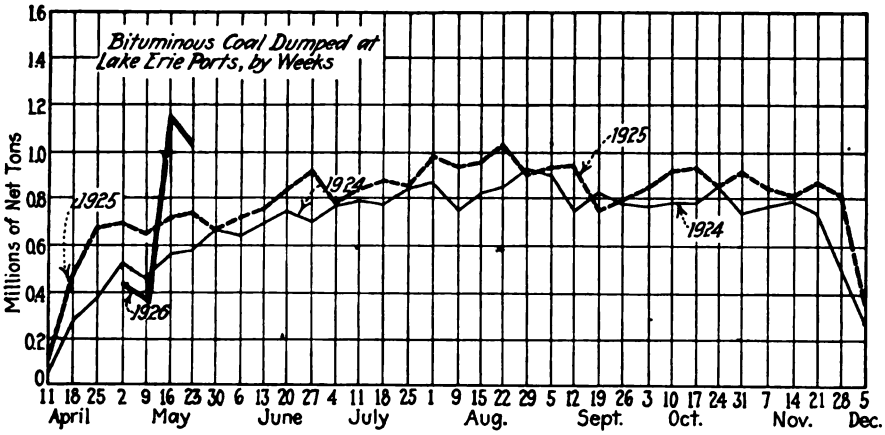


to 50c. per ton have been made on lump and dock-run bituminous. The price war was started by two companies pooling forces against a third accused of persistent underselling. So far, screenings have escaped the price decline.

Several cargoes of anthracite already have been unloaded at Superior and Duluth. Many householders are ready to buy now despite the fact that prices are on the winter basis. There has been a heavy run of bituminous cargoes to the docks. These have been handled promptly. The industrial outlook is good. The market at the Twin Cities is marking time.

Business in the Milwaukee dock territory is on a satisfactory basis. Interest is centered largely upon the rapid unloading of incoming vessels. Up to May 20, Milwaukee had received 410,209 tons of bituminous and 54,400 tons of anthracite via the lakes, as compared with 390,660 tons of bituminous and 193,915 tons of anthracite during the corresponding period last year. Local quotations on buckwheat have been shaded, but other retail prices are unchanged.

Southwestern Domestic Trade Dull

Dullness is the outstanding characteristic of the domestic markets of the Southwest. Orders for threshing coal are trickling in to Kansas operators and there has been some school buying for late summer delivery. Shoppers do not find it difficult to obtain concessions in prices on prepared sizes of Kansas coal, and Arkansas semi-anthracite lump, officially listed at $4.75@$5.25, has sold as low as $4.

Colorado mines are averaging 60 to 65 per cent running time. Steam trade is the backbone of this business. Prices on Colorado coals and on domestic sizes from the Kemmerer-Rock Springs field are unchanged. Wyoming steam coal is quoted at $1.25@$1.40. In an effort to stimulate the movement of prepared sizes leading operators in Utah have named summer storage prices, offering lump and nut at $3, screened slack at $2.25 and straight slack at $1.50.

Cincinnati Market Steadier

The Southeast has settled down to a steady production grind to keep lake coal moving in an even stream. Prices at Cincinnati reflect this acceptance of things as they are. The outstanding exception is the break of New River mine-run to $1.75@$1.90, and that is a reaction from an earlier attempt to capitalize on the British strike. Lump and egg are firm at $3, nut is $2.25@$2.50 and slack does not rise above the $1.25@$1.35 level.

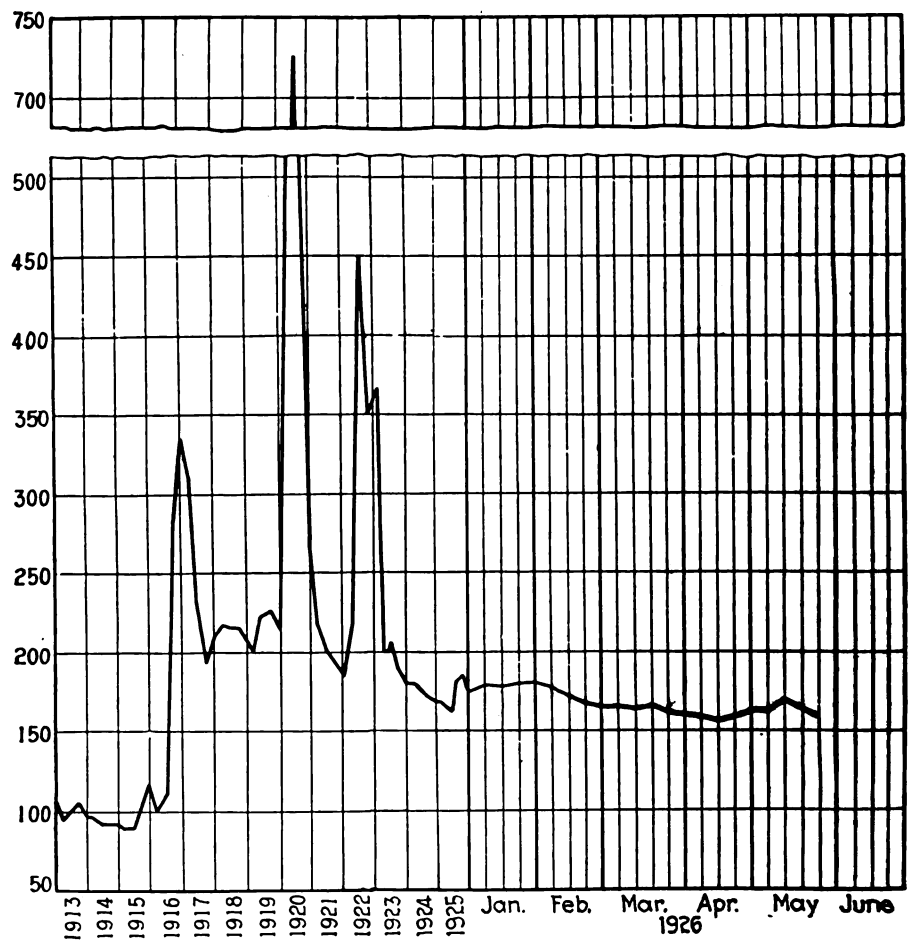
The high-volatile division of the trade seems resigned to a season without sensational developments. Hazard shippers are angling for $2.10 on lump, Harlan asks $2@$2.25 and extra choice Elkhorn and Jellico find buyers willing to pay $2.50@$3. Logan County block brings $1.75@$2. Steam mine-run from West Virginia and Kentucky swings between $1.25 and $1.35, gas moves at $1.40@$1.50 and byproduct coal demands $1.50@$1.75. Kentucky slack is 90c.@$1.15; West Virginia, $1@$1.10.

May retail business, season considered, has been excellent. River traffic is without feature. Movement of rail coal through the Cincinnati gateways is on the increase. During the second week of the month there were 10,897 loads, including 2,210 cars en route for the lakes, interchanged. More empties were on the way to the mines.

Pressure Lifting at Columbus

The flow of tonnage to the lakes has relieved some of the pressure on the Columbus market, but central Ohio prices and demand still are depressed. Little southern Ohio coal is being loaded for the lakes and that little is coming from mines with dock affiliations. Hopes that the late opening of the season would mean higher prices have been doomed. The prevailing quotation is $1.50, mine-run basis.

Most of the large industrial consumers are content to play the open market. To make matters worse, some are depending upon stockpiles already accumulated. Several railroad contracts still hang fire and public utilities are buying less freely. These factors



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926				1925	1924
	May 24	May 17	May 10	May 3	May 25	May 26
Weighted average price	$1.89	$1.93	$1.95	$1.92	$1.96	$2.02
Index	157	159	161	159	161	167

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, obtained was compared with the average for the twelve months ended June, 1914, as 100, and second, with respect to the tonnage of each normally produced. The average thus after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.

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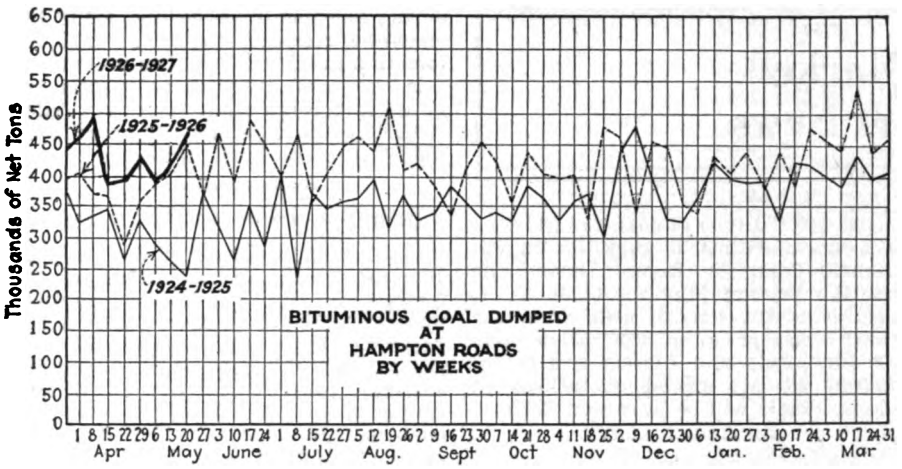


Car Loadings and Supply

	Cars Loaded — All Cars	Cars Loaded — Coal Cars
Week ended May 8, 1926.....	996,527	162,453
Preceding week.....	995,641	165,627
Week ended May 9, 1925.....	981,370	154,214

	Surplus Cars — All Cars	Surplus Cars — Coal Cars	Car Shortages — All Cars	Car Shortages — Coal Cars
May 8, 1926....	270,385	105,108	.....	.....
May 1, 1926....	275,573	115,205	.....	.....
May 8, 1925....	329,844	149,992	.....	.....

and a windfall in the way of vessel fuel to Pomeroy Bend have further weakened screenings. The southern Ohio output approximates 15 to 18 per cent of capacity.

Operators in the northern Ohio field are groping for market stability. Spot prices at Cleveland are less erratic and there have been some modest advances recorded. Steam demand, however, is very light and railroad buying is not up to the mark. The inauguration of the lake season has eased the slack situation, but prices have not declined. Eastern Ohio mines are running about 30 per cent of capacity. "No bills" are the rule.

Pittsburgh Still on Dead Center

The unprofitable *status quo* of the Pittsburgh district was undisturbed last week. If there was a slight recession in union production, it was offset by a corresponding gain in open-shop tonnage—and neither group claimed any profit for their efforts. The increasing percentage of non-union tonnage, however, is having a depressing effect upon prices. Youghiogheny three-quarter gas is $2.20@$2.30—a loss of 10@15c. Three-quarter steam has dropped from $2.10 and up to $1.90@$2.15. Gas mine-run and steam and gas slack also have weakened slightly.

Central Pennsylvania production the first half of the month showed a small increase over figures for the first two weeks in April. The district, however, reports 2,000 "no bills" on hand. Prices are unchanged.

The Buffalo bituminous trade continues to wallow in a slough of unrelieved gloom. As coal men there see it, the only relief possible must come through a further drastic reduction in output. Prices on Pittsburgh and No. 8 steam lump are off 20@25c. and Allegheny Valley mine-run has declined a dime. There is less consignment coal to upset the market.

Atlantic Seaboard Quiet

Atlantic seaboard bituminous markets are inactive. A moderate tonnage for export—contingent upon the duration of the British strike—is moving offshore, but steam demand in New England, for example, probably is less than a fortnight ago. Navy Standard is easy at $4.50 gross, f.o.b. Hampton Roads. Pool 2 can be had at $4.25 and slack still lower. On cars at Boston and Providence, pool 1 coal is offered for inland delivery at less than $5.50.

Little interest is displayed by New England in central Pennsylvania offerings. A few venturesome operators loaded coal in the hope of finding an extra outlet in the Northeast, but they have been unable to locate prompt buyers for their product. What little spot New England demand develops is concentrated upon West Virginia coals.

Consumers buying in the New York market are withholding orders. The tidewater market, however, gained in bunker business as a result of the British strike and there is very little distress tonnage left in the harbor. Bunkering also is the most active feature of the Philadelphia spot market. In the line trade, slack is the only bright spot; some plants are supplementing shipments with purchases of mine-run. Baltimore bituminous trade is colorless.

Alabama Slows Down

The Birmingham market is feeling the effects of the gradual slowing up in demand. The comparative inactivity however, is wholly seasonal in character. It presses most heavily upon the lower grade fuels, but there are no troublesome accumulations of unsold coal to plague the shippers as production is trimmed to more nearly meet the existing spot and contract demand. Very little tonnage is offered at cut prices. The coke market is quiet.

Independent anthracite producers are finding it difficult to sell coal at a premium over company prices in the New York market. Consumer buying is still backward, but distributors are taking egg and stove freely. Pea retains its strength. The steam market drags.

Practically the same situation with respect to independent tonnage prevails at Philadelphia, and some quiet, but not altogether successful, price cutting has been indulged in in the effort to move coal. The companies, however, seem to be able to sell their domestic output, although there have been some cancellations. It is recognized, of course, that the opening of the lake season has helped the larger producers.

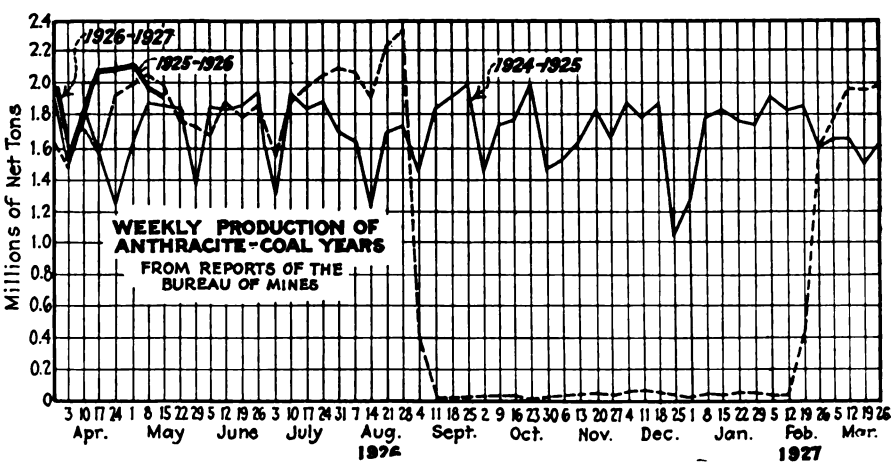
Use Pea to Move Nut Coal

Pea, while still popular, is not the leader that it was some weeks ago. Independents are using it, however, to force retailers to take in nut coal. In some cases the distributors decline to swallow this bait. Steam trade, as at New York, is sluggish, with No. 1 buckwheat the weakest size in the group. Baltimore householders show no anxiety over anthracite.

Local Buffalo demand for anthracite and coke is disappointing. Weather conditions again have interfered with the lake trade, slowing up the movement of coal. Anthracite shipments for the week totaled 87,200 tons, of which 18,300 tons were cleared for Chicago, 55,700 tons for Duluth and Superior, 7,200 tons for Green Bay and 6,000 tons for Milwaukee.

Coke Market Weaker

The Connellsville coke market is distinctly weaker. Spot furnace coke has sunk to $2.85@$3. Standard furnace holds to $4@$4.50, but the bulk of the limited spot tonnage moves at the lower figure and some off-grade fuel has moved at less than $4. Production during the week ended May 15 totaled 154,870 tons, according to the Connellsville *Courier*. Furnace oven output was 90,700 tons, an increase of 1,200 tons over the preceding week. Merchant oven output was 64,170 tons, a decrease of 6,670 tons.



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Foreign Market And Export News

German Operators Favor Export Pact with Britain

Berlin, Germany, May 11.—The strike in Great Britain undoubtedly has brought the problem of a German-British coal agreement nearer maturity. When the question was taken up informally some months ago German operators were averse to such an understanding. Since then the British state subsidies have changed the situation.

The German export business has been maintained only at a considerable sacrifice in prices. The Ruhr syndicate suffered a loss averaging about four gold marks per ton on coal exported in competition with British coal. While there are no signs of retreat the large majority of German operators now are convinced that a British-German coal agreement is absolutely necessary in the interest of both parties and have obviously decided on the alternative of a price-cutting war or an agreement.

In the minds of the German operators it would be a desirable course of events if the British industry would create for itself an organization similar to that prevailing in Germany, either a uniform syndicate or local syndicates acting under central direction. As far as has been heard, the German syndicates are quite willing to come to an understanding with the British industry with regard to a price policy as well as the combined control of the export markets.

The German idea is that the export markets should be divided between Great Britain and Germany at a certain ratio of supplies—if possible the pre-war ratio. In the event of such an understanding the Ruhr coal syndicate is even prepared to abandon all attempts to eliminate British coal from German markets. It is hoped in German circles that the situation in the British coal industry after the end of the strike will accelerate an accord.

Strike Spurs French Market

Paris, France, May 12.—Stronger demand for French coals is the first reaction to the British strike felt in this country. Prices, too, are rising. In the Nord and Pas de Calais areas wage agreements which expire May 15 will be replaced by new contracts granting the workers a 10 per cent increase in base rates and a 15 per cent bonus on the cost of living. This means a maximum increase of 2.80 fr. daily and a minimum of 1.30 fr.

Industrial stocks are low. Inquiry for domestic fuels is increasing and shipments of ovoids seem insufficient to meet demands. High prices for pitch have discouraged the patent-fuel manufacturers. Quotations in the Centre, the South and in the Sarre are rising.

Receipts of indemnity fuels are declining. During April the O. H. S. received 410,800 tons of coal, 288,600 tons of coke and 29,000 tons of lignite briquets from the Ruhr. During the first ten days of May the O. R. C. A. received 85,200 tons of coke from the Ruhr. The price on reparation coke for June, July and August will be increased 20 fr.; official quotations on coking smalls will be advanced 12 fr.

Belgian Market Stronger

Brussels, Belgium, May 12.—The British strike has had a favorable influence upon the Belgian coal trade. As long, however, as Ruhr stocks are so large there can be no great boom. Nevertheless inroads are being made upon supplies in the Borinage and stocks of lean bituminous and 8x20mm. beans have been exhausted. Coking smalls are commanding 90@90.50 fr. Lime duffs are 70@74 fr. Coke, too, is firmer; the range is 130@135 fr., but up to 137.50@140 fr. have been offered.

April Foreign Coal Trade Below March Levels

Exports of coal from the United States last month did not come up to the March levels. Bituminous shipments declined approximately 80,000 tons and there was a slight drop in anthracite. The totals, however, were greater than in February.

April exports by countries were as follows:

To:	Anthracite Gross Tons	Bituminous Gross Tons	Coke Gross Tons
France	.....	1,224	.....
Italy	.....	80,110	.....
United Kingdom	.....	6,590	.....
Canada	289,679	686,797	53,228
British Honduras	.....	5	.....
Costa Rica	.....	1,005	.....
Guatemala	.....	29	15
Honduras	.....	30	5
Nicaragua	.....	533	.....
Panama	111	68,917	.....
Salvador	.....	52	.....
Mexico	89	14,881	153
Miquelon & St. Pierre Islands	.....	1,594	.....
Newfoundland and Labrador	.....	1,347	.....
Bermuda	.....	763	.....
Barbados	.....	6,500	.....
Jamaica	.....	12,185	.....
Trinidad & Tobago	.....	2,500	.....
Other British West Indies	.....	10,388	.....
Cuba	4,291	43,822	412
Dominican Republic	627	510	.....
Dutch West Indies	.....	5,673	.....
French West Indies	.....	6,975	.....
Haitian Republic	.....	21	.....
Virgin Islands	.....	7,822	.....
Argentina	.....	17,543	.....
Brazil	.....	111,123	228
Colombia	.....	40	27
Ecuador	.....	.....	41
British Guiana	.....	779	.....
Venezuela	5	2	803
Egypt	.....	4,487	.....
Totals	294,802	1,094,247	54,912

Bituminous imports in April amounted to 43,000 tons which was slightly less than in March. Anthracite received from abroad reached 59,000 tons as compared with five times this amount during the month preceding, while the amount of coke arriving fell from 85,500 tons in March to 20,000 tons in April.

Bunker coal supplied to vessels engaged in foreign trade in April totaled 400,638 gross tons, as compared with 353,149 tons in April, 1925.

Brazilian Imports Up in 1925

Coal imports during 1925 at Rio de Janeiro, which receives most of the foreign coal for Brazilian consumption, totaled 1,117,000 metric tons, which exceeded those of the two preceding years. The United States supplied 502,783 tons and Great Britain furnished 614,033 tons of the total coal imports. In 1924 the United States supplied 561,292 tons and Great Britain 403,947 tons.

Prices in 1925 averaged approximately 36 to 37s. for British coal and $9 for American.

Export Clearances, Week Ended May 20

FROM HAMPTON ROADS

	Tons
For Jamaica:	
Nor. Str. Marie Nielsen, for Kingston	1,496
Nor. Str. Askeladden, for Kingston	3,700
Nor. Str. Haralshaug, for Kingston	2,683
For Newfoundland:	
Nor. Str. Facto, for St. John	2,101
For Danish East Indies:	
Br. Str. Euryades, for Sabang	1,716
For Cuba:	
Br. Str. Baron Garioch, for Manati	2,998
Nor. Str. Sagsland, for Havana	3,914
For Canada:	
Br. Str. Clintonia, for Port Alfred	4,676
Br. Str. Vera Kathleen, for Gaspe	2,830
For Canary Islands:	
Br. Str. New Mexico, for Teneriffe	8,446
Nor. Str. Samnanger, for Las Palmas	6,437
Br. Str. Penolver, for Las Palmas	5,570
For Portugal:	
Dan. Str. Hanmershus, for Leixoes	5,892
For France:	
Br. Str. Essex Envoy, for Marseilles	5,620
For Brazil:	
Br. Str. Navarino, for Rio de Janeiro	6,549
Br. Str. Tideway, for Rio de Janeiro	7,000

FROM BALTIMORE

For Canada:	
Nor. Str. Modig, for Montreal	6,391
For Jamaica:	
Nor. Str. Fort Gaines, for Port Maria	50

Hampton Roads Coal Dumpings*

(In Gross Tons)

	May 13	May 20
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week	161,743	173,349
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	66,191	90,355
C. & O. Piers, Newport News:		
Tons dumped for week	141,904	156,752

* Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS

	May 15	May 22†
Pool 1, New York	$5.50@$5.75	$5.50@$5.75
Pool 9, New York	4.90@ 5.20	4.90@ 5.20
Pool 10, New York	4.70@ 4.90	4.70@ 4.90
Pool 11, New York	4.40@ 4.65	4.40@ 4.65
Pool 9, Philadelphia	5.10@ 5.40	*4.95@ 5.30*
Pool 10, Philadelphia	4.80@ 5.15	*4.70@ 5.00*
Pool 11, Philadelphia	4.25@ 4.50	**4.35@ 4.65**
Pool 1, Hamp. Roads	4.50@ 4.60	*4.50*
Pool 2, Hamp. Roads	4.30@ 4.35	*4.30*
Pool 3, Hamp. Roads	4.00@ 4.10	4.00@ 4.10
Pools 5-6-7, Hamp. Rds.	4.15	*4.00*

BUNKERS

Pool 1, New York	$5.75@ $6.00	$5.75@ $6.00
Pool 9, New York	5.15@ 5.45	5.15@ 5.45
Pool 10, New York	4.95@ 5.15	4.95@ 5.15
Pool 11, New York	4.65@ 4.90	4.65@ 4.90
Pool 9, Philadelphia	5.35@ 5.65	*5.20@ 5.55*
Pool 10, Philadelphia	5.05@ 5.40	*4.95@ 5.25*
Pool 11, Philadelphia	4.50@ 4.75	**4.60@ 4.90**
Pool 1, Hamp. Roads	4.60	4.60
Pool 2, Hamp. Roads	4.35	4.40
Pools 5-6-7, Hamp. Rds.	4.15	*4.10*

† Advances over previous week shown in **heavy type**; declines in *italics*.

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Coming Meetings

West Virginia Coal Mining Institute. Annual meeting, June 1-2, Bluefield, W. Va. Secretary, R. E. Sherwood, Charleston, W. Va.

American Wholesale Coal Association. Annual meeting at Toledo, Ohio, June 7-9. Treasurer, R. B. Starek, Union Fuel Bldg., Chicago, Ill.

Association of Iron & Steel Electrical Engineers. Exposition and convention at Hotel Sherman, Chicago, Ill., June 7-10. Secretary, J. F. Kelly, 1007 Empire Bldg., Pittsburgh, Pa.

Coal Operators' Association of 5th and 9th Districts of Illinois. Annual meeting, St. Louis, Mo., June 8. Secretary, O. L. Lumaghi, St. Louis, Mo.

Southwestern Interstate Coal Operator's Association. Annual meeting, Kansas City, Mo., June 8. Assistant Secretary, George Manuel, Kansas City, Mo.

National Coal Association, June 9-11, at Drake Hotel, Chicago, Ill. Executive secretary, Harry L. Gandy, Southern Bldg., Washington, D. C.

The National Association of Purchasing Agents. Annual convention at Los Angeles, Calif., June 9-12. Secretary, W. L. Chandler, Cleveland, Ohio.

American Society for Testing Materials. Convention at Haddon Hall, Atlantic City, N. J., June 21-25. Secretary, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

American Institute of Electrical Engineers. Annual convention, White Sulphur Springs, W. Va., June 21-25. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

Illinois Mining Institute. Annual summer meeting on steamer "Cape Girardeau," leaving St. Louis, Mo., June 24 and returning June 26. Secretary, Frank F. Tirre, Central National Bank Bldg., St. Louis, Mo.

American Society of Mechanical Engineers. Spring convention at San Francisco, Calif., June 28-30. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

Illinois and Wisconsin Retail Coal Dealers' Association. Thirty-first annual convention, Highland Hotel, Lake Delavan, Wis., June 28-30. Managing Director, N. H. Kendall, Great Northern Hotel, Chicago, Ill.

Fifth International First-Aid and Mine-Rescue Contest, San Francisco, Calif., during the first week of September, 1926, under the auspices of the Bureau of Mines, Department of Commerce.

Coal Mining Institute of America. Annual meeting, Chamber of Commerce, Pittsburgh, Pa., Dec. 8, 9 and 10. Secretary, H. D. Mason, Jr., Box 604, Ebensburg, Pa.

New Publications

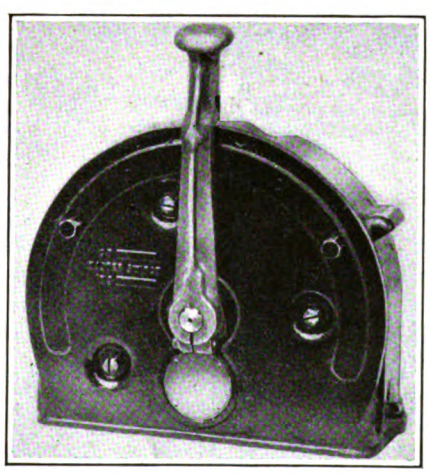
American Blower Co., Detroit, Mich., has issued Bulletin No. 1608, superseding No. 8, Series 6, illustrating and describing its Type P "A B C" **Pressure Blowers and Exhausters.**

New Equipment

Lever-Thrown Master Switch

A lever-operated master switch for installation where exceptional strength and durability are important factors has recently been announced by the General Electric Co., of Schenectady, N. Y. The new switch is particularly suitable for grouping and for operation by one man.

This master switch is flat and semicircular in general shape consisting of a cast-iron frame and cover totally inclosing the contact mechanism. This design readily permits convenient grouping within easy reach of one operator. The handle is of the vertical type, operating through a radius of 40 deg. on a one-point switch and through a 100-deg. total radius on switches of the three-point type. This handle is mushroom-shaped so that it may be grasped easily and quickly. Operation from one position to another is quite free, there being no gears or other friction surfaces other than the bearings and contact fingers. The handle is held in the "off" position by a spring roller device.



Switch Affords Safety from Shock

This switch is devoid of all friction surfaces except the bearing and the contact fingers. It is fitted with a mushroom top lever and is especially adapted to grouping.

Approval Accorded to Cable With Non-Metallic Sheath

The non-metallic sheathed electric cable, known as RomeX and manufactured by the Rome Wire Co., of Rome, N. Y., which has been a subject of much debate in the electrical industry during the last four years, has finally been approved by the National Fire Protective Association. This action will permit the Rome Wire Co. to begin production of this product and place it on the market in competition with other insulated wiring now used on all types of circuits under 300-volt potential. The accompanying sketch shows the construction of this wiring. The core or beginning of RomeX cable is a standard rubber-covered code wire, marked *A* in the sketch. *B* is a close wrap of fibrous tape formed from six thicknesses of long-fiber kraft paper. The cotton braid *C* is then applied and carefully saturated with fire-resistant compound. Another wrap *D* of the long fiber kraft tape is next applied and two or more of the conductors are thus sheathed together with filler cords *E* under a heavy braided outer jacket *F*. The materials marked *D*, *E* and *F* are treated to make them fireproof and moisture-proof.



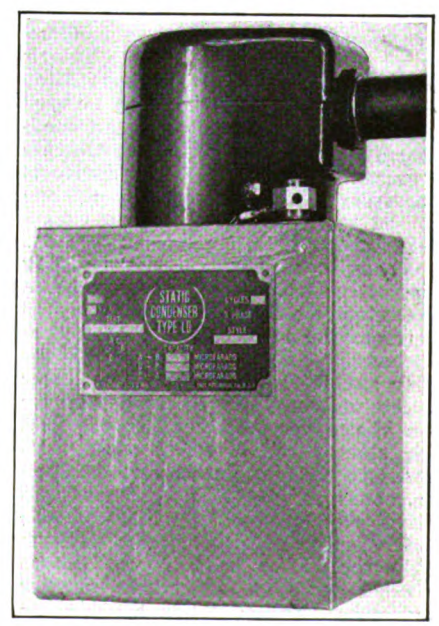
For All Circuits Under 300 Volts

Paper and cotton braid the only coverings. The various coats are treated so as to make them both fire- and moisture-proof.

Static Condenser Designed for Individual Motors

Development of a line of static condensers for application to 220-, 440-, and 550-volts two- and three-phase individual motor circuits has been announced by the Westinghouse Electric & Mfg. Co., of East Pittsburgh, Pa. The new condenser consists of insulation inclosed in a sheet-metal container and a porcelain terminal housing arranged for conduit connections.

By the corrective effect at the motor that these condensers afford many advantages are said to be obtained: The losses are less than ½ per cent regardless of the kilovolt-ampere rating; the power factor is corrected immediately; because of the reduction of the line current the voltage regulation at the motor



Corrects Power Factor

This static condenser may be installed beside the motor it serves. When additional motors are needed more condensers may be purchased or those already in use may be shifted. At present it is available in capacities up to 5 kva.

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or on the feeders is improved; the power-factor correction is flexible and applied where needed. There are other advantages but these are the most outstanding.

Better Furnaces

Furnishes Air to Gases for Complete Combustion

Heretofore, the principle of the bunsen burner has been applied to gaseous, liquid or powdered fuels only. What is termed the CO_2 Combustion Tube, adapting this principle in practically its entirety to the burning of solid fuel on grates in domestic furnaces, recently was developed and patented by James C. Law, of Scranton, Pa.

In the past, aside from natural draft, two means have been employed for supplying air to the fire in the ordinary house furnace. These were pressure blowers delivering air to the ashpit under the grates and various forms of diaphragmed inlets admitting air to the combustion space above the fuel bed. Most of these latter devices are attached to the inner surface of the firing door, drawing their air supply through a rotary damper therein.

Ordinarily, but especially when burning a smoky coal, air for the combustion of the gases distilled from the fuel must be supplied above the fire. Hence the sliding or rotary damper in the firing door. If the combustion of these gases is not completed, smoke is evolved, and as much as 15 per cent or even more of the heat derivable from the fuel is lost up the stack.

Approaching Perfect Conditions

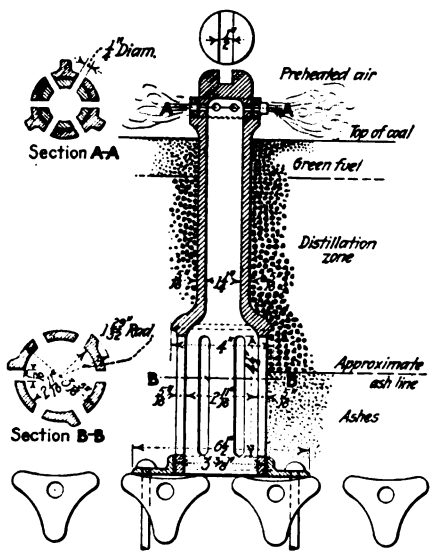
When a sufficient quantity of air from the ashpit is conveyed through the fire bed, preheated during its passage, and then released at or near the upper surface of the fuel, the conditions necessary for complete combustion are closely approximated. This is the function that the CO_2 Combustion Tube seeks to perform. It may be used with either natural draft or an inexpensive volume blower. A forced-draft or pressure blower with this device is unnecessary; furthermore, should one be used it would tend to form excess clinker and to consume fuel too rapidly.

As may be seen in the accompanying illustration, this device consists of a tube extending upward through the fuel bed from the regular grate of a furnace and terminating just above the upper surface of the bed. The lower portion of this tube is made larger than the upper part and is provided with slots through which air is delivered to the distillation and combustion zones of the fire. Above this slotted portion the diameter of the tube is restricted and remains uniform to the top. Here several small holes, provided with an adjustable shutter ring, spray the air, which has become highly heated in its passage through the tube, into the combustion space above the fuel bed. This hot air then mixes thoroughly with the combustible gases released from the fire, thus furnishing oxygen in a regulated volume for their consumption. A slot or depression is provided in the apex of the tube, thus furnishing a means of rotating it on its base by the insertion of a bar or poker through the firing door. Such a movement of the tube breaks up any clinker that may have formed around its slotted portion and allows a free passage for air directly to the distillation zone of the fire bed.

Application of this tube to a furnace is extremely simple. It is provided with a base of limited diameter but sufficient to span two grate bars. Holes in the flange of this base allow two ordinary rivets to be inserted. These extend downward through opposite interstices of the grate bars. The tube is thus held centrally positioned even though the grate bars upon which it rests may be rocked in the ordinary way to remove ashes and light clinker. The grate bars, however, must not be completely turned over.

Utilizes Small Sizes

This tube is intended to assist in the utilization in domestic furnaces, of the small sizes of anthracite such as No. 1 buckwheat or mixtures of pea and buckwheat, as well as domestic grades of bituminous coal. It is stated that when used with fuels of the latter type, regardless of percentage of volatile matter, the volume of smoke issuing from the chimney is reduced 40 to 50 per cent; also that the flashing or "puffing" of the gases and the possibility of destructive gas explosions is precluded regardless of the firing method employed. Furthermore, this tube, by its slotted section, provides the equivalent of a 10 per cent increase in the grate area in the furnace to which it is applied, and affords a general increase in combustion effectiveness of 15 per cent or more. No change in furnace structure is required, and as the device is extremely simple no tools are necessary for its installation.



Supplies Heated Air for Gas Combustion

This tube is built to withstand high temperatures. It rests upon the grate bars which may be rocked in the ordinary way and it supplies heated air to both the combustion zone of the fire and for burning the gases above the fuel bed.

Industrial Notes

J. L. Latture Equipment Co., 354 Belmont Street, Portland, Ore., has been appointed sales representative in Oregon, Washington and Idaho of the Climax Engineering Co., Clinton, Iowa, manufacturers of engines and power units.

The Electric Service Supplies Co., Philadelphia, Pa., removed its Pittsburgh office from Room 829, Oliver Building, to Room 1123, Bessemer Building, on April 1.

Maurice R. Hart, who has been with the Morse Chain Co. for several years in the production department and the last two years in the sales department, has been appointed manager of the Buffalo district, with an office in the Ellicott Square Building.

Harlan A. Pratt has been appointed manager of the oil- and gas-engine department of the Ingersoll-Rand Co., 11 Broadway, New York City. Mr. Pratt was connected for many years with the sales department of the Westinghouse Electric & Mfg. Co., later becoming sales manager of the Atlantic Elevator Co., exclusive agents in the East for Westinghouse gearless traction elevators. For the past three years he has been sales manager of the Elevator Supplies Co., of Hoboken, N. J.

The Stoker Corporation, Dover, Del., manufacturing coal stokers, W. W. Murphy, president, chartered under Delaware laws, has filed a certificate in the office of the Secretary of State of New York to allow it to do business in New York State with $525,000 capital. The New York office is 150 Broadway, New York City.

The Hyatt Roller Bearing Co., Newark, N. J., announces these recent changes in its mine car division organization: T. V. Picraux has been placed in charge of Western territory with headquarters in St. Louis, succeeding Leo Shea, recently transferred to the tractor and implement division, Chicago. Alex Hunt assumes charge of the Huntington (W. Va.) office, relieving Charles Perry, who has left the company.

Samuel B. Belden, has resigned as vice-president of the Jeffrey Manufacturing Co., manufacturers of coal-mining machinery, Columbus, Ohio.

David F. Reid has organized the **Pocahontas Mining Co., Inc.**, of which he is president, with headquarters in McDowell County, W. Va., on the Norfolk & Western Ry., where it has opened a mine in the Douglas or Red Jacket seam of coal and is opening the seam above it. The plant is electrically equipped, power being purchased from the Appalachian Power Co.

The Duff Manufacturing Co., Pittsburgh, Pa., manufacturers of jacks, announce the appointment of Albert Roberts as district manager of the Southern territory, with offices in the Candler Building, Atlanta, Ga. Mr. Roberts was formerly associated with the Grip Nut Co., of Chicago.

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CINCINNATI COAL MINING CONVENTION REPORT NUMBER

JUN 5 1926

COAL AGE

The World's Accepted Authority on Coal Mining

McGraw-Hill Publishing Company, Inc. **June 3, 1926** Price Twenty Cents per Copy

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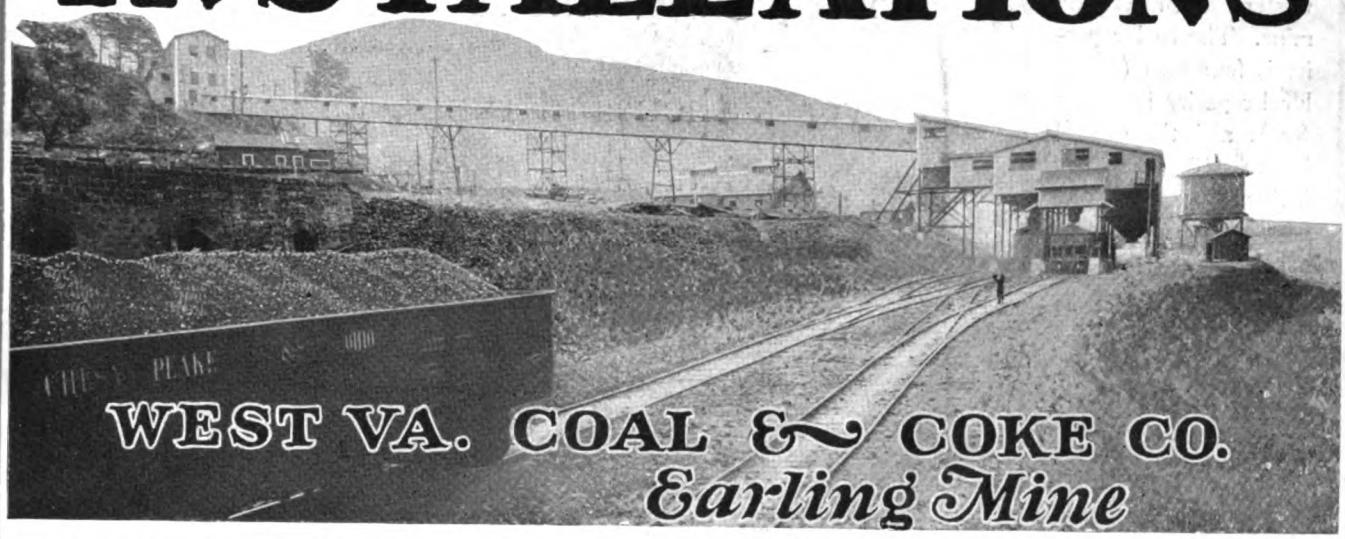

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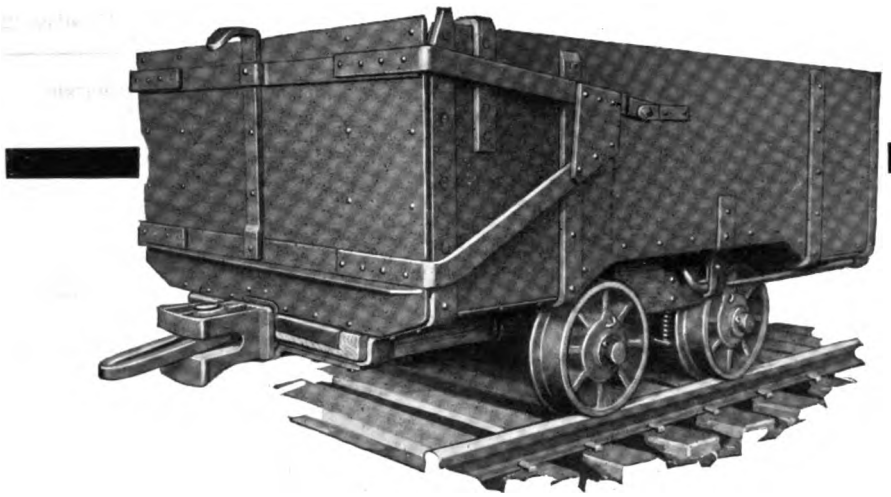

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 29 — New York, June 3, 1926 — *Number* 22

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R. DAWSON HALL, *Engineering Editor*

Can Coal Companies Improve Their Acid Water Effluents? 787
STAFF CORRESPONDENCE.

How Should Coal Be Cut for Machine Loading? 789
BY STAFF CORRESPONDENT.

Mechanical Loading Saves Money for Many 793
BY STAFF CORRESPONDENT.

Face and Main Conveyors Are Receiving More Attention Than Ever Before 796
BY STAFF CORRESPONDENT.

Many Attest to Value of Rock Dust 797
BY STAFF CORRESPONDENT.

Rigid Supports Near Face Help Bring Down Roof 799
BY STAFF CORRESPONDENT.

Many Exhibitors Show New Equipment at Cincinnati 802
BY FRANK H. KNEELAND.

British Strike Enters Second Month with Both Sides Outwardly Unmoved; Informal Efforts for Accord Continue 806

British Coal Situation Intensifies Complexity of World Markets; Fuel Economy, Oil and Water Power Spread 807
BY PAUL WOOTON.

No Change in Situation on Coal Legislation 806
Studdard Heads New District in West Virginia 806
Deplores Perennial Strife in Coal Industry 807
Burns Bros. Earnings Jump 807
Promising Program Arranged for N. C. A. Convention 808
Railroads to Spend Heavily for Betterments 808
Midwest Dealers Reorganize and Hold Annual Meeting 808
Short-Circuits Ventilation, Saves 62 Lives in Fire at Mount Lookout Mine 809
Wholesalers Hold Convention in Toledo Next Week 809
Pierce Defends Quality and Sizing of Anthracite 810

Editorials 785
News Items from Field and Trade 812
Weekly Review and the Market 816
Foreign Market and Export News 820
New Equipment 821

Five Editors at Cincinnati

You will find in this issue a full account of the convention and exposition at Cincinnati. With such a large attendance and such general interest *Coal Age* has found ample justification for arranging that no less than five editors be present. You will see the results of their labors in this week's issue. The important events of that momentous meeting are well portrayed in the pages before you, and he would be unwise indeed who would delay his perusal of the matter thus adequately presented.

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McGRAW-HILL PUBLISHING COMPANY, INC.
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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 29 NEW YORK, JUNE 3, 1926 Number 22

Cincinnati's Convention

DURING THE past year not much that is really new has been introduced, but that does not mean that there has been no progress. In fact the technique of mining appears to have advanced as much as in any previous year. The large number of new devices of a few years back are now getting into regular operation. One hears less of what can be done in a record run and more of everyday experience.

The schemes of past years are gradually being digested. Machines are beginning to cut their repair bills. Mines are being adapted to the new systems of operation. Superintendents are gradually assimilating the new technique. If, as Eugene McAuliffe says, the success of the new equipment lies 90 per cent in management, and if we are to interpret that as meaning an attitude of mind, then we are making real progress. Where before it was said, "will it work?" we have now advanced to the question, "how will it work best?" We have ceased to question whether the new methods of mining are going to replace the old.

Conveyors have made the most progress, especially shaking conveyors. The United States is getting in line with England and Germany, which countries by the way got their first ideas on this subject from this country. The American mines initiated slushing for backfilling and conveying for coal and then turned the cold shoulder to both. Conveying is coming back, partly with American devices and partly taking advantage of German and English machines.

Rock-dusting was probably advocated here by G. S. Rice before the British devised it for their own needs and on their own initiative. But now with their example and that of France it is being introduced here. In no long period of time every mine not naturally rock-dusted will adopt it and perhaps all will find it well to introduce the manufactured article because of the uncertainty of natural rock-dusting. Here again the convention proved helpful in suggesting methods of distributing the dust as much as in advocating the practice.

No one can doubt that Mr. McAuliffe is right in emphasizing the importance of ventilation and coal-dust suppression. The U. S. Bureau of Mines is doubtless in full accord, but to advocate too many improvements is usually an effective way to dull the edge of one's advice. One strand at a time is an easier way to sever a rope than to try cutting the whole cable at a single stroke. This year it is rock dust that receives the emphasis. When that advance is assured, then perhaps we shall find due stress accorded to the other two. If a thousand lives yearly can be saved by rock dust, a big gain in safety will be achieved.

After all rock-dusting is a protective device that can be seen and evaluated. It lasts for months. Ventilation on the other hand is not so readily assured. It may be sufficient today and inadequate the day following, and an explosion will wipe away all evidence of the adequacy or inadequacy of temporary stoppings and doors. Rock dust on the other hand will remain after the explosion to show that it was present to guard the haulway.

The convention has done a good work. It has brought up many new ideas and dramatized and revised many not so new. A year from now we shall see what it has done without realizing to the full perhaps how much of the progress should be attributed to its influence.

Pending Coal Legislation

THE COAL industry, in considering the bills now before Congress which are designed to ameliorate the difficulties under which the industry is suffering, will do well to view the problem in a judicial and unexcitable mood. These bills, it must be realized, are put forward by Congress, not on account of a pressure from the President and the Executive branch of the government so to do, but from a pressure of public opinion, voiced through the press and communicated from their constituents through the different senators and congressmen, that "something must be done." When this pressure is coupled with reproaches from the Democratic representatives and senators that the Republicans have done nothing, it is clear that a gesture in the way of legislation is inevitable.

The attitude of the Executive branch of the administration toward the subject—that the industry, if it were humanly possible, should be left to work out its own problems, provided it did address itself to that task—was clearly shown by the President's attitude during the anthracite strike, when his wise "hands off" policy, in the face of public clamor and complaint on Capitol Hill, produced the most satisfactory results.

Concerning the present legislation a certain attitude, such as is exhibited by certain spokesmen for the industry, indicates a belief that the administration is seeking no exert some control over the coal industry, for the sake of aggrandizing its power over business. There is nothing in the record to support this view. Not only the President's attitude during the strike, but the testimony of the Secretary of Commerce at the coal hearing of the House of Representatives show this; reading of Mr. Hoover's testimony shows that he abhors compulsion of any sort, and moreover, that he did not favor present legislation. The imputations that the bills were drafted by or with the help of the Department of Commerce are quite unfounded.

It is indeed unlikely that the present legislation, though introduced, will be passed this session: the political exigencies of the situation are for the moment satisfied by their introduction. But that does not mean that the economic and political problems of the coal industry are settled: only a fair, progressive and

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tolerant attitude on the part of coal operators and coal miners alike can avert future troubles, and a further loss of public sympathy toward both sides of the quarrel.

It is not sufficient for the coal industry simply to repel all these pressures, as was explained in the editorial on "The Dangers of Negation" in our issue of April 22. The coal industry should be allowed to solve its problems by itself, always providing that it takes advantage of that privilege and permission. It must not, however, deny or minimize the power of public opinion, the greatest ruling influence in the modern world.

Coal Age is opposed to the passing of the pending legislation at the present time and is opposed to all legislation if it can be avoided. It does, however, see clearly the folly of a *laissez-faire* policy on the part of the industry. Constructive, not destructive leadership is necessary on the part of operators and miners alike; and, moreover, tolerance and co-operation between these two groups of leaders.

Will Mine-Water Pollution Increase?

EXTREMELY GLUM were the reflections of Andrew Crichton in his address on the pollution of streams by mine water at the American Mining Congress convention last week. His was a sort of unrhymed threnody, or dirge. Only 400 square miles of the coal on the Monongahela River drainage area have been mined. Some 6,600 square miles remain. Already the water is acid part of the year. Soon it will be acid all the time. Soon it would be so acid it could not be treated.

What can be done? To treat the mine water would be excessively expensive. There is apparently no way out except by state purchase of idle coal lands. These were the saddening reflections presented by Mr. Crichton, and no one can aver that he overstated the problem.

There are, however, some signs of improvement. Without planning for less pollution, probably much is being done all unwittingly to decrease it. Much of the acid water in old abandoned mines is doubtless derived from the slack coal that in early years was left in the mines. Pyrite in slack is particularly susceptible to oxidation by waters carrying oxygen.

In early days less slack was made than today. In a 3-ft. bed perhaps a third was fine coal and in a 6-ft. about one-fifth. When we realize that the sulphur in the bed will run from 1 to 6 per cent, assuming all the sulphur to be pyritic which is, of course, not correct, the acid that could be formed would run from 3 to 18 per cent. If a third was pyrite, there would be 1 to 6 lb. of acid for every 100 lb. or from 20 to 120 lb. for every ton of slack, that is from 4 to 40 lb. for every ton of coal mined.

Furthermore, in early days the coal was not extracted with any degree of completeness. About a third of the mineral was left. This coal became crushed and in time all of it will be leached of its sulphur, thus increasing the figures given materially. Today not only is all the slack loaded out, but the pillars are more completely removed. The extent of that removal is constantly increased, thus again reducing the quantity of acid formed.

Coal, however, is left in the roof and floor. That in the roof is badly crushed and will doubtless give trouble for years. That in the floor is probably almost intact, though floor movements break it up a little. The floor coal is the most sulphury of any. Where it is not, it is mined and shipped, now as in past times. We are not clear to what extent it was left in the mines in earlier years, but probably it was removed as the market was not as finical as today, for coal was less used for metallurgical purposes.

Other sources of pollution are the rooster coals and perhaps some of the measures that are void of coal but contain sulphur. The shale and sandrock measures are thicker than the coal beds, but their sulphur content is lower. Nevertheless the stalactites in the mine bear evidence of the presence of iron and therefore possibly of pyrite.

One would not be so ready, however, to make that assumption, were it not that droppers are noted to be acid in some mines, as has been proved by their action on mine piping. These droppers may, however, be acid only because they have passed through superincumbent coal seams or through rooster, or "wild" coal beds.

The effect of sealing a mine is to prevent oxidation by free air. Such sealing might be fairly effective, though that is a matter for proof. Unfortunately oxidized waters from the surface would undoubtedly reach the coal, especially when the cover is light. Then if the water escaped through the outcrops it would be extremely acid, all the more so that the water would remain in the workings long enough to oxidize the pyrite and to reach levels well above the floor of the mine.

The coal operator who pumps water is interested in keeping his water free frm acid. What should he do to this end? That is another story and well worth the telling.

Wasting Human Lives

USING EIGHT or more men when one or two would serve to do the work and could do it more efficaciously and easily is wasting human lives and depriving the public of its right to buy coal at the price for which coal should sell and incidentally is not profitable to the operator who does it. These wastes of human effort which need correction are found not only in dumping practice, though there they are not infrequent and are larger, perhaps, than elsewhere, but they occur in many departments of work in mining and in other industries. They are not peculiar to mining. One can find such wastes everywhere if one looks.

Those who believe the function of the superintendent is just to keep men working greatly misapprehend the real purpose of that functionary. Many a mine does good work for its owner when scarcely a man is actually laboring. At such mines machines are at work and the men merely direct their operation. "Hustle" was a big word in the nineties when human effort almost alone achieved results, but smooth, well-adjusted mechanical operation is the desideratum of today. We have no words yet to express this notion as emphatically as we express activity of the body, effort, grind and labor by the word "hustle," but that is a sign that the present decade does not know itself yet, has not recognized its own conditions, has not visualized its aims. When it does it will have words and synonyms aplenty for the job that runs itself—that is automatic, propelled by the nind and not by the body. Who will invent the word of power that will set our thinking straight on modern ways of operation? Words are the tools of thought, but here we are with a new condition in our lives, and a new thought for which we have no word.

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Can Coal Companies Improve Their Acid Water Effluents?

Air as Well as Water Needed to Turn Pyrite into Acid—Sealed up Mines Eventually Leak Again—Abandoned Mines Worse Than Those Working

By Staff Correspondent



THAT THE complete neutralization of all mine waters, to say nothing as to their softening, is a task almost beyond immediate contemplation was the view taken by most of the engineers present at the morning session of Tuesday, May 25, on "Mine-Water Pollution." Yet it was realized by nearly all that it would be wrong to take an irreconcilable attitude in regard to the matter. The industry cannot afford to assume an air of indifference towards the rights of others.

The consuming public needs the use of the waters, and the coal operator would do well to endeavor, if it be possible, not to pollute them excessively, for that action would be tantamount to attempting to deny to the public its use of those waters.

LEGISLATION IMMINENT

S. A. Taylor, president of the American Institute of Mining and Metallurgical Engineers and consulting engineer of Pittsburgh, who took the chair, said that the coal industry though unfortunate in the low prices it received for its product and in its excessive production did not stand alone when it faced these troubles. Farming and the metal industries were equally inflated as to production and equally deflated as to prices. The coal industry, however, found the legislators disposed to interfere to the disadvantage of the industry, whereas Congress was always active in attempting to alleviate the plight of the farmer. Governmental interference was prone to make more difficult the pathway of the coal operator, whereas the farmer was likely to find the action of Government and legislatures friendly and helpful.

Comparing the coal industry with those producing metal, Mr. Taylor said that the coal fields were operated by such a large number of companies that it was impossible for the coal operator to look for any great amelioration of his troubles. Mergers in metal mining were likely to help the metal industries, but the coal industry had far to go to gain much assistance by that means.

ACCORDING to Mr. Crichton, mine water contains 80 to 100 grains of acid per U. S. gallon. If water from a stream or lake contains four grains of acid per gallon it will be necessary to treat it, and twelve grains will make it so impure that it cannot be made a suitable boiler feed. In part of the year the streams are already acid.

Andrew Crichton, consulting engineer, Johnstown, Pa., delivered the first address which was on "Mine-Drainage Stream Pollution." This will appear in another place in this issue. Mr. Crichton emphasized the problems that confronted the coal industry and the great expense that might be incurred if even a neutralized water were demanded. To soften the water would cost even more.

S. A. Taylor said that the difficulty with mine-water pollution was that it did not come to an end with the closing of the mine. A tannery or cannery might have an extremely objectionable effluent, but as soon as the factory ceased to tan or can respectively, the objection was removed. At coal mines the pollution would continue for years after the mines were abandoned, that pollution often becoming worse as time went on.

H. N. Eavenson in his discussion of the paper said that Mr. Crichton had rather underestimated the effects of the decision in the Indian Creek pollution case. The court had defended the riparian rights of those whose lands bordered on the stream as well as the rights of those who distributed the water in pipes. The decision, unfortunately, would apply to almost any stream.

He wondered who would neutralize the water from abandoned mines. True, the mines might be sealed. That, for a while, would solve the difficulty, but after a time the water would escape through the outcrop, and the last condition might be worse than the first.

Mr. Eavenson said that the railroads could hardly expect to be given soft water. They were already treating stream water even where no mine drainage water had been allowed to enter it. He questioned whether the public had any right to ask that the water in the streams be made as pure as rain water.

COURTS HIT LEAD MINES

J. F. Callbreath remarked that the lead mines in Idaho had been required by the courts to return the water to the stream as pure as it was when it was removed. As Idaho is largely dependent on its lead mines, it is easy to imagine what a blow this decision will be to the state, seeing that the prosperity of most of its citizens is dependent on the operation of the mines.

Replying to Mr. Eavenson, Mr. Crichton said that if sealing would shut off the air, the water could do no harm. It could not dissolve the pyrite appreciably. It was only after

The headpiece shows a refuse dump surrounded by blooming dogwood trees outside the mines of the Harvey Coal Co. at Harveyton, in the Hazard region of Kentucky. The way in which vegetation continues to thrive close by rock dumps from which run acid water shows that acid is not so injurious to plant life as is often stated.

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the pyrite had been oxidized that sulphuric acid would be formed.

C. E. Lesher, assistant to the president, Pittsburgh Coal Co., said that the smelter problem had been at one time as acute as the water problem is today. A solution was ultimately found in that case. One would probably be found in the water-pollution difficulty also. The smelters had to be allowed to continue in operation, and surely the mines cannot be shut down without injury to everyone.

Dr. J. J. Rutledge remarked that all beds were not equally productive of acid water. The Bakerstown and Kittanning seams did not pollute water as much as the beds in the Upper Productive coal measures. H. I. Young, of Mascot, Tenn., said that the wastes from his copper mines were not in any manner harmful but were alleged to discolor the water in the stream. Proceedings had been brought to prevent the continuance of operations causing such discoloration.

Would Treat Free Acid

James O. Handy, director, Pittsburgh Testing Laboratory, Pittsburgh, Pa., then read a paper on "Mine-Water Purification," which he prefaced by saying that what Mr. Crichton had said was impossible, he proposed to attempt. He believed that mine water could be treated to remove free acid. Mr. Handy said that all sulphates were not harmful, the sulphates of lime and magnesia for instance.

Mr. Handy declared that the addition of lime to water was not considered harmful, but with that statement Mr. Crichton later took issue, saying that magnesium and calcium sulphates had been found to cause pitting in boilers. Mr. Handy said that the Bureau of Mines had found that in most cases the water entering the mine through the roof or at the working face is not acid but that it received its acid content in traveling through the mine, especially when the water was allowed to pass over slack. Some of the acid comes also from the exposed coal faces. He thought that a study should be made of the exact causes of water pollution.

Mr. Withrow declared that acidity did not kill the fish in the streams directly. They died because the acid removed the oxygen and made it impossible for the fish to get air from that source. He believed that Mr. Crichton had overstated the case in saying that 12 grains of sulphates per gallon would render the water incapable of successful treatment. In the Allegheny regions the waters were in general relatively free of lime, but in the West there was far more, yet industry had been quite able to cope with that difficulty.

COST of treatment to neutralize acid with present area of developed and abandoned mines will be from 80 to 110 million dollars yearly, said Mr. Crichton. The treatment plants would cost 145 million dollars, and the water would still be hard.

As regards the iron-ore sludge resulting from mine water it would not discolor the banks of a stream if after deposition in a reservoir it was later flushed down the valley. In such cases it was washed down like clay and had no power to grip to the rocks as when first deposited. He advocated that some streams be kept free of pollution and that others be recognized as sewers into which industrial wastes be allowed to enter.

S. A. Taylor, in commenting on Mr. Handy's paper said the sulphur would leach from the floor coal for years. That coal was left because it had such a high percentage of sulphur. The impurity appeared to have been concentrated from the rest of the bed and found lodgment in the lower part of the coal measure.

William L. Stevenson, chief engineer, Sanitary Water Board of Pennsylvania, addressed the convention on the "Restriction of Stream Pollution." Mr. Stevenson said that the coal industry should be willing to enter into a co-operative investigation to ascertain what can be done to keep the streams reasonably free from pollution. The tannery interests and those of the paper and pulp industry have arranged for such co-operation.

It would not be well for the coal men to show indifference to the demands of the public and thus invite crippling legislation, nor should the public or the state work against its own interest by passing unreasonable laws that would destroy an industry upon which its own prosperity depends. Already about one hundred public water supplies in the state are being more or less affected by coal-mine drainage.

Mr. Stevenson would divide the streams into three classes namely those (1) in a pristine condition which should be preserved from pollution, those (2) which are more or less polluted, where pollution should be controlled and those (3) so greatly polluted that they should be regarded as natural sewers.

R. S. Ture said that it was to the interest of everyone that treatment should be effected before the dilution of the impure water as that was the more economical method. The manufacturer and the producer of coal should purify the effluents consequent on their operations. In conclusion a committee was formed to consider the mine-water pollution problem, a resolution to that effect having been passed by those present. The committee will consist of H. N. Eavenson, H. I. Young, and J. J. Rutledge.

The tanneries have appointed three chief engineers and three chief chemists of the tanning companies on a committee with Mr. Stevenson as chairman. The committee will make laboratory researches, will actually operate a full-scale experimental tannery-waste treatment works and will make observations of the streams below the works to determine the assimilating power of the stream to receive untreated waste and also to take care of the effluent of the treatment works with various degrees of purification.



Down Toward Big Coal River

View from the dumphouse of No. 4 mine of the Coal River Collieries Co., near Seth, W. Va. This mine is one of three operated in the state by the Brotherhood of Locomotive Engineers.

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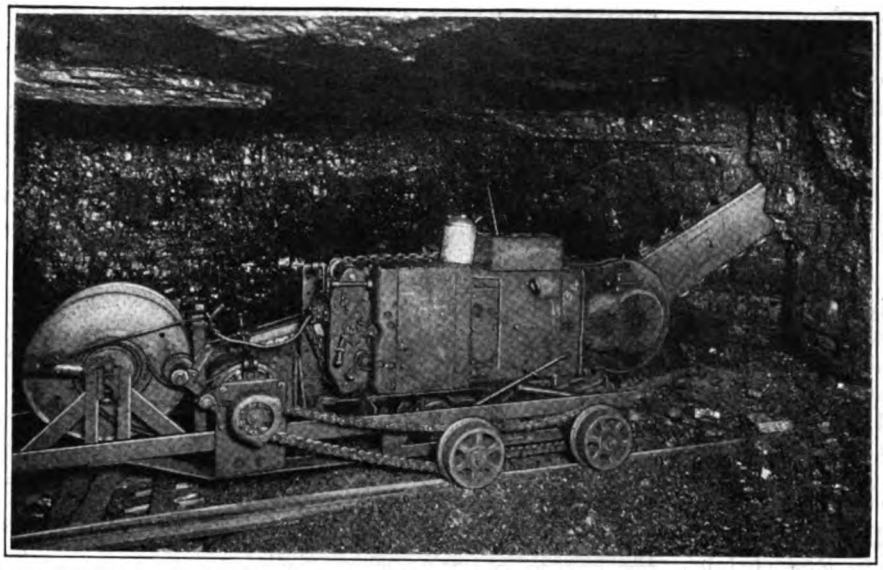

Shearing Machine *Courtesy, Sullivan Machinery Co.*

How Should Coal Be Cut for Machine Loading?

Two Shears in Face Increase Tonnage per Machine 45 per Cent And Lump Coal 5 per Cent—Cushion-Blasting Not Suited to All Mines—Face Snubbed by Pop Shots—Cutting in Clay Bottom

By Staff Correspondent

WITH A TONNAGE of 3,500 tons daily, dating from May 1, the Union Colliery Co., of St. Louis, Mo., and Dr. L. E. Young, its general manager, are already taking an important part in the mechanization of the coal industry. Dr. Young contributed the opening paper at the Tuesday afternoon session, his talk being entitled "The Cutting and Shearing of Coal for Mechanical Loading."

At last year's meeting Dr. Young outlined the experiments he had made in snubbing, the purpose of which was to see if it was not possible to prepare the coal for shooting so that it could be brought down and loaded by mechanical means with minimum degradation. Since then Dr. Young has advanced a long way toward his goal which is to mine coal entirely by mechanical means.

Frank B. Dunbar, general superintendent, Hillman Coal & Coke Co., of Pittsburgh, presided in place of W. L. Affelder, assistant to the president of the same company.

The coal being mined by his company is the No. 6 seam which varies in thickness from 8 to 11 ft. About 1½ ft. from the bottom of this seam occurs a blue band or shale parting. From 1 to 1½ ft. of top coal is left in mining chiefly to hold the roof. Rooms are driven 26 to 28 ft. wide on 45-ft. centers. The coal is shot at the end of the day shift, the shooting of more than three shots at any one time not being permitted.

Snubbing Costs Excessive

The company has found by experience that the labor cost of snubbing coal by hand is greater than that of manual loading. It has also discovered that at its mines the coal cannot be snubbed with powder to advantage, as this practice in mines where shooting is not permitted in the day shift, requires the working of too many places. This would defeat the primary purpose of mechanical mining, which is, to concentrate the operations of men and machinery.

In the first experiment in shearing tried by the Union Colliery Co. an improvised cutting machine on a mine-car truck was used. As the bar of this machine could not be adjusted laterally, the shearing cut had to be made in line with it. The general practice being to lay the room track along the left-hand rib the coal was necessarily sheared at some distance from the room center.

The test revealed the fact that in this seam with a single shearing cut the snubbing of the coal is still necessary. As the coal is laminated hand snubbing is hazardous.

As a second experiment a machine which would cut vertically was mounted on a sled which could be slewed so as to touch either rib or be located at some intermediate position. But here again the results were not satisfactory as the shearing cut would not reach to the rib unless it was pointed diagonally. Nevertheless the experiment indicated that two shearing cuts contributed greater capacity to the loading machines. A shearing machine, mounted on a caterpillar tractor was also tried.

Less Powder Required

The coal was loosened by two pop shots which were placed 8 ft. from the ribs and by two shots which served to break down the bulk of the coal and to square the corners. Without shearing, 1 lb. of powder produced 5 tons of coal; with one shearing cut 10 tons of coal were obtained for each pound of powder used and with two shearing cuts 15 to 20 tons of coal were dislodged per pound of powder.

S. Farnum, of the Goodman Manufacturing Co., related his ex-

The headpiece shows a shearing machine with the sumping cut partly made. The machine has been run off the regular track and is resting on slide rails which are ordinary rails turned on their sides.

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periences in shearing the thin seams of Kansas twenty-five years ago. Though they produced bigger lumps than could be obtained otherwise, those early experiments were not successful, because they increased the percentage of screenings. Inasmuch as shearing by modern machines increases the capacity of the loading machine and produces better lump coal, shearing, he thought should be justified, despite the additional expense which it involves.

W. R. Jarvis, of the Sullivan Machinery Co., said that his experience with shearing was confined to the Uniontown field of Pennsylvania, In this instance shearing resulted in the production of better coal. It also made it easier to load coal by hand. The adoption of the vertical cut decreased the consumption of powder by one-third and also caused the coal near the roof to arch in a manner which could not be attained by any other means. At the same time it made props unnecessary in places 10 to 11 ft. wide.

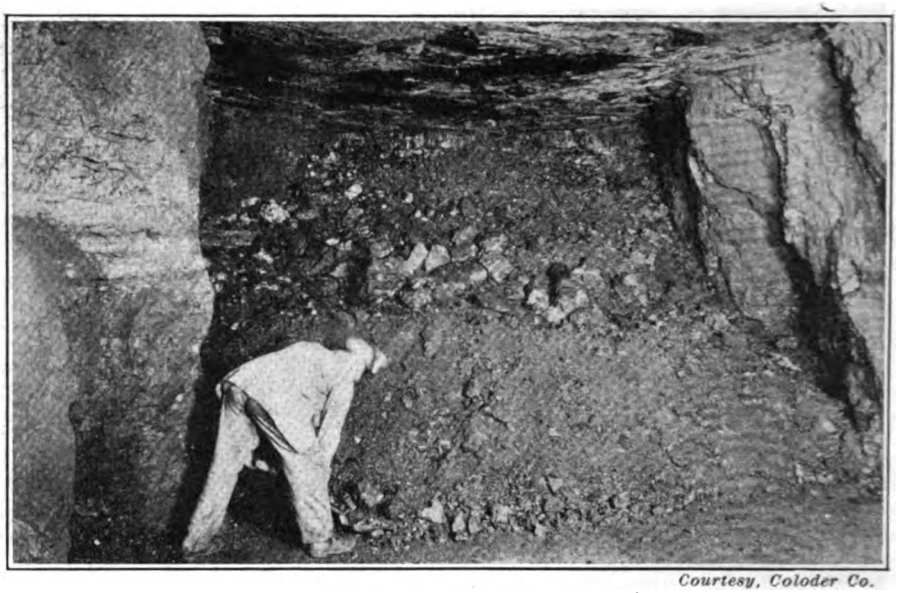
In a mine in northern West Virginia, according to Walter M. Drake, of the Joy Machine Co., center shearing was employed to cut through heavy "bearing-in" bands in a 14-ft. room. The practice increased the tonnage per machine per shift.

SHEARING AIDS PRODUCTION

Dr. Young said that shearing has been adopted in the mines of his company solely to increase the capacity of the loading machine. A year ago his machines were each producing 185 tons per shift. One shearing cut increased this output 35 per cent, and two have boosted the average to 275 tons as determined over a period of one month. He closed with the remark that the vertical cut has not only increased the output of the loading machines but has also raised the yield of lump coal 5 per cent.

In a paper on "Blasting Coal for Mechanical Loading" B. L. Lubelsky, explosives engineer of the Pittsburgh Coal Co., declared that with the introduction of mechanical loading will come a need to use small charges and a greater number of boreholes. His paper will appear in a later issue of this magazine.

David Ingle, president of the Ayrshire Coal Co., of Oakland City, Ind., in a discussion of Mr. Lubelsky's paper said he had been loading coal mechanically for about four years. He found that too much time and effort are lost in mechanical loading for reasons which cannot be attributed to the machine itself.



Courtesy, Coloder Co.

Pillar Shot Ready for Loader to Lift into Mine Cars

Shows the effect of a shot in the Pocahontas No. 3 seam in one of the Pocahontas Fuel Co.'s mines. As the coal is quite soft and friable a comparatively large percentage of fines is formed. A snub cut has caused the coal to roll out as shown. The man is trimming the pile so that the loading machine will not have to waste time, running around to get coal.

In his mines the rooms are driven 21 to 24 ft. wide. Under what he chose to term "the old system of hand-loading," the officials of his company paid little attention to methods of shooting. The advent of mechanical loading rudely awakened them to the necessity for skilled shooting. The number of holes was increased from two to three. Investigation uncovered several bad practices. Undercuts were generally inclined outwardly so as to grip the ribs, thus forming triangular pockets, and the boreholes were drilled so as to be parallel to these offsets.

TRAFFIC PROBLEMS TO SOLVE

The management now finds that where holes are drilled by hand they are frequently not extended to a sufficient depth. Though the common practice is to drill the shotholes electrically, hand drilling is sometimes necessary because of difficulty in keeping the electrical drills in order. He said that the drills cause more trouble than any other machine in his mines. His force has not yet reached a final decision as to the methods of shooting that will best meet local conditions.

A shearing machine has been tried in the mines of the Ayrshire Coal Co. Though the machine accomplished the purposes for which it was introduced, it caused much confusion when an attempt was made to keep it at work. This was only partially avoided by operating the shearing machine between visits of the cutting and the loading machines.

In justice to this machine, Mr. Ingle said that a cycle involving the operation of three different machines for as many purposes could not be co-ordinated because the cutting and the loading machines operate 24 hours a day keeping the roadways cluttered with traffic. He said that, in all probability, he would again try shearing. All sorts of experiments are being tried by his company in an attempt to arrive at more efficient practices in mechanical loading. His observations in brief are that "If the machine loader is to be successful it must not be compelled to fight tight coal."

A paper on "Results from Cushion Blasting" was read by C. W. Nelson, explosives engineer of the Hillman Coal & Coke Co. He thinks mining men should not condemn cushion blasting on no better ground than that it has proved unsuccessful under the conditions prevailing at their mines. They should be willing to concede that, under different conditions, the method might produce more favorable results.

TEST FOR PROPER AIR SPACE

Before one decides whether the method is adaptable to one's mine, one must know the purpose for which cushion blasting is intended. In most machine-cut coal the resistances from the back of the drillhole to the kerf and from the same

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point to the front of the cut are not the same. If the resistance offered in these two directions were the same, the proper location for the explosives charge would be as near the back of the hole as possible. Except in very thick coal, the resistance is usually greater in the horizontal direction. The charge must be so located or distributed as to balance the burden upon it.

Mr. Nelson recommends that the proper length of the air cushion for given conditions be determined by careful tests. He suggests that the air space be increased in 3-in. steps until the point is reached where the breaking shots begin to hang at the back of the cut and then gradually decreased until the correct length for a balanced shot is attained. The length will vary with the seam and to a small degree as between various places in the same mine.

Conditions Determine Methods

In thick seams, cushion blasting has not been successful where the coal is being worked on the butt, chiefly because planes of greatest weakness run parallel to the direction of the drillholes, in which case the line of least resistance is toward the front of the cut. Under this condition the charge should be concentrated as much as possible at the back of the hole.

He believes that at best rock-dust stemming is merely a makeshift for a true blasting cushion. Its value depends upon the compressibility of the dust, upon the density of the dummy and upon the care with which the hole is charged and tamped. These factors are so variable as to make exact control of the shooting impossible. The necessity for storing and keeping the rock dust dry despite the dampness of the mine is a difficult problem in itself.

Air Spacing Works Here

A method of cushion blasting for mechanical loading in the thick Freeport bed and another for use in the Pittsburgh seam were described in a discussion by John G. Bart, general manager, Union Collieries Co., Renton, Pa. The former seam in the No. 3 mine is about 86 in. thick and consists of two benches equally divided by a 10-in. bone parting. The coal is undercut to a depth of 6 ft.

The cut is blasted in three stages. First, the bottom bench is shot down by three shots which are placed immediately under the bone parting and perpendicular to the face. The center shot is detonated first, this merely serving to spring the bench; then two rib shots are fired which break down the coal so well as to make loading by hand or mechanically quite easy.

These holes and all the others drilled higher in the seam are extended to the same depth, 7 ft. or 1 ft. beyond the back of the cut. All are given an equal charge. This consists of one stick of permissible set midway of the depth of the cut. Behind this single cartridge is an air cushion nearly 4 ft. long. In front of it is inserted the usual stemming which is loosely placed and not tamped at all except for the last 10 in. which is tamped solid. Having been thus shot down, the bottom bench is loaded out.

The next stage is to break down the bone parting, which is accomplished by three holes placed immediately over this bony layer. Having gobbed this material the final stage is completed by three similar boreholes which are drilled horizontal and near the top.

Snubbing Decreases Slack

In shooting the coal in the Pittsburgh seam, the practice of his company is to place two pop shots of ½ stick each with air-spacing in a 3-ft. hole which is started slightly above the mid-height of the seam and extended downward on about a 45-deg. angle. The bottom of this hole is within 5 to 6 in. of the kerf. These two shots snub the coal across the entire width of the place.

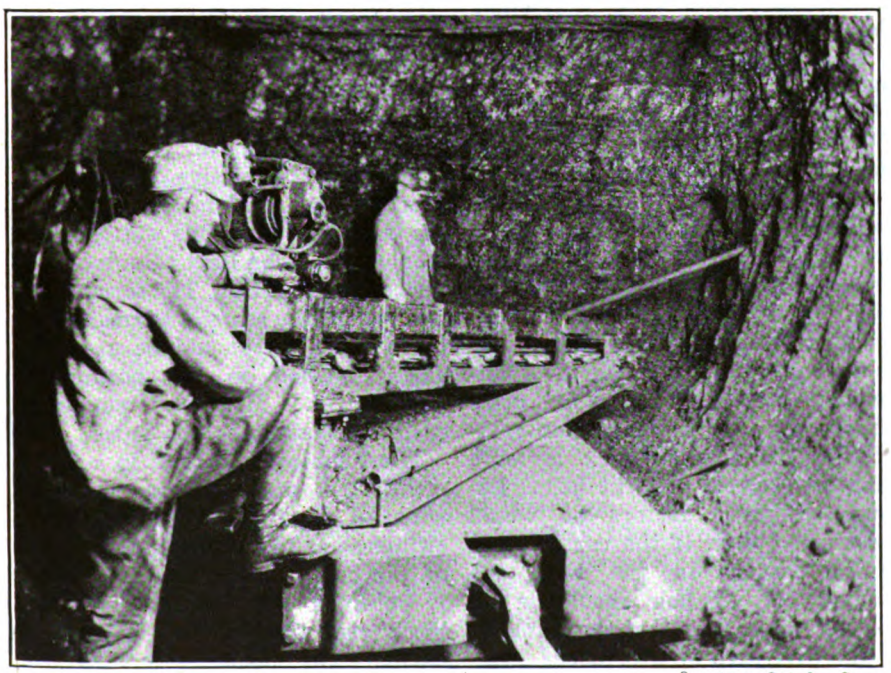
Two horizontal holes near the roof and along the ribs, which are extended about 1 ft. beyond the back of the cut, are air-space loaded by placing one to one and one-half sticks of permissible in each in the same manner as has been described for shooting the Freeport seam.

These methods of shooting have been in practice for about six months and have decreased the violence and shattering effect of the explosive greatly. They have lowered the proportion of ¾-in. slack in the mine product by 8 per cent.

Why Not Cut in Fireclay?

A talk on "Cutting in Fireclay Bottoms" was given by W. J. Freeman of the Fayette Realty & Development Co., of Indiana. He said loading machines have emphasized the possibilities from an economic and mining standpoint of cutting in clay bottoms rather than in the coal. Mr. Freeman wanted to know why the operator who had a thick bed had not found it advisable to follow the thin-coal operator in putting his kerf in the clay floor.

Not only does cutting of the clay bottoms decrease screenings, but it also makes it unnecessary to place the cut in the pyritic coal which



Courtesy, Coloder Co.

Machine That Snubs the Coal so as to Give a Wedge Kerf

This machine has been improvised from a breast machine. Set on a frame it cuts a sloping kerf that breaks down the coal and at the back intersects with the horizontal kerf. Thus a cut is made that looks like a saw cut in a tree after it has been trimmed by an axe. The cutter bar is fed forward mechanically and swung around as desired.

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usually lies along the bottom. In many mines all over the country water is being sprayed over cutter bars to keep down the dust. The expense of this safety precaution would be eliminated by the practice which he advocates.

REQUIRES SPECIAL CHAIN

To be successful in this project the manufacturer must provide a special chain. That used for cutting coal will not work in clay. At the mine of his company in Nashville, Ill., a bone-clay band which occurs about 24 in. from the bottom is being cut. The machine used for this job is in all respects similar to a shortwall cutter except that the bar is mounted on the top of the machine instead of at the bottom. As the refuse band is fairly regular little trouble is experienced in keeping the cutter bar in it.

At first much difficulty was found in obtaining a chain for the job, that would stay in the band, for the latter is harder than the coal. The solution to the problem was finally found in an 11-position Sullivan chain, each lug of which holds two bits. This chain cuts the refuse so successfully that the machine runners now cut as many places in the band as they formerly did in the coal.

The screenings have been decreased thereby 10 to 12 per cent, and the coal can be better prepared at the face than was possible when cutting in the coal.

Mr. Freeman said that time and money are well spent in seeking a method to cut bands or clay bottoms in that the cost of hauling dirt to the surface is eliminated and waste material is left in the mine where it properly belongs. Though it took his company more than a year to solve the problem, it now feels that the money was indeed well spent. The adoption of the loading machine has brought the industry face to face with the need for new methods of cleaning and of keeping the coal clean.

KEEPS DIRT IN THE MINE

In his mine the practice of refuse cutting has decreased the proportion of ¾-in. screenings from 22 to 12½ per cent and lowered the quantity of refuse which is taken out of the coal at the washer by 50 per cent. It has increased the percentage of 2-in. lump to 75 per cent and made it possible to obtain 120 tons of coal with 25 lb. of powder. Before the change was made only 90 tons of coal was obtained with the consumption of that quantity of powder.

A discussion by John L. Clarkson, of the Clarkson Coal Mining Co., Illinois, dealt with his experience in cutting in the clay bottom. The mine where this practice prevails is working the Indiana No. 5 seam. When his company started to develop this bed it was questioned whether undercutting machines could be used.

Up to that time they had not been successfully applied to this seam in the region in which the mine is located because of a large quantity of sulphur in the coal near the bottom. To the best of his knowledge no one had made any extensive attempt at cutting in the clay which underlies this seam.

WANTS SMALLER CARTRIDGES

His company has continued this practice ever since and has fully demonstrated that the venture was well worth while. The cutting conditions vary from place to place, and bits, therefore, are changed with no regularity. The worst drawbacks are that of throwing back and handling the cuttings and the dense clouds of dust stirred up in cutting. The shoveling of the clay is expensive but the dust can be overcome by providing the machine runners with respirators. This dust, of course, adds to the safety of the mine, for it is pulverized rock and not fine coal.

Theodore Marvin, managing editor of *Explosives Engineer*, took exception to some of the remarks made by Mr. Nelson in his talk on cushion blasting. He objected chiefly to his advocacy of a cartridge of smaller diameter than is being generally used. The cartridge of smaller diameter costs more per pound, and its rate of detonation and its sensitiveness decreases with time more rapidly than with the larger cartridge. The smaller stick is more liable to produce a burnt hole. Because of these factors he would recommend that, if the cartridge is to lie loosely in the hole, the diameter of the hole should be increased rather than that the diameter of the cartridge be decreased.

Mr. Nelson replied that the use of a larger hole does not give the true cushion-blasting effect. He knew of no tests which had demonstrated that such a practice increases the efficiency of blasting. Replying to the charge that cartridges under 1¼ in. deteriorate rapidly with age, he cited an experience in which he used successfully 1⅜-in. cartridges which had been in storage in a magazine at one of the mines of his company for eight months.

NELSON DOUBTS THE MINER

Mr. Lubelsky said that the manufacturer put forth a similar cry at each demand of the operator for a smaller cartridge beginning with the change from the 1¼-in. size. He makes the claim that in some instances the explosive in a cartridge of 1-in. diameter may be more sensitive than that in one of 1¼-in. He is not at all in sympathy with the 1¼-in. limit and claims that when the U. S. Bureau of Mines tests are correctly interpreted the limitation is not well grounded.

Someone asked Mr. Nelson whether he has had any experience with miners blasting by the cushion method. He said that his company employs shotfirers because miners cannot be relied upon to cushion their blasts correctly and because in general, it was not safe to leave the blasting in the hands of the miners. Where it is left to them the results are as varied as the methods they employ and these as varied as the miners themselves.

AIR SPACING IS SUGGESTED

Josiah Keely, of the Cabin Creek Consolidated Coal Co., asked why a center cutter in one of his mines in 7-ft. coal failed to decrease the quantity of explosive needed and shattered the coal more than when the face was not thus cut. Frank Dunbar and John Bart volunteered to answer this question. The former said that where the seam is burned to the top a topcutter should be used and where burned to the bottom an undercutter. Mr. Bart suggested cushion blasting as the cure.

Mr. Fenning said that, in a three-month test of a machine equipped with an elevated cutter bar which swings so as to cut an arc at the back of the cut, his company found that it obtained 10 per cent less 4-in. block coal than it did before the change was made. Mr. Clarkson suggested that a square cut at the same elevation be tried for the sake of making a comparison.

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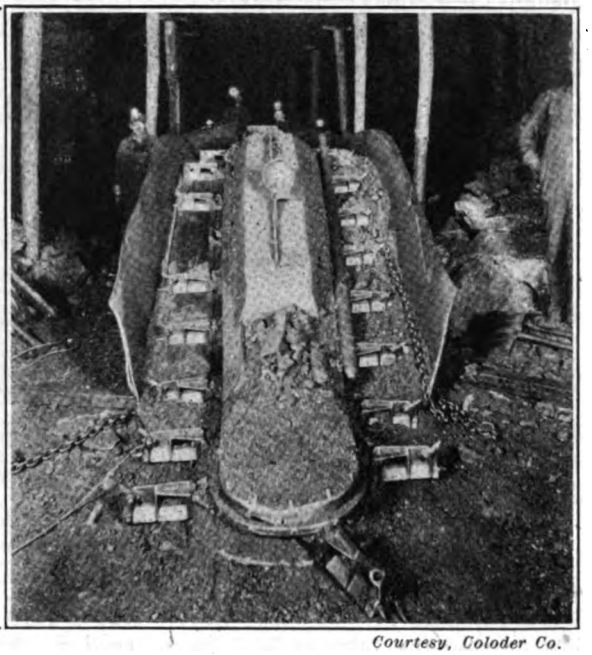
Mechanical Loading Saves Money for Many

Cost of Coal Lowered 40c. per Ton at Rock Springs—Drives 42 Ft. of Entry in Nine Hours—Duck-Bill Attachment Loads Coal on Shaking Conveyor

By Staff Correspondent



Courtesy, Coloder Co.

"TO make a success of mechanical loading we will have to discard traditions; the problem is 90 per cent management," said Eugene McAuliffe, president of the Union Pacific Coal Co., Rock Springs, Wyo., at the meeting held in the forenoon of Wednesday, at which he presided.

Geo. B. Pryde, vice-president and general manager of the Union Pacific Coal Co., talked in the place of A. W. Dickinson on "Mechanical Loaders That Have Operated Successfully at the Face and Their Operating Costs." He confined his remarks to a description of the experience of his company, which operates seventeen mines in the State of Wyoming.

The first loaders were installed in 1916 and now the company has at one operation thirty-eight Thew and twelve Joy machines, at another six Goodman scrapers and two Eickhoff conveyors and at a third three Eickhoffs. It is planning further installations of scraper loaders. Mr. Pryde stated that the company has had a marvelous success with the Eickhoff conveyors in driving narrow work.

The scraper loaders have a capacity of 3½ tons per trip. Consequently each scraper will load two cars on each return run. These scrapers operate in a section working the block system. At the first attempt a fall closed up the face, but the second trial of the system was quite successful, about 90 per cent of the timbers being recovered. This is important, for the posts cost $1 apiece.

Joy loaders are used to drive the lower bench of a 32-ft. seam, the top portion of which is later shot down and loaded by a Thew shovel. The average advance with Joy loading is 7 ft. per day, as compared with 1 ft. per day with hand loading. The type 4-BU Joy machines are loading an average of 90 tons each per day at a maintenance cost of 8 cents per ton.

Loads 342 Tons per Shift

The Thew shovels load an average of 175 tons each per day; and the scraper loaders on thirty-two consecutive working days averaged 342 tons per shift with a crew of fifteen men. Mr. Pryde also said that the scraper and Eickhoff loaders were producing coal for about 40c. per ton less than it could be produced by hand loading.

A time study of mechanical loading showed that of the total delays 60 per cent were administrative and 40 per cent due to repairs. The administrative delays include moving and other like items all of which, with experience, the mine officials should be able to shorten or eliminate.

H. C. McCullough, engineer, H. C. Frick Coke Co., Scottdale, Pa., read a paper on the "Shaking-Conveyor Loader and Its Use in Mining Coal." He described the system of loading progressively from one end of a long face toward the other, using a duckbill loading attachment with an automatic feeder at the end of a shaker conveyor. Rather than one long face, he proposed a number of faces of medium length operated in steps.

The paper was discussed by Mr. Pryde. He stated that in the Union Pacific mines, 42 ft. of entry, 12 ft. wide by 6 ft. high, has been driven in 9 hours by use of a loading attachment on an Eickhoff conveyor. The company has developed an automatic feeding attachment to the Eickhoff by which it has loaded 15 tons in six minutes.

This method was used on two faces, one on each side of the main entry; one face 165 ft. long and the other 135 ft., but the roof could not be held, so the company has now gone to 100-ft. faces in steps. When loading a long face with the automatic feeder attachment, about 13 ft. of the face must be loaded by hand in order to obtain room for starting the loader.

It has been found that the duckbill can more easily undermine the loose coal if the machine cuttings are spread over the floor before the coal is shot down. The original duck-bills used were 7 ft. high, but this has been reduced to 4 ft.

Sneaks Up Along Face

R. Y. Williams, of the Weston Dodson interests, in commenting on Mr. McCullough's paper, said that he liked the plan of loading a long face with the automatic attachment to the shaker conveyor because it reduces the roof overhang. At his company's mines heavy metal jacks are used,

The headpiece shows front view of loading machine at one of the Pocahontas Fuel Co.'s mines. As far as possible a clear path is maintained in front of the machine. Props are placed 3 ft. apart, but located so as to interfere as little as possible with the movement of the loader. The seam is about 10 ft. thick. Drawslate which varies from nothing to several feet is removed before the coal is loaded out in the pillar sections.

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Scraper Loader Cleaning a Long Face in a Thin Seam

At last, the industry has boldly adventured with large scrapers that fill two cars in a single run. At one time the scraper was a thin coal proposition, going where men could scarcely crawl, but it did difficult rather than much work. Today, it will beat hand loading in any kind of seam.

thus moving the fulcrum back from the face.

First the company worked two blocks, one 300 ft. and another 350 ft. long, then it had to wait nine months for the development of other long faces. Now there are three 300-ft. faces and one of these has been going since April 21.

The first break came after an advance of 85 ft. and now the roof falls behind the jacks each day. This face is being worked with a Jeffrey conveyor, 300 ft. long. On the second of the three faces they expect to try an Eickhoff conveyor.

HAS 125 SCRAPER UNITS

Cadwallader Evans, Jr., general manager, of the Hudson Coal Co., said that his firm has 125 scraper loading units in operation every day, and that last year they loaded over 1,000,000 tons with their assistance. The company first tried longwall but could not control the roof, so went to chambers 125 ft. wide by 225 ft. long and abandoned pillar work.

Answering a question of Charles Enzian, chief engineer, Berwind-White Coal Mining Co., Windber, Pa., Mr. McAuliffe said that his company drives up the pitch with the Eickhoff loading attachment, but narrow work is advanced along the strike. He also stated that his firm is in some cases conveying coal up a 7 per cent grade with this equipment. This grade, however, is at the end where the trough is elevated to discharge into the mine car, the main part of the conveyor usually working in favor of the load.

W. L. McCoy, mine inspector, Bertha Consumers Co., Pittsburgh, read a paper on "Best Methods of Adapting Present Standard Mining Systems to Mechanical Loading." This emphasized the many factors which must be combated when mechanical loading is introduced in a mine. He asserts that it is impractical to draw pillars mechanically, for the reason that the noise of the machinery does not give the miner a chance to hear the warning noises of a working roof.

In discussing the paper, Sterling S. Lanier, Jr., Norton Coal Mining Co., Nortonville, Ky., said that his company has used Goodman scrapers, Joy loaders, and Jeffrey conveyors and Shortwaloders and was successful with all and made some savings. His firm has been particularly successful in driving narrow work with Shortwaloders and conveyors. In a recent test in driving 600 ft. of entry a saving of 33⅓ per cent over hand loading was effected. The average was five or six cuts per shift with five men in the crew.

Edwin H. Johnston, of the Coloder Co., Columbus, called attention to the fact that the fields having high wage scales are not necessarily the most active in the development of mechanical loading, and as proof, he cited the many successful installations in West Virginia and Kentucky.

The last paper of the morning meeting "Getting Mine Cars to and from Mechanical Loaders" was read by Charles Gottschalk, consulting engineer, of Evansville, Ind. He predicts that 290 tons per shift will be the average production of loading machines. Car-changing efficiency is a measure of the effectiveness of a loader and this efficiency can be greatly increased by proper track facilities and close attention to administrative details. Promotion of friendly rivalry between gangs is one of the best ways of increasing car-changing efficiency.

F. F. Jorgensen, consulting engineer, Superior Coal Co., Gillespie, Ill., said that he has had to change his ideas of mechanical-loading possibilities about once a month, and sometimes every day. For instance, he at one time had made up his mind that if the mine cars were not of 2½ tons or more capacity, they could not be loaded economically by mechanical means. This idea was shattered by his learning of certain mines having much smaller cars which were nevertheless effecting a saving by mechanical loading.

The large attendance at the morning session was duplicated at the meeting held in the afternoon, which would seem to indicate that the interest in mechanical loading is on the increase rather than on the wane as some operating men believe. The first speaker of the afternoon was Robert Wallace, superintendent of the Pocahontas Fuel Co., who read a paper on "Mechanical Loading in Pillar Work" as practiced in the mines of his company.

REPAIR COSTS 3C. A TON

During 1925 the Pocahontas Fuel Co. produced with twenty-five Colodders 1,709,132 net tons from seven mines. The cost of parts and labor for repairs last year was 3c. per ton and the power consumption 0.2 kw. per hr. The average daily loss of loading time per machine was 9.18 min.

This company finds that it can load pillar coal mechanically at a lower cost than room coal and therefore has increased the width of its room pillars. It has mined thus far more than four million tons mechanically without a single machine runner being fatally injured. The difference in cost between coal loaded by machine and that shoveled by hand is between 20 to 25c. in favor of the former. Mr. Wallace characterized the mechanical loader by saying that "you can send him back to work a double shift without danger of backtalk."

W. J. German led the discussion of Mr. Wallace's paper. He said that on several occasions individual machines have loaded 300 tons in 9 hours from pillars. Pillar coal can be loaded four to eight times as fast

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by machine as by hand. N. G. Alford, consulting engineer, Pittsburgh, Pa., said that the roof in the mines where the Coloders are in operation is worse than any other he has seen in that part of the state.

Mr. Wallace explained that the roof immediately over the coal consists of drawslate which has a thickness varying from nothing to 3 ft. This must be taken down before the loader begins to load out a cut. He said that much timbering is eliminated by machine loading. Hand-loaders under similar conditions are sometimes compelled to reset timbers three to five times.

"Mechanical Loading in Rooms and Entries" was discussed by I. N. Bayless, superintendent of the Union Colliery Co., Dowell, Ill. A paper containing his remarks and additional information will appear in an early issue of this magazine.

He pointed out that a prerequisite of successful mechanical loading is education of the management as well as the workers in the new problems which will accompany mechanicalization. His company is satisfied with the results being attained mechanically. The machines are working successfully from an economic viewpoint in spite of the many disadvantages under which they have to operate in the Kathleen mine.

L. D. Smith, of the Chicago, Wilmington & Franklin Coal Co., opened the discussion of the subject introduced by Mr. Bayless. He indicated a few of the difficulties that must be considered by those who contemplate the installation of loading equipment. At shaft mines where the hoisting equipment is working at capacity, the loading machine will lower the output because less coal can be loaded into any given mine car by machine than by hand. With machine loaders more refuse will be loaded with the larger sizes of coal than the hand loader will put on the car, at least in mines where discipline prevails.

SAVED 204 MEN

J. G. Bart wanted to know how many men were employed in the Kathleen mine before and after mechanical loaders were introduced. Mr. Bayless stated that these machines have eliminated 204 men with no change in the daily output of the mine. In answer to another question Mr. Bayless said that all except the machine cutters are paid a flat day wage.

The machines installed in his mine work every day except when they break down, which is not often, and when they do it is generally from small defects which can be easily repaired. He has never anticipated that he could operate machines without some trouble, and he is of the opinion that several spare machines should be kept on hand. These loaders have increased the daily output per man on the payroll from 5.5 to 8.5 tons. The record output per man employed at his mine for one day is 11 tons.

In a paper on "Mechanical Loading of Top and Bottom Rock in Entries," A. C. Hohnke, superintendent, Russell Coal Mining Co., Clymer, Pa., said that the substantial savings which Myers-Whaley machines have effected in the taking of top and bottom rock, as indicated in his paper, are second in importance to the speed with which development can be advanced in thin seams where such brushing and bottom lifting are necessary. His paper will be published in a later issue.

MUCH WORK OR NONE

W. L. Householder, electrical engineer, Buffalo, Rochester & Pittsburgh Coal & Iron Co., related the experience of his company in the same kind of work. For five years that company has been using Myers-Whaley machines for taking rock and in some instances has realized savings in excess of those given by Mr. Hohnke.

In this work the cars must be low enough to enable the roadways to be extended in the coal at least 50 ft. before shooting the rock. The machine will not work to advantage where the rock is taken with each advance of one or two cuts. In such instances the cost of loading the rock may be twice that where the rock is loaded by hand. A machine should work at least one or two full shifts in a single place.

This machine showed up to great advantage in the driving of a rock tunnel, 1,200 ft. long, 7 ft. wide and 6 ft. high. A comparison of hand-loading methods with those in which machines were used showed a saving of $25 per yd. The upkeep cost of the machines in the mines of his company compares favorably with that given by Mr. Hohnke, which is 2.67c. per ton.

The experiences of the Berwind-White Coal Mining Co., Windber, Pa., with new methods of mining by long face advancing, and by long face retreating with conveyors in the former case, were described by Charles Enzian, chief engineer of that company. It has done much mining on long faces and finds that such methods give genuine promise of being practicable at its mines, so much so indeed that the organization is constantly thinking along these lines.

LONG FACE AND HEAVY COVER

In the places where long face retreating was tried roof conditions are difficult. The immediate strata over the Miller seam which was thus being mined are soft and friable. In places the roof will fall up to a rider 20 ft. above the coal. The coal is 39 in. thick and the cover varies in thickness from 600 to 700 ft.

The faces in the layout of long face retreating were 150 to 200 ft. in length. Pack walls, 15 ft. wide, were separated by spaces of equal width. The coal was shoveled by miners who were paid a task rate. This method has been abandoned, temporarily at least. The seam being worked has many rolls and clay veins.

Recently a system of long face retreating, upgrade, was started in the same seam with no saving as yet over the room-and-pillar system. In this work a 290-ft. face has been moved back a distance of 710 ft. The roof is supported principally by 10-ft. pack walls separated by 10-ft. spaces.

The cover over this place is heavier than that which was over the faces which were mined advancing. Though the cost of timbering and building pack walls in this work is not favorable, the company is getting a return in the form of experience.

SCRAPER LOADERS FAVORED

Conveyors are also being operated in 28-ft. rooms with 36-ft. pillars with a material increase in output per man. The average output per man per day by this method is 11 tons.

Mr. Enzian has great faith in the scraper loader and intimated that his company will shortly try a machine of this type in an attempt to find out how the roof will act in a suitable system.

His company has concluded that mechanical mining, at least in the mines of his district, must be accompanied by mechanical cleaning.

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Face and Main Conveyors Are Receiving More Attention Than Ever Before

Can Be Used Even in Thin Coal and in Rooms—Dunbar Would Have Conveyor Work Full Shift—McAuliffe Believes Mines Should Produce Coal Night and Day to Outstrip Action of Roof

THURSDAY morning was devoted to "Underground Conveyors." A. C. Callen of the University of Illinois, acted as chairman. The viewpoint of the material-handling engineer was given by Nixon W. Elmer, consulting engineer, Quincy, Mass., in his talk "Inside Mine Conveyors."

He condemned the practice of selling conveyors on approval, saying that no manufacturer of a competitive non-patentable article can afford to spend much money in development work. The conveyor should be made to fit the mine rather than the mine to fit the conveyor.

BELT CONVEYORS ON MAIN ENTRY

Mr. Elmer pictured the coal mine of the future as one with little track, few locomotives and cars, and with belt conveyors on the main entry. The production per entry will be 600 to 800 tons per day. He is not so sure as to what will be the method at the face, but mentioned an instance where a caterpillar loader was operating along the face and loading the coal into a conveyor. Glen Southward, consulting engineer, of New York, in discussing the paper, agreed in general with Mr. Elmer's conclusions.

Frank Dunbar, general superintendent, Hillman Coal & Coke Co., Pittsburgh, said his company was using some conveyors, but would like to know how to reduce the time taken by the first two operations in the cycle, that is, (1) cutting and (2) drilling, shooting, timbering and cleaning-up slate. He would like to keep the conveyor working 80 per cent of the time instead of about 20 per cent as is now customary. The third part of the cycle, loading the coal on the conveyors, he considers the easiest part of the operation.

SHOULD WORK NIGHT AND DAY

Eugene McAuliffe, in commenting on the future of loading and conveying said that he believed that a loading machine should be a relatively small mobile unit. "If there is an industry on earth that should be operated 24 hr. per day, it is a coal mine," were his words in prefacing a remark regarding the present mine laws. He called attention to the fact that the forces of nature are working in a mine 24 hr. a day and outwitting those who worked only 8 hr. He predicted the time when in well-ventilated and face-sprinkled mines, even in those that are gaseous, shooting will be allowed at any hour, and yet the risk will be lessened by concentrated and continuous operation.

R. J. Smith, of Terre Haute, Ind., president of the Princeton Mining Co., said that efforts should be made to eliminate hand labor wherever possible; for instance, by shooting down the undercut coal onto a conveyor. He remarked that a small easily handled shearing machine was needed that would cut in any position at the face, possibly with a cutter bar resembling that of the old breast machine.

CONVEYORS IN LOW COAL

In the second paper of the morning session, "Room-and-Pillar Mining with Conveyors," R. A. Suppes, general superintendent, Knickerbocker Smokeless Coal Co., Johnstown, Pa., described in considerable detail his experience during fifteen months of operation in seams from 23 in. to 44 in. thick. Because of the rolls, faults, and other uncertainties of mining, he believes that in most instances the room-and-pillar method must be retained and that mechanicalization must be suited to fit this condition. The system at his mines is to drive rooms 35 ft. wide and about 250 ft. long, with 18-ft. pillars between them.

A sectional chain conveyor is used on the main roadway and a belt conveyor passes along the face. Ventilation is by a distributing fan with 12-in. flexible tubing. It is the practice to stop all machines for three minutes, at specified intervals, so that the men at work can listen for signs of roof action. Up to the present the conveyors have not been used for the removal of heading stumps or barrier pillars.

In the mining of somewhat over 55,000 tons the average output has been over 14 tons per man, including cutting, timbering, drilling, shooting, conveyor moving and like items.

EQUIPMENT COST PER ROOM

The total equipment investment per room, including the mining machine is $8,000. The mining cost, including 25 per cent depreciation on the equipment has been materially less than at neighboring mines in that district.

S. W. Blakeslee, superintendent, Pennsylvania Coal & Coke Corp., Ehrenfeld, Pa., in discussing the paper, stated that the tonnage per man reported by Mr. Suppes, is greater than is obtained by any method in that part of Pennsylvania so far as he knows.

WAY OF EARNING A LIVING

"Mining Plans for Different Types of Conveyors," by Heber Denman, president, Paris Purity Coal Co. Clarksville, Ark., was the last paper of the morning session. Mr. Denman described the face-conveyor panel-longwall method by which he has been operating for three years. It has ceased to be an experiment, but instead is now the company's "way of earning a living." The coal thickness runs from 18 to 24 in. and the product goes only to the domestic market. The roof is handled by the caving method, the breaks being produced by a single row of sand-pack, cast-iron jacks.

The loaders move the conveyor forward as a unit at the end of each shift. Mr. Denman doubts if face conveyors could be used successfully in thin coal where the roof is so bad that face timbering would necessitate moving a conveyor in short sections. He stated that there are now fifteen to twenty long-face conveyors in use in the Paris field.

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Coal-Dust Explosion at Bruceton Mine Staged for Inspectors' Institute, May 13, 1926. Below —Initial Flame Emission. To Left—Flame and Smoke on Second Explosion.

Many Attest to Value Of Rock Dust

Jones, Jenkins and Osler Testify How It Saved Lives at Their Mines — Wet Coal Dust Explosive — Saturated Rock Dust Effective — Gas Still a Menace

By Staff Correspondent

"To quibble and argue in the face of scientific evidence which has been unqualifiedly supported by actual experience is to show such an utter disregard for mine safety as to entitle one to contempt," said A. C. Callen, professor of mining engineering of the University of Illinois, in a paper on "Proven Advantages of Rock Dusting," in opening the Thursday afternoon session.

He said that those who assigned him the topic evidently desired him to prove that rock dust will stop an explosion. In accord with this interpretation, he presented pertinent facts showing the effectiveness of rock dust and reviewed recent experiences which demonstrate that point.

"When an insurance company refuses to insure you because of high blood pressure, a bad heart or for other reasons, you begin at once to consider your case seriously. When an insurance company refuses you compensation insurance because your mine is considered too great a risk you should likewise consider your case seriously." In addition to recommending unqualifiedly the practice of rock dusting, Mr. Callen urged the use of every other practicable safety device. The session was conducted by Dr. J. J. Rutledge, chief inspector of Maryland, as chairman.

J. E. Jones, safety inspector of the Old Ben Coal Corporation, was scheduled to comment on the subject covered by Mr. Callen's paper, but being unable to attend, he sent a short paper which was read by N. G. Alford.

In his paper Mr. Jones stated that damp rock dust is by no means ineffective. The section in which the recent explosion in the Orient mine originated was throughout extremely wet. An inspection after the explosion showed that coking action began 100 ft. from the origin and continued for a distance of about 175 ft., extending, however, only 25 ft. beyond the inby extremity of the rock-dusted section of that entry.

The rock dust, like the section in which it was spread, was extremely wet; yet it extinguished the flame. On the other hand the coal dust at the dead end of this entry which had not been covered with inert material burned and deposited coke despite the fact that it also was wet water, therefore, neither prevented the rock dust from extinguishing the flame, nor rendered the raw coal dust at the face incombustible. Who shall doubt, therefore, that rock dust is more effective than water, either dry or wet?

Charles Enzian, chief engineer of the Berwind-White Coal Mining Co., read a paper in which he described the methods, and detailed the costs,

The explosion shown in the headpiece is that described in the last four paragraphs of page 734 of the May 20 issue of *Coal Age*. The shot from the cannon first ignited the dust between the cannon and the drift mouth and then later the dust behind the cannon. It was this last explosion that filled the valley with flame and smoke, making it an inferno. The dry material on the hillside caught fire and added evidence, if any were needed, of the scorching effect of the blast.

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of rock dusting in the mines of his company. This paper will appear in a later issue of *Coal Age*.

Rock dusting saved the lives of all but seventeen of the 125 men in the mine during an explosion which occurred on June 8, 1925, in the No. 9 mine of the West Kentucky Coal Co., said T. E. Jenkins, the vice-president of that company. In 1917 he had noted that an explosion had been halted on a haulway by the finely ground sand which was lying in the roadway and that this same explosion had traveled some distance along a companion aircourse until it came to a shaft. This carried conviction to his mind, and in 1924 he took advantage of what he had learned and began rock dusting mines of his company.

Trough at Line Brattice

The general practice at the West Kentucky Coal Co's mines is to build barriers on aircourses at 300 ft. intervals and also to erect them at the outby end of each line brattice. His company pulverizes the rock dust that it uses in its workings at a cost of $4.60 per ton including the cost of sacking it and delivering it to the mines.

He said that he was in hearty accord with the recent decision of the Associated Companies, as recently promulgated. The companies announced that thereafter they would refuse to assume the explosion risk of any mine which is not rock dusted. He believed that this would do much to increase safety, for since the declaration was made several of the companies in his field had commenced the rock dusting of their mines.

Saved Men at Horning

That rock dust undoubtedly checked the propagation to wider limits of the explosion in the Horning mine was the opinion of George Osler, general manager of the Pittsburgh Terminal Coal Corporation. The information collected after this explosion, which led him to this belief and which he detailed at this session, has already appeared in *Coal Age*.

He believes that strict attention to rock dusting on haulways and in rooms to the face may make it unnecessary to apply inert matter on aircourses. He was convinced that of the two, the rock dusting of the haulways was the more important provision.

Mr. McAuliffe does not believe that the 9 mills per ton of coal mined which his company expends on rock dusting is in any way sufficient to afford adequate safety. To prove the sincerity of his belief he outlined the safety program which his company has adopted. He attacked the attitude of not a few operators who, having rock dusted, place almost entire reliance on that practice for freedom from explosions.

In his opinion, rock dusting is only a third line of defense. Ventilation and methods of keeping down coal dust must be given priority. Means should be taken or sought to stop the initiation rather than the propagation of an explosion.

Last year his company applied 1,200 tons of rock dust which cost $9 per ton at the mill. It spent altogether in the practice $27,000, excluding in that estimate the capital investment. In the last six months it installed 36 miles of water line. This is being used to wet down the coal dust at the face. Last year the company sunk five new air shafts to reduce the travel and decrease the friction of the mine air and to increase the volume of air delivered to the mines. His company is using gunite machines to make stoppings as leakproof as possible.

Many Diverse Opinions

John T. Ryan, general manager of the Mine Safety Appliances Co., presented to the meeting a complete and comprehensive compilation of the opinions of a wide group of men, in a paper on "Sealing Fires in Gaseous Mines," which he strengthened with his own conclusions. He gathered much of the information contained in this paper by sending far and wide a questionnaire of twenty-one questions to ninety men, of whom seventy-five responded.

It represents, therefore, the best opinion current as to what practices should be adopted in the fighting of mine fires. Though conditions from mine to mine vary somewhat, he pointed out that certain fundamentals are known which can be applied at all times. His paper will be published in a later issue.

Old-timers used to say, "when a fire breaks out, fight and fight till you can't fight no longer; then bottle her up and 'git' out, for the cork may blow off." This was the expression given by Charles H. Nesbitt, chief inspector of mines of Alabama, in a written discussion which was read by C. W. Nelson in the absence of the writer.

Mr. Nesbitt believes that every known means consistent with safety should be exhausted to extinguish the flame before sealing is considered. When a fire breaks out all employees with the exception of those whose services are needed should be immediately ordered to the surface.

When it has not already been done, that part of the mine in the vicinity of the fire should be thoroughly rock-dusted, washed down and made wet. Immediately after completing the temporary seals all men should leave the mine and stay out for twenty-four to forty-eight hours. This is necessary to avoid fatalities in an explosion which might occur within these limits of time.

Simultaneous Closing

E. J. Newbaker, general manager of the Berwind-White Coal Mining Co. would build doors as temporary fire seals, which when ready would be closed simultaneously. Mr. Ryan likewise is of the opinion that the intake and return should be sealed at about the same time. When this cannot be done the intake should be sealed first.

Installed in the Nemacolin mine of the Buckeye Coal Co. is perhaps more equipment for preventing and fighting fires than at any other plant in the world. Water lines, water cars under pressure, sand buckets and extinguishers of several types in adequate numbers are installed to extinguish the fire before it can gain headway. The story of this installation as given by W. Z. Price, assistant superintendent of the Buckeye Coal Co., in a paper on "Fire Protection Underground."

Ignore Small Shorts

In his paper Mr. Price stated that many automatic circuit breakers are installed in the Nemacolin mine. Mr. McAuliffe said that great care should be taken to see that all permanent track is well bonded as a means of eliminating that source of mine fires. He gave as his reason the occurrence of a fire in one of his mines. This was caused by the fall of a trolley wire on a new unbonded rail. Unfortunately the automatic circuit breaker in this instance failed to open.

Mr. Price declared that even where the rails are thoroughly bonded a similar condition might prevail, as the circuit breaker to carry the load must be set for such high amperages that the short might not draw sufficient current to operate the device.

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Rigid Supports Near Face Help Bring Down Roof

Step-Face Longwall Next of Kin to Pillar Work on a Long Break Line—Woodson Describes Breaks in Roof Starting Back of Cut—Face Falls Said to Be Light

By Staff Correspondent

That rigid supports close to the face are necessary for the breaking of the mine roof, was an opinion frequently expressed and generally approved at the Friday morning session on "Roof Control and Mining Methods." At this meeting L. E. Young, general manager of the Union Colliery Co., of St. Louis, presided.

H. F. McCullough's paper on "Roof Control" pointed to the step-face system as the best solution of any departure from standard room-and-pillar methods. He stated that almost any attempt at working longwall without a gob pack is only an effort to work a long face without adequate means of controlling the roof.

Falls as a Form of Control

If the roof cannot be controlled, then it must be allowed to come down, and this is best accomplished by means of rigid supports at the break line which will prevent bending and produce a fracture at the coal face. The projecting corners of a step face furnish rigid supports, which move the general break line outward, allowing a reasonably free space behind the greater portion of each face.

Mr. McCullough called attention to the fact that the step-face system is in principle the same as drawing pillars on a pillar line. He showed how natural conditions can be met by varying the length of face, distance between steps, and the relative direction of the general break line. He described his company's first attempt in 7-ft. coal on a 300-ft. face. Cribs were used, but still there was enough deflection of the overhanging strata to allow the roof, at times, to fracture close to the face.

R. Y. Williams, consulting engineer, of Shenandoah, Pa., in discussing the paper said, that 90 per cent of mining today is in reality done by the step-face method, because this system corresponds to the robbing line in room-and-pillar workings.

He called attention to the fact that seldom, if ever, does the roof shear off immediately at the face. The falls at that point are light and usually extend but a short distance in an upward direction. An example of a conveyor digging itself out of the fall and of a mining machine and other equipment being reclaimed from under a mass of rock at the face were cited as proof that such falls are light.

The paper by E. F. Woodson, general superintendent of the Crowe Coal Co., Henrietta, Okla., was read by Mr. Burgess of the Republic Iron & Steel Co. The author described a recent attempt at working a face about 200 ft. long by conveyor mining in a bed 32 to 38 in. thick under a cover of 200 to 300 ft., with a good roof of blue shale. The plan was to set a row of break timbers close to the conveyor face so as to cave the area mined and relieve the weight.

After advancing the 200-ft. face about 150 ft. heavy roof breaks occurred after which a fall was obtained with every cut of coal. A fracture was formed at the back of the undercut, taking an angle of 60 to 70 deg. with the horizontal, and extending over the caved area.

Results Vary With Height

The break would always appear at the back of the cut as the mining machine crossed the face. Later the work had to be abandoned because of the heavy pressure which resulted from encountering a normal fault. He described in detail his observations and theory as to the bending and shearing action in the overburden.

Following this, Mr. Pryde read a discussion written by W. D. Brennan, general manager of the Phelps-Dodge Corporation, of Dawson, N. M. This detailed experience during the past year and a half, with long-face mining in coal from 4 ft. to 9 ft. thick, under overburden which in places attained a thickness of 1,500 to 2,000 ft. These faces were 150 to 400 ft. long. The breaks extended entirely to the surface.

In coal over 6½ ft. thick the results were disastrous, but where the bed was less than 6½ ft. thick the roof was successfully broken at a row of props 6½ ft. from the face. The practice followed was to remove all supports back of the break row in which four rows of props were always used so as to assure protection to the men and equipment. The opinion was expressed that longer faces resulting in a slower advance so as to give the roof more time to settle, might afford better results.

Seams Above Limit Methods

Dr. J. J. Rutledge commended the paper by Mr. Woodson, saying that the author had put into concrete form a likely theory of roof action. He called attention to the fact that in panel longwall the roof action is the reverse of that with true longwall advancing, and that the breaks should be obtained at rigid supports so as to relieve the face of weight.

Josiah Keeley, president of the Cabin Creek Consolidated Coal Co., Kayford, W. Va., was the third speaker. His subject was: "Control of Roof in the Eagle Seam." He opened by humorously describing the idosyncrasies of the No. 1 Gas or Big Eagle Seam. Pillar drawing in this measure results in cracks which extend to the top of the mountain, perhaps through 1,000 ft. of cover.

He said that little over 50 per cent of the coal is removed, principally because of the fear of disturbing the valuable beds above. The thick draw slate overlying the coal presents a real problem. This can be controlled only by complete lagging, which is, of course, out of the question.

The last paper of the morning, "Recent Developments in Roof Control," was read by W. C. Stratton, chief engineer of the United States Coal & Coke Co., Gary, W. Va. He described his company's endeavors to improve and cheapen the method of controlling the roof. One of these was by the use of a two-part crib with height adjustment accomplished by sliding one part upon the other at a suitable angle, the two portions

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being held in position by a chain. The other device is a power-propelled metal jack.

One of the most interesting talks of the session was by Glen Knox, superintendent of the Gunn-Quealey Coal Co., Quealey, Wyo., who at the request of Eugene McAuliffe, reviewed his experience in longwall mining. The coal worked is 6 ft. to 6 ft. 3 in. thick, the roof a strong sandy shale and the cover about 500 ft. thick. The coal is free of partings and is shot down onto a heavy-duty conveyor, which is moved up tight against the face.

His company has already worked two continuous faces each 250 ft. long for a distance of 2,000 ft. Selected posts 8 to 10 in. in diameter are set 12 in. apart in one direction by 15 ft. in the other to form rigid break rows. Between these rows of selected posts ordinary props are set on 4 ft. centers.

If the roof does not break at every second cut or each 15 ft. of advance, work is stopped until the roof can be brought down. Cribs are sometimes used, but are employed only for the safety of the men and equipment. A new break row is set about 4 ft. from the face, or about 11 ft. from the back of the cut.

After the conveyor has been put in operation shooting is started at one end of the face and is continued along its entire length at one-minute intervals. About 10 per cent of the coal is loaded automatically by the conveyor and the remainder is shoveled by hand. Each loader handles 18½ to 19 tons per shift and the output per underground employee is 9 to 10 tons daily, which compares favorably with 5 tons which was the production before the adoption of the new system.

Without a single accident at the face, 175,000 tons have been mined. During the last year, the men have never failed to clean up a face each shift. Less lump coal is obtained than with the old system of mining.

At the start a face was lost by advancing a distance of 30 to 35 ft. before getting a break. Mr. Knox stated that the saving realized has been small. Timber cost is somewhat increased. The net saving in getting the coal into the cars is less than 15c. per ton. He said that they are now reclaiming more rail than is required for development and eventually they will have some to sell.

Erskine Ramsay described two successsfull longwall mines in Alabama. He also hinted at a new system of mechanical mining that he is working out and which he predicts will prove of great advantage under favorable conditions.

Carl Scholz, of Charleston, W. Va., said that so far, his company has failed to control the roof in wide places. However, it has one mine in which all production is from faces that are 60 to 80 ft. in length.

Better Track and Bigger Cars Are Advocated

Heavier Rails, Fixed Standards of Construction, Smaller Car Wheels and Greater Length of Cars All Urged—Paint Should Reduce Corrosion—Young Wants Double Trucks on Mine Cars

By Staff Correspondent

FRIDAY afternoon's session was devoted to a discussion of underground transportation. So busy had the exhibitors been during the week demonstrating and exhibiting their equipment to coal company officials to the number of at least 1,200, who milled around the exhibit spaces, that they were willing to close the show at noon. This they did. That was not the case, however, with about 150 operating men who desired expert information on the design, construction and maintenance of track and rolling stock. R. L. Kingsland, electrical engineer of the Consolidation Coal Co., presided.

"Track materials and layouts must be standardized to keep maintenance cost low and efficiency high," said A. A. Culp, consulting engineer of Birmingham, Ala. Track men will become more proficient in their work when track is standardized. Often so little is spent on the haulage system that other phases of mine operation suffer thereby to the extent that the unit cost of mining is higher than it should be.

Mr. Culp made a statement which should be at all times borne in mind: "No matter how good the condition of the track, if the layouts are not planned so as to minimize delays to other phases of the operation, the haulage system is not efficient."

He drew attention to the fact that as a short ruling grade will limit the tonnage of a train over a long haul, such abnormalities in grade should be in most cases corrected. When details are properly planned and executed the maintenance forces are lowered to a minimum without jeopardizing the efficiency of the track. Poorly laid rails and complementary equipment are torn up by passing trips as fast as they can be repaired.

Some years ago, the Lehigh Valley R.R. turned to the use of 136-lb. rail as an experiment, though it thought at the time that this section was much heavier than necessary. The rail has been in long enough use now to prove that not only are the track maintenance costs less, but that the yearly tonnage of rail renewals also is less.

In some mines the cost of track maintenance is as much as that on the best railroads, according to Fred C. Hohn, consulting engineer, Scranton, Pa. This unfortunate situation is due to the fact that makeshift and unsuitable materials are improperly installed, and then maintained in a haphazard manner with the result that their life is short, derailments are common and labor is wasted in patching. He read a paper on "Track Work, Details and Maintenance."

Clarence E. Watts, mechanical engineer of the Berwind-White Coal Mining Co., Windber, Pa., delivered a paper on the subject of, "Selecting a Mine Car Design." His attitude is that though great strides have been made in the design and construction of mine cars, not much progress can be noticed with respect to certain of its mechanical features. He feels that the last word has not nearly been reached in achieving the highest ratio between the dead weight of the car and its gross weight.

In his paper, Mr. Hohn objected to the practice of having bond holes

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punched in rails before they left the mills. R. P. Hines wanted to know his objection, stating that it was cheaper to follow this practice than to do the drilling on the job. Mr. Hohn's chief objection is that the punch hole is irregular and therefore requires reaming.

Mr. Hohn also had said in his paper that he could not see the merit of steel ties for general use. George Hay, general manager of the Consolidation Coal Co., said that his company was experimenting in the use on main haulages of heavy steel ties under 60-lb. rails. The tie being used has a bearing surface of 7 in. and a top surface of 5 in.; it is ballasted with rock, and is held in line with braces which extend from the rib to the rail. He thinks that the steel tie is of particular value in the repair of rails, which have spread. Where they are used under switches, a floor of concrete is poured.

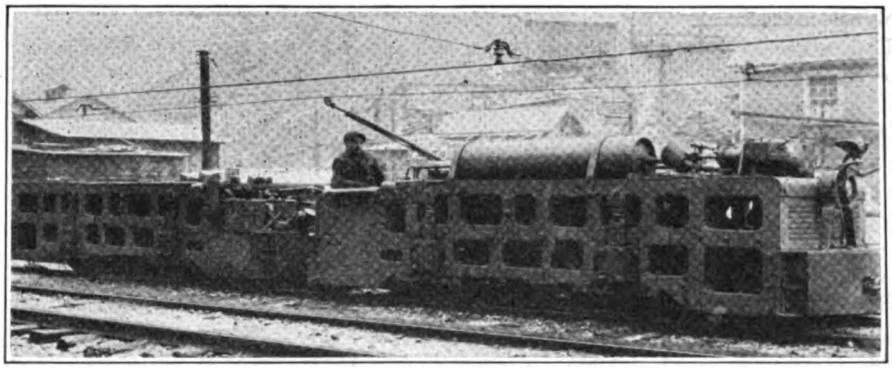
STEEL TIES CONCRETED

Mr. Johnson of the Bethlehem Steel Co., described a steel tie installation in a Michigan copper mine where concrete was utilized to hold and support the track along the entire length of the main haulway. Mr. Hohn said that in his experience steel ties in general use, and under heavy rails in particular will bend and tend to draw the rails together because the center of the tie is in contact with ballast material at a higher level.

W. D. Hockensmith, of Penn, Pa., pointed to current practices and tendencies in design which car manufacturers are now following. A change from the 16-in. wheel to the 14-in. wheel has been made to increase the capacity of the car by 5 to 8 cu.ft. with only a slight increase of tractive effort. He intimated that no brake should be designed so as to protrude beneath the axle. Where the brake gear extends beneath this point, it is generally out of order.

He stated that the steel-band brake is satisfactory for spotting mine cars, but is of no value for steadying trips on long hauls.

He urges wider use of the composite type mine car because it has proven to be best both from a practical and an economical standpoint. The cost is 15 to 20 per cent higher than the wood car of the same carrying capacity, and the weight in each case is about the same. In his opinion the width of a composite mine car can be increased to such an extent as to give 30 to 40 per cent greater capacity without sacrificing strength.



Two Fifteen-Ton Locomotives Operating in Tandem, Keystone, W. Va.

This heavy haulage equipment is being used on the main haul of the Keystone mine, operated by the Keystone Coal & Coke Co. The motors in each unit are adapted for a locomotive weighing 20 tons.

Steel sides of mine cars will last at least twelve years. The Steel Corporation has found by experience that the average life of wood cars is five years. After that time they have to be rebuilt. Contrary to common belief, the bodies of steel cars are not much weakened by rust which attacks the outside and not the inside of the plates. Mr. Hockensmith would recommend therefore that oil or paint be applied to the outside surface, perhaps by the use of a spray gun.

The mechanical loaders now in use require a clearance of 14 to 18 in. between the top of the mine car and the mine roof. Many operators are considering the possibilities of mechanical loading as applied to their properties. Mr. Hockensmith urged them to consider the requirements of the mechanical loader when having cars built for hand-loading purposes.

LONGER MINE CARS

According to him, the mine car will be increased in length. Inasmuch as 16-ft. mine locomotives are being used successfully, he sees no reason why the mine car should not be longer where conditions require higher capacity than that can be obtained with current proportions. He feels that a bottom could be built strong enough to take care of the additional overhang of a longer mine car. He has no doubt but that a 16-ft. car on a 6-ft. wheel base would work with entire satisfaction, providing the track curves were made longer.

Much is yet to be learned about features of design and construction which will give the same strength to the mine car and at the same time lighten its dead weight. He sees no reason why the 3 to 1 ratio between the capacity and dead weight which is being obtained in railroad cars could not at least be approximated in mine cars to the extent that the latter would carry as much as two and one-half times their dead weight.

He is building for outside tram purposes at a certain mine a 40-ton car, one end of which will be equipped with a hand brake and the other end with an air brake.

Dr. L. E. Young, of St. Louis, is confident that the idea of double trucks on mine cars is practicable and in the future may have to be adopted where the hauls are long. Little encouragement from others was forthcoming to strengthen him in this belief. Nevertheless he remained as ever "from Missouri."

DISPATCHING METHODS

The Consolidation Coal Co. employs two distinct methods of controlling underground haulage. In closed-light, gaseous mines traffic is regulated through a motor boss. In such of its mines as are equipped exclusively with permissible equipment no telephones are installed. In its open-light mines, transportation is governed by telephones and a dispatcher. A detailed account of these two methods was described by J. B. Hicks, electrical engineer of the Consolidation Coal Co., in a paper on "Dispatching for Long Haulage."

The subject of this paper was discussed by T. G. Fear, general superintendent of the Inland Collieries Co., Indianola, Pa. He said that if he should ever decide that the use of a telephone in a gaseous mine was dangerous practice, he would at the same time make a decision to take out all electrical equipment. The mine which he is operating produces normally about 3,100 tons of coal per day. This tonage is hauled over a distance of one and one-half miles by two 15-ton locomotives.

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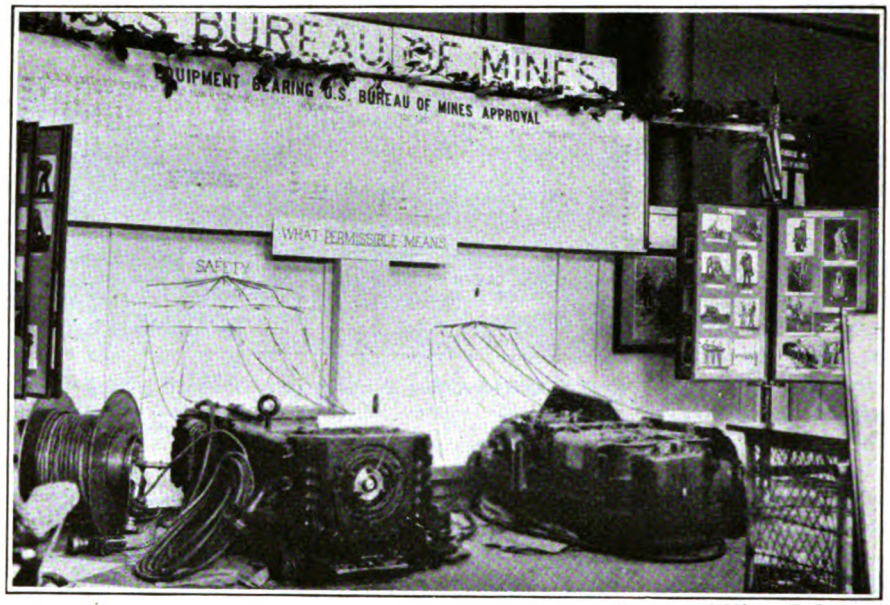


Bureau of Mines Exhibit

Many Exhibitors Show New Equipment At Cincinnati

Ninety-Two Separate Booths Exhibit New Suggestions for Cutting Cost and Increasing Safety—Trend Strong for Greater Use of Power—More Mechanical Loading Devices Shown Than Ever

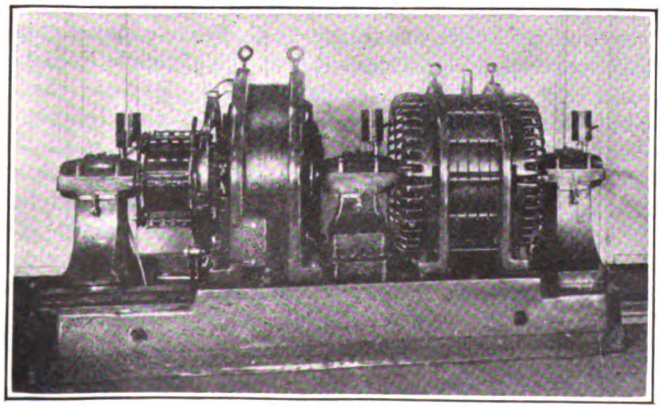
By Frank H. Kneeland
Associate Editor, *Coal Age*

EACH SUCCEEDING year seems to show a growth and improvement in the exhibition of mining equipment held in conjunction with the meeting of the American Mining Congress. One needs only to study these exhibits carefully to see the present and future trends of the industry. This year face conveying, power drilling and shoveling were much in evidence. It is not, however, the intention here to enumerate the various exhibits, interesting though they were, but rather to recount some of the new devices, each capable of doing its bit toward easing the labor or cheapening the cost of coal production. These ran a wide gamut of usefulness, ranging all the way from pump controls to shotfiring devices. Just as the visitor to the show came upon these various pieces of new equipment in no particular order or arrangement, so no attempt will here be made to place the descriptions in any premeditated sequence.

Simplicity and compactness, two highly desirable features, were embodied in the new automatic substation exhibited by the Ridgway Dynamo & Engine Co. The control apparatus, with the exception of the direct-current breaker and its supervisory relays, was made by the Cutler-Hammer Mfg. Co. and was concentrated on two panels. Only one voltage was employed for operating the magnetic switches and relays.

The direct-current breaker is that manufactured by the Automatic Reclosing Circuit Breaker Co. This substation was unique in that it was the product of three companies, each a specialist in its particular field. The Ridgway synchronous motor-generator set of the exhibit is characterized by abundant copper, by the "Ridgway" compensating winding of the generator, and by provision for easy alignment of the motor and generator frames. Adjusting bolts are provided which make it convenient to raise or lower the frames or shift them laterally on the base. Although the motor-generator on exhibit ran at 1,200 r.p.m. the same automatic switchboard is used with the 900-r.p.m. machines.

The automatic reclosing circuit breaker, which is the new type KSA, has a number of new features. The most important of these are: Solid contacts instead of laminated, a magnetic blowout and a laminated frame. The blowout is designed for maximum effectiveness even at low current values. The contact pressure has been greatly increased which results in an operating temperature



Motor-Generator Set

This constitutes part of the automatic substation described in the right column of this page. The switchboard is not visible in the picture. The bearing relays and some automatic equipment are plainly shown.

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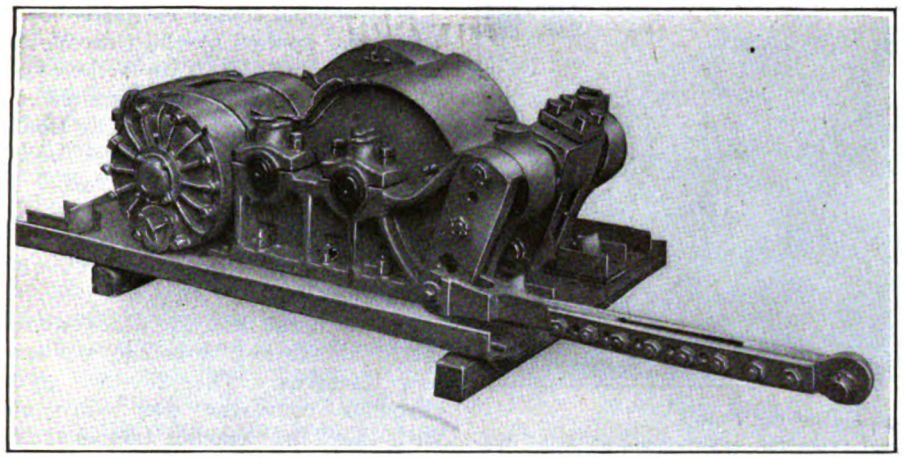


Engine That Gives Differential Shaking Motion to Conveyor

This side-drive engine, which is intended for actuating the Mavor & Coulson conveyor, is one of three types available. It operates at 65 strokes per minute. The motor and controller are of the explosion-proof type and the design is rugged and simple throughout.

considerably below the limits permissible on a solid-contact device.

The laminated frame of the breaker speeds up its operation and reduces the actuating current required. Another feature is the use of a rolling-ball contactor which delays the insertion of resistance in the holding coil circuit, until the breaker has had plenty of time to seat itself.

The C. H. McCullough Engineering Co., of Pittsburgh, Pa., had on exhibit a driving engine and two sections of the Mavor & Coulson shaker-trough conveyor, which is made in Glasgow, Scotland. The engine is compact, and appears to have that ample ruggedness and simplicity which is necessary for duty in a mine.

The motor and controller are of the inclosed type approved in Europe for use in gassy mines. The armature is fitted with grease-packed ball bearings. The bronze sleeve bearings are oiled by the wick system from an oil cellar, the covers for which instead of being held in place by ordinary nuts, are each secured by a single lever nut requiring no wrench. Gears and the wearing portions of the shafts are case-hardened.

The 9-ft. trough sections exhibited were 20½ in. wide. The standard sections, which are made of lighter gage steel than the drive section, weigh only slightly over 100 lb. each. Two men can easily handle one of these.

The conveyor is designed to operate at 65 strokes per minute, and on a level course, 360 ft. of 20½-in. trough is the maximum to be driven from one engine. The tonnage rating on the level, when using a 9 to 10-in. stroke is 30 to 70 tons, and when using a 6¾-in. stroke 28 to 40 tons per hour. Ratings are naturally somewhat higher for grades in favor of the load.

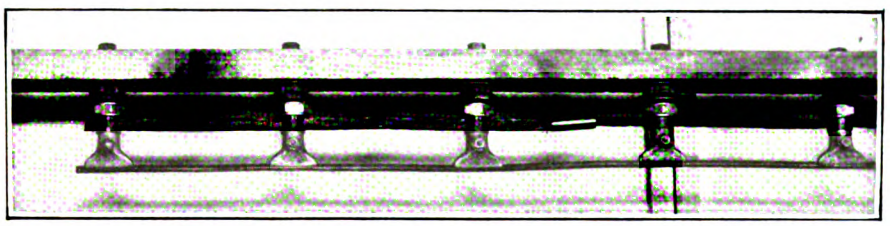
Another exhibit of the McCullough company showed an EMB drawn alloy-steel continuous locomotive resistance built in one section with a side frame shaped to suit the available space in a certain type of locomotive. This design makes the complete resistor nearly jointless so far as the elements are concerned and leaves only external connections to be made on the job.

"Insta" control for centrifugal pumps, the "Rogers" feeder-wire clamp, and a new "Curtis" valve were among the new features of the exhibit of the Dravo-Doyle Co., of Pittsburgh, Pa. The purpose of the "Insta" control is to shut down a centrifugal pump if for any reason the water is lost. It consists of an anti-acid bronze body containing a differential plunger which operates an electrical contact. The only pipe connections necessary are two ½-in. lines to the sides of the discharge-line check valve.

The Rogers feeder-wire clamp is interposed between the hanger and the trolley clamp. It is adjustable to take several sizes of wire. The smaller size will take cable up to 500,000 circ. mil capacity. Perhaps one of the most important advantages of the clamp is that in case of a slate fall, the loosened feeder can be tightened without disturbing the trolley wire.

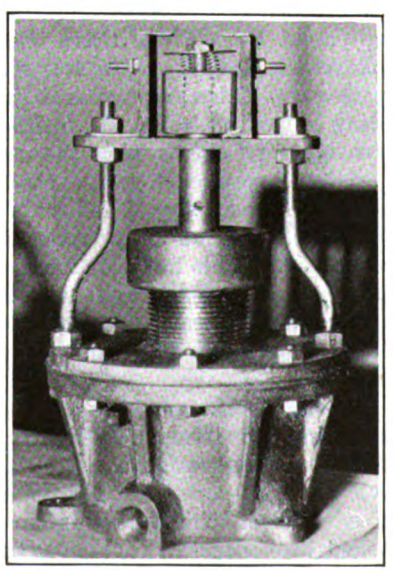
The Curtis valve now has two distinct features; automatic suction control and automatic pump control. Both are combined in one unit. The suction control does the work of a pump man by automatically opening and closing the several suction lines from a pump as the various sumps served by it fill up and are emptied.

This valve with the new electrical contact arrangement in the top makes mine gathering pumps completely automatic. It operates as follows: By means of the electrical contact in the top of the valve, which is a built-in feature, and may be connected in multiple where more than one valve is installed in connection with a given pump the time of operation of the pump will coincide exactly with the water conditions encountered. When all of the places have been drained the pump automatically stops and remains inactive until sufficient water has ac-



Rogers Feed Wire Clamp Holds and Connects Trolley and Feeder Cable

This is another of the several devices of a similar nature and for a like purpose that have been put upon the market recently. This clamp holds both trolley and feeder cable from one support and forms a connection between them.



Insta Pump Control

This device is intended to control the operation of centrifugal pumps. It is of simple design and built of acid-resisting bronze. Its only connections are two ½-in. pipes that come from either side of the discharge-line check valve.

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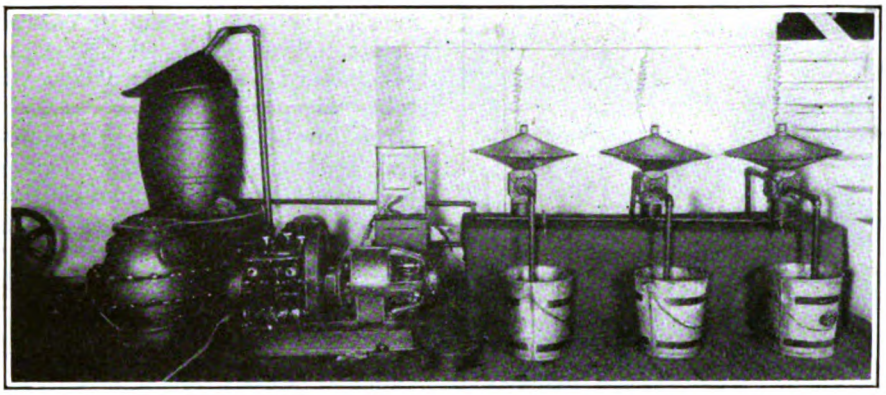


Curtis Valves Controlling Gathering Pump

These valves are now fitted with an electrical connection which adds much to their utility. The pump station may now be made almost as truly automatic as the substation, as the pump will operate only when and as long as there is water to be pumped.

cumulated to make it necessary to pump out one or more of the branch suction lines. The electrical contact then starts the pump, which remains in operation until this water has been removed, when the machine is again shut down. It has been found that many of the pumps used in mines operate at only 10 to 20 per cent efficiency. During much of the time they merely waste power. By means of this contactor, which is built into the valve, this excess power loss has been eliminated. At the same time this device insures reliability of operation.

This firm also exhibited in combination with the Bureau of Mines, the first government-approved mine pump for use in gaseous workings. This unit has been tested by the Bureau and permits have been issued to the manufacturer for both 550 and 250 volt machines.

Six new developments were noted at the booth of the Electric Railway Equipment Co. First, there was a trolley-wire splicer with staggered set screws, this arrangement providing space so that an ordinary wrench can be used. Thus the usual special socket wrench is not needed.

The next was the "No-Loss" expansion bolt for hanging trolley and feeder wire. This has a double, ½-in. pitch thread and the end is slotted so that the bolt can be screwed out of the hole with a spanner socket wrench.

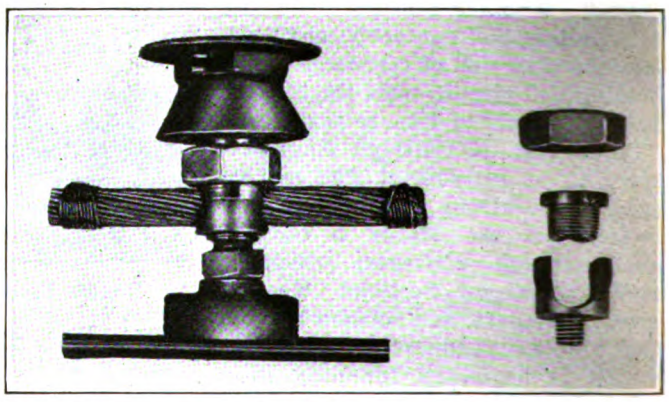
Another development is the triple-duty sure-grip clamp. Cast integral with the compression ring of this device is a set-screw lug for holding a feeder wire. The feeder is simply hooked into place and fastened by a set screw. The three functions of the clamp are to support the trolley wire, support the feeder wire, and to connect the feeder and trolley at each hanger.

A mining-machine cable nip is another new item of this company's line. This has a solderless connection in the handle, with a plug connector on the side as well as on the nip end.

Another item is an improved sectionalizing insulator switch. This has a double blade, and a double hanger support. There was also on exhibit a double feeder clamp which provides for carrying two feeders of any size, or a trolley and a feeder, at the same level, but 6 in. apart.

Triple Duty Clamp

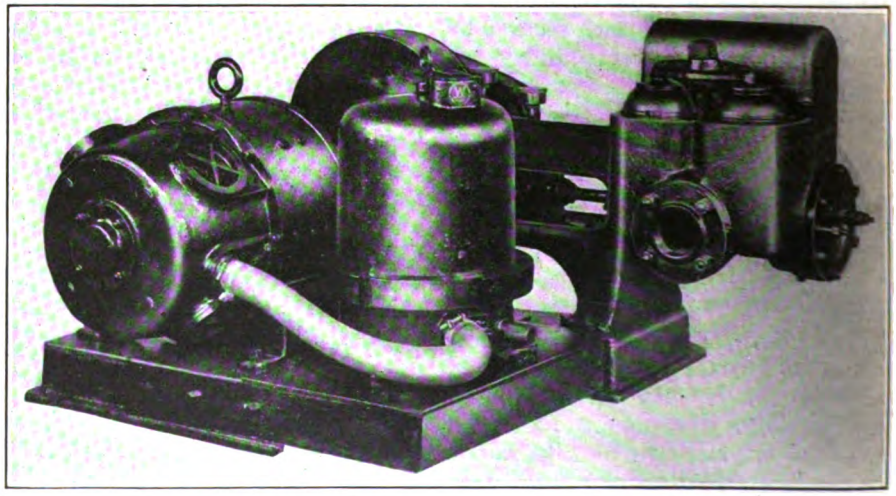
Trolley and feeder cable hanger combined. It is simple in construction, holds both conductors, either of which may be tightened without disturbing the other. It also joins them electrically.



A steel-mold copper electrode bond was being applied by the Una Welding & Bonding Co. This is the type CBM, "Metmold." The terminal is held securely in proper welding position by driving the mold-fitted bond head onto the base of the rail. A reduction of accessories, quick installation and contact to both base and web of the rail are secured by the new design.

The General Electric Co.'s automatic substation embodied several new features. The 200-kw. synchronous converter was equipped with the TB-8 bearing temperature relay which uses mercury contacts operated from a rod extending into the bearing where the temperature element is concentrated. The starting and running contactors now have demountable arc chutes in place of the hinged type. This facilitates inspection.

On the main control board, several dash-pot relays have been replaced by the more positive induction type, and the starting protective timing relay is motor-driven. Phase-failure protection is now accomplished by a current phase-balance relay of the induction type instead of by two tem-



A Permissible Pump Unit Approved by Bureau of Mines

It consists of the gathering pump, the motor that drives it and the control device. All electrical equipment is inclosed and explosion-proof.

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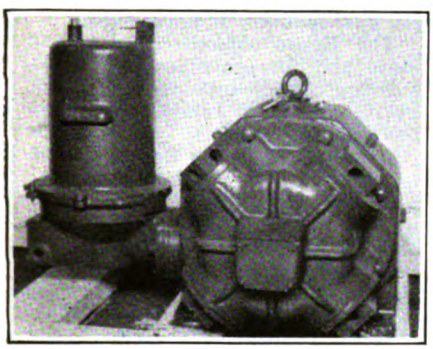
perature relays. Also the old plunger-bellows type of alternating-current relay has been replaced by the type IA induction relay.

Among the electrical instruments shown were the new type CP-4 and CP-5 graphic portable meters and a type D-7 polyphase watthour meter equipped with potential indicating lamps. Each of the graphic meters has self-contained resistance units, a non-spillable and quick-removable ink well, potential change switch, quick-opening back giving ready access to the meter element and inking mechanism, a knurled nut for locking the apparatus for transportation, also a hinged clock and chart element, all of which add to the ruggedness or convenience of the instrument.



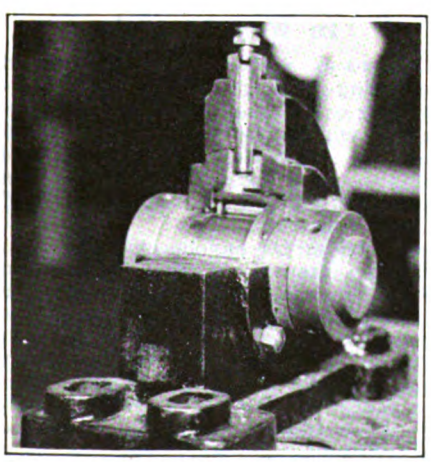
General Utility Motor

This motor and its control equipment is entirely inclosed and forms a unit within itself with no flexible connections between the two elements. It is intended primarily for driving pumps in gassy places.



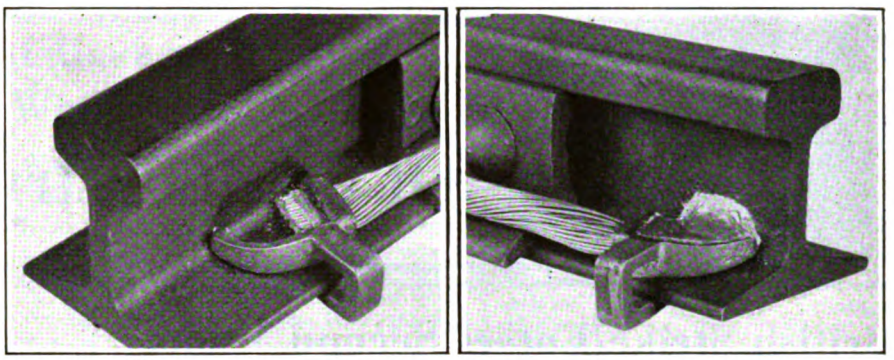
Line Shaft Bearing

This bearing is split so that the shaft to be supported may be laid into it. It is so proportioned that it will fit any standard shaft hanger.



Roller Bearing Pillow Block

Ordinary cold-rolled shafting can be used with this pillow block. It is so constructed as to prevent longitudinal movement and the shaft does not require turning down.



Steel-Mold Bond Terminal Said to Be Rapid in Application

The terminals of this stranded copper bond are so made that they may be driven over the flange of the rail where they form molds for the deposition of molten copper. Bonds of this kind can be applied, so it is claimed, with greater rapidity than those that have to be clamped in position before they can be welded.

As its name implies, the potential indicating feature of the D-7 watthour meter provides a visible means of knowing that potential circuits of the meters are not open. Flashlight lamps rated at 3½ volts are operated at one volt from a few turns of transformer winding, which is added to the meter elements.

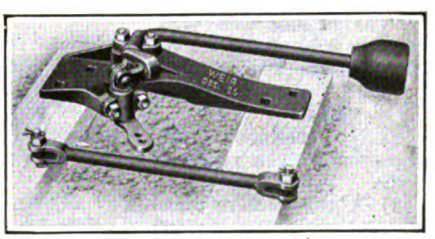
Another exhibit of this company was its new general utility motor for use in the mines and designed primarily for driving pumps. This is a direct-current machine of 5 hp. and 1,200 r.p.m. The controller is attached directly to the motor, making a unit with no flexible connection between these two elements. This machine is protected from overload by a thermal relay, which, if tripped out, can be reset by a push rod without dismantling the machine. The motor may be thrown directly across the line, and although designed primarily for driving gathering pumps it will doubtless find favor for actuating other machinery, such as face conveyors and the like.

This company also showed a 6-ton permissible storage-battery locomotive that has been approved by the Bureau of Mines. The particular unit exhibited has been operated for nearly a year in the Warden mine of the Pittsburgh Coal Co.

For Any Standard Hanger

The Hyatt Roller Bearing Co., of Newark, N. J., exhibited a line-shaft bearing built to fit any standard shaft hanger. The construction of this bearing is extremely simple, consisting of two parts held together by four bolts. The roller cages also are split so that the entire bearing may be put in place without disturbing the shaft assembly.

This firm also showed a roller-bearing pillow block built along the same general lines. In this block the inner race is slipped over the shaft and held in place longitudinally between two collars that are clamped to it upon either side of the block. It is thus unnecessary to turn the shaft down in any way, and the block is made to fit commercial cold-rolled shafting of diameters ranging from $1\frac{7}{16}$ to $5\frac{7}{16}$ in. A thrust collar within the block resists any tendency of the shaft toward longitudinal movement.



Parallel-Throw Switch Stand

Malleable iron and steel parts only are used in the construction of this switch throw. It is a notable fact that there has been a measurable decrease in the accident rate at mines that have made parallel-throw stands their standard.

The Weir Kilby Corporation showed a new parallel ground switch throw stand. The base of this stand is a single casting of malleable iron, all other parts being forgings. The reverse crank of the throw lever is provided with a ball-and-socket joint which actuates the throw arm. The connecting rod may either be solid or fitted with a spring. This stand is self-locking in either position of the points; but with the spring rod cars may be passed through the switch. The chief advantages as claimed by the makers are that the switch stand is low and may be set at a point remote from the track, the throw is parallel, a rest is provided at each side, all the parts are accessible, repairs may be readily made and the device has great durability.

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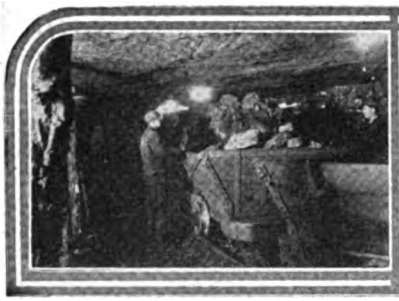
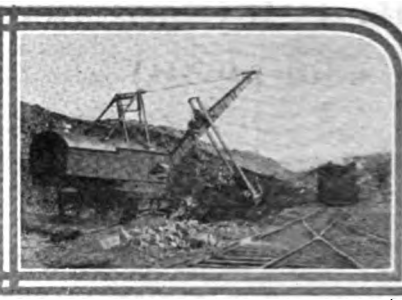


News Of the Industry



British Strike Enters Second Month With Both Sides Outwardly Unmoved; Informal Efforts for Accord Continue

The British coal strike enters its second month with the tie-up in production complete and with neither mine owners nor mine workers offering any new formulas for peace.

Officially neither side has receded from the positions taken when they rejected Premier Baldwin's settlement program. Unofficially, however, efforts are being made to find a platform upon which both sides can stand.

The leadership in this movement has been taken by F. B. Varley, M.P., a member of the executive committee of the Miners' Federation. Mr. Varley's plan calls for mutual concessions. Mr. Varley suggests:

(1) A reduction of 8½ per cent in wages to the end of the year, instead of the 10 per cent included in the Baldwin proposals.

(2) No profits to the owners until wages have been restored to pre-strike levels.

(3) A government subsidy of £6,000,000, instead of the £3,000,000 offered by the Premier.

(4) Immedate wage adjustments by the National Wages Board to be set up, instead of postponing action until December.

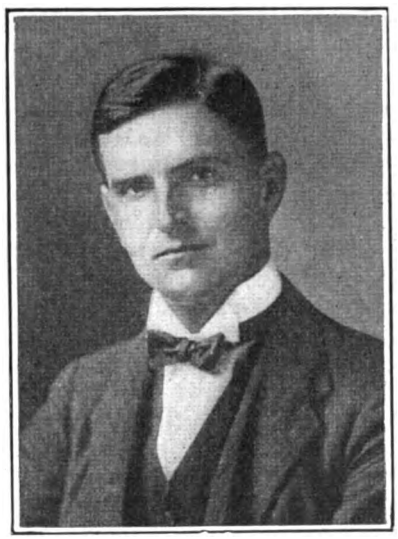
Frank Hodges, secretary of the Miners' International Federation, is another one who has come forward with a plan. Mr. Hodges calls for a general reorganization of the industry. He favors increasing the working day from seven to seven and one-half hours and a five-year extension of the wage agreement of 1924.

New coal regulations issued by the goverment last Thursday cut the allowance to domestic consumers from 100 lb. weekly to 50 lb. Lights for display and advertising signs have been prohibited to save coal. Industries in general are beginning to feel the pinch of the fuel shortage. Only a few furnaces are in blast. Several large Sheffield cutlery plants are down. Most of the pottery plants have been closed again. Railway service is being further curtailed.

Stamp Urges Restrictions

Sweeping restriction of the coal-mining area and a reduction in the number of mines in Great Britain were urged as the only solution of the British coal problem by Sir Josiah Stamp, chairman of the executive committee of the London, Midland & Scottish R.R., and a member of the Dawes commission, in an address before the British Empire Chamber of Commerce at New York on May 27.

"Before the war," he said, "the [British] coal production in peak years was about 280,000,000 tons going into export trade, enough to make all the difference between that kind of prosperity that existed before war and the depression in unemployment today. A large number of mines of very great age are operating on, what we should say in economic language, the margin of profitability. They cannot hope to succeed in competition with mines



Frank Hodges

under a modern equipment. The geolocial formation and the half dozen other conditions preclude that, and, if you could cut out of the producing area many of those mines and some 200,000 men, then it is quite clear that the remaining mines would produce enough coal to satisfy the market today under such conditions as would enable the present wages to be paid on an economic basis without loss.

"It is obvious that you cannot negotiate for a wage agreement for a state of affairs in the industry as the industry will be when it is reconstructed, because it will take three or four years at least for the things to be done that are required, and at least three or four years for them to have their full effect in profitability to the industry. You have, therefore, an interim period during which that state of affairs is being brought about by common agreement. That is the period for which you have to negotiate, and with the dissensions that exist within the mining association I cannot conceive that it is possible to negotiate for that interim period without a lapse of time—say four or five months."

No Change in Situation On Coal Legislation

The legislative situation at Washington as it affects the bills introduced in Congress to regulate the coal industry is unchanged.

The House committee on interstate and foreign commerce, considering the bill introduced May 17 by its chairman, James S. Parker, has made no report.

In the Senate, the Copeland bill is listed with the major legislative proposals pending before the upper house. The Republican steering committee, which is expected to map out the program for the remainder of the session, has taken no action.

With the continued delay, opinion grows that no bill will pass either branch of Congress before adjournment. The most uncertain factor, however, is the date of adjournment. The longer Congress is in session the greater will be the opportunity to press for consideration of coal regulation.

Studdard Heads New District In West Virginia

James L. Studdard has been named as acting president of District 31, comprising counties in northern West Virginia, which was recently established by the international executive board of the union. C. F. Davis has been appointed acting secretary-treasurer of the new district.

In making the announcement, Van A. Bittner, international representative in West Virginia, said: "There is only one task confronting us and that is the complete establishment of our union in this field. It is a great task, but with the splendid spirit of unionism displayed in the future that you have displayed in the past, we will demonstrate our ability to thoroughly unionize every mine in District 31. This condition will be made a living fact by that co-operation and assistance which knows no defeat."

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British Coal Situation Intensifies Complexity of World Markets; Fuel Economy, Oil and Water Power Spread

By Paul Wooton
Washington Correspondent of *Coal Age*

That the serious depression which underlies the British coal situation is reflected in the United States and in other coal-producing countries is apparent from studies being made in Washington of the situation. There is enough competition between coal produced in the several countries of the world to influence the price level in each country.

To find the key to this world situation it has been necessary to examine the broad features of supply and demand of coal in the world market. In comparing present conditions with those existing in 1913—the last year before the war—two great tendencies are clear. One is the worldwide interest in fuel economy, which has tended to reduce the demand. The other is the competition of other sources of heat and power.

It has been found difficult to reduce to figures the effects of fuel economy. It is known, however, that the high prices and the shortages caused by the war turned the attention of engineers to fuel economy in a much more determined way than ever before. This was particularly true among the electric utilities. It became the great test of operating efficiency. The route to rapid promotion for the aspiring engineer was through the boiler room.

Railroads Reduce Consumption

Out of this movement there are certain places where savings in fuel can be reduced to figures. In the United States the consumption of locomotive fuel in the freight service has decreased 18 per cent per unit of work done. In the passenger service the decrease has been 13 per cent. All of this saving has taken place since the war.

Improvement in blast-furnace operation and in coking practice have cut by 9 per cent the consumption of coke and coal per ton of pig iron. The savings of gas and tar and other byproducts of present coking methods have reduced the consumption of heat by metallurgical industries by an additional 10 per cent. The electrical utilities have shown even a greater decrease. The pounds of coal per kilowatt hour have been reduced 34 per cent since the war. Figures from Great Britain are hard to get, but those available show the same trend.

At the same time that fuel economy has been reducing the demand, other competitors of coal have been taking away a part of the market. Before the war the world demand for coal increased with surprising regularity at the rate of about 40,000,000 tons per year. Since the war there have been only three years in which the 1913 output was reached. Production in 1925 was 1,368,000,000 tons, which shows an apparent increase over 1913, when 1,342,000,000 tons was produced. Most of the 1925 increase, however, came from German lignite. The world production of bituminous coal alone, since the war, never has reached the 1913 level. On a B.t.u. basis the world output for 1925 was not quite equal to that of 1913.

While the demand for coal has stopped growing the production of its competitors has increased at a faster rate than before 1913. Water power has doubled since 1913 and the production of petroleum has much more than doubled. The increase in water power since 1913 is equivalent to 66,000,000 tons of coal per year. The increase in oil and gas is equivalent to 172,000,000 tons per year.

Coal Recedes in Position

Putting it in another way, the contribution of coal and of its competitors to the world's supply of energy may be expressed as follows:

	Per Cent 1913	Per Cent 1925
Coal	89	76
Oil and gas	7	16
Water power	4	8
Total	100	100

Before the war coal absolutely dominated the world's energy supply. It now supplies 76 per cent of that demand. This arrested growth has been all the more difficult for the industry because it had accustomed itself to a steadily expanding market. Even the British industry was growing. Coal production in Germany and in the United States was expanding very rapidly, while in some of the outlying new countries, of which South Africa is an example, the rate of growth surpassed that of the United States. The industry not only was accustomed to an increase in demand but capacity has continued to increase even though the demand has not. In the United States this increase in capacity has been enormous. The same is true in the outlying countries, when expressed in percentage and not in tons.

The plight of coal is worldwide. For that reason the solution being worked out in Great Britain is being followed very carefully by the government's coal specialists in Washington.

Deplores Perennial Strife In Coal Industry

Much of the unrest in the United States may be attributed to the lack of co-operation between people whose interests certainly lie in harmonious understanding, yet appear to be in eternal strife, according to a statement made May 12 at the annual convention of the Maryland Bankers' Association in Atlantic City by George Decamp, of the Federal Reserve Bank of Cleveland.

"The coal industry," Mr. Decamp said, "is a specific example in this regard. It would seem that we may look forward annually to disputes concerning wage adjustments, ending in strife which apparently benefits neither miner nor operator and in which the public is generally greatly inconvenienced.

"It is a sad commentary on American business that some workable plan had not been developed to bring about better co-operation between these warring elements."

Burns Bros. Earnings Jump

Official figures of earnings for the fiscal year ended March 31, 1926, of Burns Brothers, New York City, show net sales of $29,049,655, against $27,287,472 in the previous fiscal year. Net profit totaled $2,420,779, against $1,271,902 the year before. The net profit for the last fiscal year was equal to $15.17 a share on the 97,365 shares of Class A stock and $7.17 a share on the 97,367 shares of Class B common stock. This compares with $10.22 a share on Class A and $2.22 a share on Class B in 1925.

Are British Coal Mines Efficient?



Wide World Photo.

Boiler Room in a New British Colliery

This boiler room is at the Snowdown Colliery, Nonington, near Dover, Kent, England. It is one of two plants owned by Pearson & Dorman Long, Ltd. It will be noticed that coal is still being stoked by hand at this brand new plant. We are told that the British mines are hindered by the besetting conditions of earlier operation, but here, in Kent, are new mines. Will the old traditions ever be overcome?

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Promising Program Arranged For N. C. A. Convention

"Big doings" are promised coal men who visit Chicago to attend the annual convention of the National Coal Association to be held at the Drake Hotel, June 9, 10 and 11. Operators from all parts of the country are expected to be present and, according to Harry L. Gandy, executive secretary of the association, and D. H. Pape, assistant to Mr. Gandy, the program will be one of the most interesting ever prepared for the bituminous coal industry.

The following addresses are scheduled:

"Research and Its Value to the Coal Industry," by Walter Barnum, president, Pacific Coast Co.

"Hunting for the Elements Produced by Low-Temperature Distillation," by Russell B. Cooper, National Coal Association graduate research fellow, Carnegie Institute of Technology.

"Questions Arising From the Disposal of Mine Waters," by Richard D. Leitch, associate chemical engineer, U. S. Bureau of Mines, Pittsburgh, Pa.

"The Human Element in Safety Work," by P. H. Penna, secretary-treasurer, Indiana Bituminous Coal Operators' Association.

"Reducing Hazards in the Mining of Coal," by J. William Wetter, general manager, Madeira, Hill & Co., Phillipsburg, Pa.

"One Way of Teaching a Miner to Protect Himself," by R. E. Howe, vice-president, Climax Caol Co., and secretary of Southern Appalachian Coal Operators' Association, Knoxville, Tenn.

"Keeping the Cost of Compensation Insurance to the Minimum" (with a motion picture film, "The Story of Rock-Dusting"), by J. T. Rupli, superintendent, compensation department, Chicago, Wilmington & Franklin Coal Co., Chicago.

"Centralized Accident Reports—Their Advantages and Benefits," by W. A. Ellison, general manager, Southern Harlan Coal Co., and president of the Harlan County Coal Operators' Association, Harlan, Ky.

"Have Statistics Any Value to the Coal Industry?" by C. E. Bockus, president, Clinchfield Coal Corporation, Dante, Va.

"Coal Salesmanship," by Ralph Knode, vice-president, General Coal Co., Philadelphia, Pa.

"Will Oil Compete With Coal or Will Coal Compete With Oil?" by J. G. Puterbaugh, president, McAlester Fuel Co., McAlester, Okla.

"Efforts on Behalf of Bituminous Coal Industry in Federal Tax Matters," by R. C. Tway, president, R. C. Tway Coal Co., Louisville, Ky.

"Legislative Proposals Now Before Congress Affecting Coal," by W. H. Cunningham, secretary, West Virginia Coal Association.

The annual dinner will be held at 7 p.m., June 10, in the ballroom of the Drake Hotel. Judge H. B. Lindsay, of Knoxville, Tenn., will preside as toastmaster.

Railroads to Spend Heavily For Betterments

Capital expenditures for new rolling stock and other improvements authorized by Class 1 railroads this year up to April 1 total $822,000,000, according to a report by the Bureau of Railway Economics of the American Railway Association. The Bureau estimates that the total capital expenditures for the year 1926 will run between $750,000,000 and $800,000,000.

Capital expenditures made during the first three months this year for equipment amounted to $74,900,000, a decrease of $22,800,000 compared with similar expenditures for the first three months last year. Capital expenditures, for locomotives, however, amounted to $18,300,000, an increase of $5,600,000 over the same period in 1925, although decreases, compared with the first quarter last year, were reported in capital expenditures for freight and passenger cars.

For roadway and structures, capital expenditures for the first three months this year were $90,800,000, an increase of $19,200,000 compared with the first three months last year.

Midwest Dealers Reorganize And Hold Annual Meeting

When members of the Mid-West Retail Coal Association gathered in Kansas City, Mo., May 26, for a two days convention, they were met by a "cease and desist" order from the Federal Trade Commission, effective that day (see *Coal Age*, May 27, page 772). The association immediately disbanded, but, as individuals, the members reorganized as the Missouri Valley Retail Coal Merchants' Association, and continued the program interrupted by the order.

The new association elected James P. Andriano, of the Todd-Sunshine Coal Co., St. Joseph, Mo., president, and W. R. Feuquay, also of St. Joseph, executive secretary. Ray D. Kelly, of Springfield, Mo., was president of the disbanded Mid-West Association.

The program May 26 included these talks: "Credit, Cash or Cash Discount—Which?" by W. A. Storrs of the W. A. Storrs Ice & Coal Co., Hannibal, Mo.; "The Association, Its Policies and Opportunities," by W. R. Feuquay, of St. Joseph; "Clinkers—Their Effect on the Furnace," by L. W. Millis, of the Security Stove Co., Kansas City; "Newspaper Advertising," by K. C. Richmond, advertising manager of the Albert Silk Co., Topeka; "How to Fire That Furnace," by A. Bement, of the Saline County Coal Corporation, Chicago.

At a dinner dance that night, James T. Bradley, of the Commerce Trust Co., Kansas City, Mo., discussed "The Value of Organization," and C. W. Morris, of the Western Railways committee on public relations, Chicago, discussed "Transportation."

The second day of the convention, Albert Silk of Topeka, talked on "Know Your Costs"; J. C. Dennis of the Howe Scale Co., Kansas City, Mo., had as his subject "Scales and Their Care"; V. McDaniel of the V. McDaniel Fuel Co., Kansas City, discussed "How to Hold That Customer," and L. B. Clough, managing director of the Chamber of Commerce, St. Joseph, answered the question of "Why an Organization?"

The convention was attended by two hundred retail coal dealers of the Southwest.

Anthracite Produced in 1925, by Regions

(Compiled by U. S. Bureau of Mines)

Region	Shipments Gross Tons	Shipments Value (a)	Local Sales Gross Tons	Local Sales Value	Used for Power Gross Tons	Used for Power Value	Total Production Gross Tons	Total Production Value (a)
Lehigh								
Breaker product	6,455,632	$41,321,141	428,810	$1,926,225	573,897	$899,320	7,458,339	$44,146,686
Washery product	174,487	507,480	0	0	0	0	174,487	507,480
Dredge product	88,941	86,983	0	0	0	0	88,941	86,983
	6,719,060	$41,915,604	428,810	$1,926,225	573,897	$899,320	7,721,767	$44,741,149
Schuylkill								
Breaker product	13,207,506	81,977,570	555,808	3,380,797	1,958,905	816,971	15,722,219	86,175,338
Washery product	380,747	1,041,965	2	13	7,788	3,743	388,537	1,045,721
Dredge product	366,242	382,269	371,817	384,990	1,870	3,275	739,929	770,534
	13,954,495	$83,401,804	927,627	$3,765,800	1,968,563	$823,989	16,850,685	$87,991,593
Wyoming								
Breaker product	26,847,626	183,357,027	1,200,184	7,289,523	2,009,183	2,257,227	30,056,993	192,903,777
Washery product	317,042	1,263,233	320	1,600	41,890	49,011	359,252	1,313,844
Dredge product	64,593	67,823	13,419	3,952	0	0	78,012	71,775
	27,229,261	$184,688,083	1,213,923	$7,295,075	2,051,073	$2,306,238	30,494,257	$194,289,395
Sullivan County								
Breaker product	104,659	574,233	5,155	35,731	17,360	32,410	127,174	642,374
Total breaker product	46,615,423	$307,229,971	2,189,957	$12,632,276	4,559,345	$4,005,928	53,364,725(b)	$323,863,175
Total washery product	872,276	2,812,678	322	1,613	49,678	52,754	922,276	2,867,045
Total dredge product	519,776	537,075	385,236	388,942	1,870	3,275	906,882	929,292
Grand total	48,007,475	$310,579,724	2,575,515	$13,022,831	4,610,893	$4,061,957	55,193,883	$327,664,512

(a) Value given is value at which coal left possession of producing company, f.o.b. mines and does not include margin of separately incorporated selling companies.
(b) Includes culm-bank coal put through breaker.

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Short-Circuits Ventilation, Saves 62 Lives in Fire At Mount Lookout Mine

The lives of sixty-two employees at the Mount Lookout Mine of the Temple Coal Co., in the borough of Exeter, sixteen miles south of Scranton, were saved on May 27 through the heroism of their foreman, Thomas Hislop. For five and a half hours they were hemmed in by dense clouds of smoke and flame from a burning building underground and blazing timbers, but were kept alive in an airway one mile from the shaft because Hislop, aided by four miners, including his son, Robert, 22 years old, had perfected a temporary system in a short time that completely short-circuited the regular mine ventilation system and swung the air currents so that the fire was not fanned by air being pumped into the shaft and at the same time fresh air was sent into that part of the mine where the sixty-two men were instructed to remain until rescued.

Only the resourcefulness of Hislop saved the men from suffocation, William P. Jennings, president of the Temple company, and S. C. Curtis, state mine inspector, declared. Had not Hislop shut off the air current the smoke and fumes from the burning timber and the fireboss shanty would have gone into the workings and smothered all.

The fire broke out soon after 8 a.m., around a shanty in the Pittston vein, 300 ft. below the surface, according to company officials, and the flames spread so quickly that sixty-two men were cut off at their places one mile from the shaft.

The sixty-two workers were trapped in the 11-ft. or surface seam of the mine when a fire started in the first aid hospital about 600 ft. from the shaft., and rapidly spread to the timbering along the seam, pouring clouds of smoke in the direction of the workers.

Hislop, who was among the fire fighters, volunteered to skirt around the flames toward the men through a return airway. Upon reaching the furthest end of the rapidly moving fire he closed the main doors and short-circuited the ventilation back through the airway, cutting off and checking the flames. Rather than return through the airway to safety he elected to push through to where the frantic workers were huddled.



Resourceful Foreman Who Saved 62

Thomas Hislop, age 51, mine foreman of Temple Anthracite Coal Co., whose presence of mind saved lives of 62 miners in fire in Mount Lookout Mine, Wyoming, Pa., on May 27.

Once with the men he reassured them, explaining that it would be but a matter of a few hours before the flames would be extinguished and they could leave the workings in safety. The fire burned for more than four hours. It was extinguished by two streams of water pumped by Exeter and Wyoming (Pa.) fire companies in lines dropped down the shaft.

The cause of the fire has not been ascertained. One version has it that a naked-flame lamp left in a footman's shanty at the landing tipped over and started the blaze.

Thomas Hislop will be recommended to the Carnegie Hero Commission for recognition and award. W. P. Jennings, of Scranton, Pa., president of the Temple Anthracite company, who led the fire fighters in the threatened area, will present Hislop's name.

Lake Cargo Hearing July 20

The Lake Cargo Coal Rate Case, Docket 15007, has been set for hearing July 20, 1926, at 10 a.m., at the Marlborough-Blenheim Hotel, Atlantic City, N. J., before Commissioner Hall and Assistant Chief Examiner Gerry of the Interstate Commerce Commission.



Official Leads Volunteer Rescue Workers

W. P. Jennings (with pipe in mouth), president of the Temple Anthracite Coal Co., who led rescue workers in fighting Mount Lookout mine fire, Wyoming, Pa., on May 27, surrounded by volunteer aids. George F. Gallagher, superintendent of the Lehigh Valley Coal Co., right foreground, who assisted in work.

Wholesalers Hold Convention In Toledo Next Week

The American Wholesale Coal Association will hold its tenth annual convention at the Hotel Secor, Toledo, Ohio, June 7-9. Business sessions will be held in the mornings. The afternoons will be given over to a golf tournament.

The business session on June 7 will be devoted to the presentation of official and committee reports. On June 8 the convention will hear addresses by Ira C. Cochran, commissioner of the organization; Joseph Harrington, combustion engineer, who will speak on "The Use of Pulverized Fuel," and Owen Meredith Fox, executive vice-president, Chicago Coal Merchants' Association, who will discuss "Retailer and Wholesaler Co-operation Toward the Establishment of a Fuel Research Institute."

Noah H. Swayne, 2d, of Philadelphia, will be the toastmaster at the annual association banquet on Tuesday evening. The principal speaker will be Senator James E. Watson, of Indiana. The program for the final business session includes the election of officers and the reports of the resolutions and trade relations committees.

Predicts Bright Future for Texas Coal Trade

The future of the coal business in Texas is bright, said D. M. Faulkner, of Dallas, at the annual meeting of the Retail Coal Dealers' Association of Texas, held at the Baker Hotel, Dallas, May 18 and 19. Lower prices may be expected, he said, due to the passing of trouble with Oklahoma miners, which, he declared, resulted in the diminution of union influence in that region. The year 1926 will be better than the year 1925 and by the year 1928 unusual prosperity may obtain, he said. Fuel oil, he declared will be largely removed from troubling the coal industry. Elijah Coles, past president, deplored the small attendance at the meeting and urged increasing the membership.

A number of timely topics were included in the addresses and a question box brought out interesting discussion of pressing trade problems. Wastage of coal between mine and retail yards was declared to be one of the gravest of the dealers' problems. They declared in favor of requiring railroads to weigh cars of coal free of charge at the point of destination rather than at the mine. Speakers for this measure declared that such a practice would cause railroad employees to exercise greater diligence to prevent both loss by leakage and theft by trespassers.

The convention unanimously indorsed a resolution asking that retailers be permitted three days' free time instead of two days for unloading shipments of coal.

Hugh L. Wallace, Fort Worth, was elected president and McAlester, Okla., was chosen as the 1927 meeting place. Other officers elected were Tillman Bibb, Fort Worth, second vice-president; Bruner R. Penniman, Dallas, third vice-president, and Clarence R. Goldman, Dallas, re-elected secretary-treasurer.

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Pierce Defends Quality and Sizing of Anthracite

Daniel T. Pierce, vice-chairman of the Anthracite Operators' Conference, in a statement May 31, took strong exception to the charge made by Representative Hamilton Fish that anthracite operators were "selling standard quality of coal, such as chestnut or buckwheat, mixed with a large proportion of inferior grades, and often containing from 20 to 30 per cent non-combustible substance."

"The industry resents such statements," said Mr. Pierce. "The industry does not follow the practice of adulterating its product. On the contrary, it uses every care and employs every known means of removing foreign material from anthracite.

"Statements made from time to time that the anthracite industry has cut down the standard sizing of coal are not true. Partly due to non-observance of established practices during the war, there grew up certain variations in the sizing of anthracite which, once the emergency was over, caused unfavorable comment. To cure this and to establish definite standards by which dealers and consumers could test anthracite, the operators agreed, in March, 1925, upon uniform sizing for egg, stove and chestnut coal and the allowable percentages of impurities."

The only change made from former practice, according to Mr. Pierce, was in connection with chestnut, where an extra allowance was made for 5 per cent undersize due to unavoidable breakage. However, Mr. Pierce added, since the strike ended in February, no operator's output had contained the maximum undersize or impurities permitted under the adopted standards.

To determine just what percentage of degradation occurs between the mine and the consumer, the operators will begin the first of next week a series of tests which will cover each step of the operation of delivering the fuel. There will be the usual test for size and purity at the mine. Another test for size will be made at the New Jersey docks when the coal arrives, still another is to be made when the coal has been loaded on the barges, another when it is delivered in the retail dealer's bins and a final test when the coal is on the truck ready for delivery to the consumer.

Summer Coal Mining Course At State College

A five weeks' summer course in practical coal mining will be instituted soon by the School of Mines and Metallurgy of Pennsylvania State College, State College, Pa. The course, which will begin June 21, is free to all men about anthracite or bituminous coal mines, practical miners, firebosses and mine foremen especially being invited.

The first week will be devoted to the following subjects: Mine safety, 44 hours, for men not having Bureau of Mines certificates; teacher training or mining subjects, 30 hours, and renewal of Bureau of Mines certificates, 14 hours, for men who already have such certificates.

During the last four weeks, for those preparing for state examinations, the studies embraced will be as follows: Mining law, 20 hours; mine gases, 12 hours; mine timbering, 6 hours; blue print and map reading, 10 hours; mine management, 6 hours; mine ventilation, 12 hours; safety lamps and gas detectors, 10 hours; mining methods and machines, 6 hours; mine fires and explosives, 6 hours; mechanical equipment, 10 hours; explosives, 6 hours; electives, 10 hours; conference and review, 38 hours.

Men qualified for advanced work are privileged to take optional subjects from the above and in addition the following: Mine ventilation calculations, 12 hours; mine mechanics, 6 hours; drawing and mapping, 20 hours; electricity, 14 hours; ventilation laboratory and fan testing, 20 hours; surveying, 50 hours; use of explosives, 5 hours; geology of coal, 5 hours.

Prominent mining men will speak on special mining subjects, moving pictures of operations will be shown and the Bureau of Mines safety car will be on hand during the first two weeks of the course. Further information about the course may be obtained by addressing E. A. Holbrook, dean of the School of Mines and Metallurgy, State College, Pa.

The state Department of Mines announces that examinations for bituminous mine foremen and firebosses will be held at State College on July 21, 22 and 23, at the close of this course. The department also reports that it hopes to be able to announce similar examinations open to men from the anthracite field.

To Ally 500 Trade Bodies Against Snooping

With a view to combating interference of the government with the normal processes of legitimate business, members of the American Supply & Machinery Manufacturers' Association, at their annual convention at the Hotel Statler, St. Louis, May 18-20, authorized a committee to take up with the more than 500 organized trade bodies in the United States a proposal to hold a meeting to "consider ways and means of bringing forcibly to the attention of Congress the necessity of amending the Sherman and other so-called anti-trust laws so that business can function fearlessly along legitimate and sensible lines."

The executive committee of the association was instructed to assist the special committee, headed by Dixon C. Williams, Chicago Nipple Mfg. Co., in its efforts to unite these trade associations into a concrete body with a definite aim. At the same time a sum not to exceed $500 was appropriated to defray the organization's portion of the total expenses of the centralized campaign against governmental "snooping" in purely business channels.

Engineering Foundation Lays Plans for Research

The quarterly meeting of the Engineering Foundation was held on May 19, members and guests gathering for dinner at the Union League Club, New York. Edward Dean Adams, John Fritz medalist 1926, was guest of honor.

Financial assistance was granted to two research projects requested by the American Institute of Mining and Metallurgical Engineers and the American Institute of Electrical Engineers. The sum of $4,000 a year for three years was granted for research in blast furnace slags by Professor R. S. McCaffery, University of Wisconsin. The sum of $5,000 a year for two years was granted for research in electrical insulation by Professor J. B. Whitehead, Johns Hopkins University.

Adams Makes Gift to Foundation

On behalf of the endowment committee W. L. Saunders announced that a contribution of $100,000 has been made to the Foundation by Edward Dean Adams. In response to an appropriate resolution Mr. Adams was elected an honorary member for life in recognition of his service as vice-chairman of the Engineering Foundation for the past ten years.

Addresses were made by Dr. John A. Mathews, president of the Crucible Steel Co. of America, on "Present Tendencies in Engineering Materials," and by Prof. Richard S. McCaffery on "Research in Iron Blast Furnace Slags." Dr. Mathews paid his respects to the present tendencies toward standardization in engineering materials through written specifications which are often practically useless. He deplored the necessity of "manufacturing down to a specification rather than up to an ideal." Unless specifications offer an advantage to both the maker and the buyer and contribute to public welfare they often are bars to progress. Dr. Mathews stated that metallurgy is rapidly becoming a branch of physical chemistry and cited alloy steels resistant to corrosion and high temperatures as examples of scientific efforts to meet engineering demands.

Begin Study of Production In Relation to Safety

Active work has been started on the American Engineering Council's study of the relationship of safety and production. The work is being directed by A. R. Berresford, executive vice-president of the Nizer Corporation, of Detroit. The study is to cover ten basic industries as follows: Iron and steel, steam railroads, cement, mining, woodworking, metal trades, paper and pulp, textiles, electric utilities, and building construction. The field work is to be completed by Sept. 1. Data will be gathered from some 2,000 plants. Records showing the accident frequency rate and its bearing on the rate of production will be studied over as long a period as new records are available. In addition a specific study will be made to determine what occurs incidental to the loss of man hours, machine hours and curtailed production.

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Equipment Makers Organize To Promote Fuel Economy

A number of representative manufacturers of equipment for the more efficient burning of small sizes of anthracite, particularly for users of large quantities and where plants can be installed or altered, if necessary, at less expense than for the use of oil or other substitutes, have formed an association with the following officers: W. D. Craven, Pyramid Iron Products Co., president; F. B. Williams, Graybar Electric Co., vice-president; J. B. Nicols, American Blower Co., treasurer; F. B. James, New York *Commercial*, secretary.

The new organization is intended to promote efforts for fuel economy, which have been widely discussed since the anthracite strike. These discussions have resulted in the recommendation of increased use of buckwheat by both large and small consumers of anthracite, either as a mixture with other sizes or alone.

The anthracite operators have promised co-operation in order to insure a dependable supply at reasonable prices. Retailers also are giving assurance of willingness to do their part in moving the smaller sizes, which will insure a sufficiency of the larger sizes and tend to keep prices at an even level as well as prevent economic waste.

N. & W. and Virginian Protest Proposed Ban on Merger

Twelve exceptions to the proposed report of Haskell O. Davis, an Interstate Commerce Commission examiner, turning down the application of the Norfolk & Western Ry. to acquire control of the Virginian Ry. are set forth in a brief filed with the Commission by the Norfolk & Western last week.

Because of the principles involved, the Norfolk & Western asked permission to present oral arguments in support of its contention and to do so before the full commission.

The Virginian Ry. also has filed a brief with the Commission taking exception to the tentative recommendation against the merger.

A considerable portion of the examiner's report regarding financial phases of the Virginian's operations were disputed in the brief, which added that it was difficult to ascertain from the record what weight had been given these findings by the examiner in reaching the conclusion that the lease would be against the public interest.

Fayette Institute Outgrows Present Facilities

The Fayette County (W. Va.) Mining Institute held its sixth annual dinner at the Loup Creek Y. M. C. A., in Mount Hope, W. Va., May 8, with over five hundred members and guests present.

Short addresses were made by J. J. Rutledge, Chief Engineer of the Maryland Bureau of Mines; R. M. Lambie, Chief of the West Virginia Department of Mines; Dr. C. E. Jones, dean of the College of Engineering of the University of West Virginia; L. C. Hudson, former instructor in West Virginia University but now Director of Mining Extension in Maryland; C. E. Lawall, professor of mining engineering and Director of Mining Extension of West Virginia University, and Adam Crawford, Assistant Director. The speech-making was closed by Robert Lilly, president of the institute, who stated that the organization had grown so large in membership and enthusiastic in spirit that the opening of the next term would see all present accommodations outgrown and that the time had come to look forward to obtaining quarters of their own.

R. J. Holmes, as announcer, introduced each speaker to the audience, and acted as a sort of roving chairman.

Labor Well Cared For and Contented, Says Gary

"It may and should be said that employers in the United States generally stand for fair and liberal treatment of employees," said Judge Elbert H. Gary, chairman of the board, United States Steel Corporation, speaking of labor conditions, at the meeting of the American Iron & Steel Institute, at the Hotel Commodore, New York, on May 21. "They believe in the open shop, which permits a man to work whenever and wherever he is disposed and can agree with the employer. They insist labor should always receive proper and adequate compensation, depending on the financial ability of the employer and the results of the business. . . .

"We do not believe he [the employee] should be entitled to a voice in the management of the employer's property or business unless he has a pecuniary interest and corresponding responsibility.

"It may truthfully be said that labor generally in the United States is well cared for and is contented. In some lines or places it is overpaid; in some instances perhaps underpaid, though it is hoped and believed such cases, if any exist, are exceptional and will be rectified."

Railroads Make Big Strides In Fuel Economy

Direct purchases of fuel during 1925 by Class 1 railroads of the United States totaled $459,465,341, 2.6 per cent less than in 1924 and considerably less than in 1923. The railroads in 1925 bought 129,325,480 tons of bituminous coal, an increase of 2.3 per cent compared with 1924 although freight traffic in 1925 was approximately 6 per cent greater. Purchases of bituminous coal in 1925, however, fell 16.5 per cent under 1923 while freight traffic compared with two years ago was practically the same, measured in net ton miles. In 1925 the roads purchased approximately 28 per cent of the total output of bituminous coal as well as about 20 per cent of the fuel-oil output.

Due to improved locomotives and other factors, the railroads of this country are operating their freight trains with the greatest efficiency in the use of fuel ever attained, and this is reflected in the reports on fuel consumption. In 1925 an average of 159 lb. of fuel was required to haul 1,000 tons of freight and equipment, excluding locomotive and tender, a distance of one mile. This was a decrease of 11 lb. from that for 1924 and 24 lb. under 1923, and was the lowest average ever attained since the compilation of reports by the Bureau of Railway Economics began, in 1920.

In 1925 more fuel oil was purchased than in 1924 by 6.9 per cent, but the total cost was greater by 22.3 per cent.

Traffic News

Recommendations and Decisions Announced by I. C. C.

The Strouds Creek & Muddlety R.R. filed a complaint with the Interstate Commerce Commission in Washington, D. C., on May 29, against the Baltimore & Ohio R.R. alleging that the division of the coal-carrying rate is not sufficient to make it profitable. The Strouds Creek & Muddlety R.R. extends from Delphi to Allensdale, in Nicholas county, W. Va., and taps rich fields of smokeless and semi-anthracite coal.

The complaint of the Fentress Coal Co. alleging unreasonable rates on coal from Tennessee points of origin to points in Iowa, should be dismissed, Examiner Jewell has recommended to the Interstate Commerce Commission.

A basis for the establishment of freight rates on lignite from North Dakota points of origin to points in Minnesota and South Dakota has been recommended to the Interstate Commerce Commission by Examiner Harris Fleming.

Examiner Fuller of the Interstate Commerce Commission has recommended a new schedule of rates on anthracite from mines on the Delaware & Hudson R.R. and on bituminous coal from the Clearfield, Westmoreland and Pittsburgh districts, to Willsboro, N. Y. He also recommends reparation to cover excessive charges in the past. Examiner Boat recommends the dismissal of the complaint alleging unreasonable rates on bituminous coal from Herrin, Ill., to points in Michigan. He recommends the refunding of certain overcharges in connection with these rates.

Condemns Proposed Reductions

Proposed reductions in rates on coal from Springfield and Riverton, Ill., to Keokuk, Iowa; Hannibal, Mo., and related points have been disallowed by the Interstate Commerce Commission in *Bituminous Coal to Iowa, Illinois and Missouri*. The proposed reductions were an attempt upon the part of the Alton and Wabash railroads to meet rates established by the Burlington at Keokuk in conformity to the Commission's decision in *Illinois Coal Cases*, 62 I.C.C. 741. The Wabash and Alton rates would have destroyed the differential adjustment prescribed in that decision.

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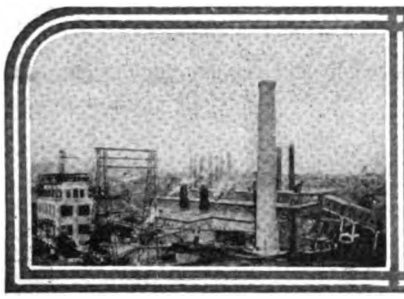
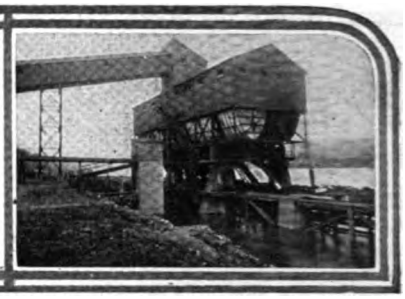


News Items From Field and Trade



ALABAMA

Shift Convict Leasing Probe.—The grand jury which has been probing Alabama's convict leasing system suddenly shifted its investigation recently to Banner Mine, where an inquiry into a mutiny two years ago was halted by Gov. W. W. Brandon. The decision to start a new inquiry at Banner Mine is regarded as an indication that the jury is determined to bring the leasing system to an end by its revelations.

New Washery Starts.—The Porter Coal Co. has placed in operation its newly completed washery at Porter mine, near Palos. The company has made a large outlay at this operation recently in order to increase production and improve preparation. The mine is owned and operated by W. C. Adams and E. J. Rowe, Birmingham.

New Premier Slope?—It is understood that the Premier Coal Co., operating the Mossboro mine, at Helena, Shelby County, is contemplating the opening of another slope at that point.

Southern Seeks New Line.—The Southern Railway Co. has asked permission of the Interstate Commerce Commission for authority to acquire the portion of the Ensley Southern R.R. branching from its line at Parrish, Ala., and serving the Gorgas mine of the Southeastern Coal Co., the Stith Coal Co. and other operations in Walker County. The line has been in receivership for a year or more. The main line extending from Ensley, Ala., to Port of Birmingham, was acquired recently by the Port of Birmingham Corporation to be operated by the Inland Waterways Corporation as a connecting link between Birmingham and the Warrior River barge service.

The Neill Coal Co. has opened a slope mine on the Southern Ry. near Coalburg on property leased from the Sloss-Sheffield Steel & Iron Co.

ARKANSAS

Jailed for Violating Injunction. — Lindsey Hedgepeth, of Dardanelle, Yell County, was sentenced to six months in jail and assessed all costs of prosecution by Judge Trieber in U. S. District Court at Little Rock last week for violation of an injunction restraining union miners from interfering with property or employees of the Bernice Anthracite Coal Co.'s mines at Russellville. Hedgepeth was charged with contempt of court in having intimidated two negro miners as they were approaching the mines. Lack of evidence against Will Martin, charged with having intimidated miners at a railroad station at Russellville, resulted in the court finding him not guilty. The injunction which Hedgepeth is alleged to have violated was issued by Judge Trieber last September following labor disturbances at the coal mines in Russellville in connection with a strike of union miners.

CALIFORNIA

Form $10,000,000 Coal Company.—The Mt. Shasta Coal Co. has filed articles of incorporation with a capitalization of $10,000,000 for the purpose of mining coal in Shasta County. For several months extensive development work has been carried on along Clover Creek and Oak Run, twenty-five miles northeast of Redding. Reports from time to time have told of ledges having been cut into up to as high as 14 ft. in thickness. Three different coal development camps have been maintained. Five miles of power line were built to furnish power. The company now controls more than 15,000 acres in the central part of Shasta County in what is known as the Oak Run and Round Mountain districts. The directors of the corporation are Charles A. Dickey, of San Francisco; H. C. Morris, of Oakland, a director of the American Bank; S. E. Biddle, of Piedmont, president of the new First National Bank of Oakland; A. P. Cross, Los Angeles capitalist; John A. McCandless, sugar and tractor magnate of Honolulu; A. F. Hockenbeamer, of Berkeley, vice-president of the Pacific Gas & Electric Co.; Harry H. Fair, president of Peirce, Fair & Co., fiscal agents; R. Ferbeck, of San Francisco; E. L. Dow, San Francisco capitalist and head of River Garden Farms, and John L. McNab, attorney, of San Francisco.

COLORADO

April Output Increases. — Colorado mines produced 805,729 tons of coal during April, an increase of 112,132 tons over March, according to the monthly report of James Dalrymple, state coal mine inspector. Total output for the first four months of 1926 was 3,430,619 tons, compared with 3,500,421 tons in the corresponding period of 1925.

The Black Diamond Fuel Co. has been incorporated to take over the mine of that name east of Boulder and to produce and sell its coal. W. W. Morgan is president of the new company; F. W. Thurman, who has been associated with him in the management of the Crackerjack mine at Marshall for eleven years, is secretary-treasurer, and Jim Bertotti, who was associated with the company from whom the Black Diamond was purchased, is vice-president of the new company. Tom Hilton is superintendent.

Cuts Wages to 1917 Level.—The Vickers Coal Co., Trinidad, notified the state Industrial Commission last week that it was reducing the wages of its men at the Aguilar mine to the 1917 scale. The company said it took this action to place its wage scale on the basis of mines operating in the same district. About forty men are affected.

To Sell National Fuel Co.—Sale of the National Fuel Co., Denver, now in the hands of a receiver, has been authorized by District Judge George F. Dunklee, who signed a decree granting the International Trust Co., as trustee, foreclosure under a deed of trust and a judgment against the fuel concern for $1,464,375.01. H. Van Mater, receiver for the National Fuel Co., was instructed by the court to give nine weeks' notice of the sale of the property at public auction at 511 Colorado Building at noon on a date to be fixed by Van Mater. The receiver also was instructed not to accept any bid under $400,000. The trust company was the holder of a mortgage on property of the fuel company, given to secure a $2,000,000 bond issue. The fuel company owns property and lands in Denver, Boulder, Weld and Las Animas counties.

INDIANA

State Gets Coal Cheaper.—Awards recently made by the state Joint Purchasing Committee on coal for the coming year for various state institutions are substantially less than expiring contract prices. For instance, where the state last year paid $1.73 a ton for screenings, the price under the new award is $1.54. Successful bidders were the Jackson Hill Coal & Coke Co., White Ash Coal Co., Patoka Coal Co. and Ogle Coal Co., all of Indianapolis; Walter Bledsoe & Co., Terre Haute; J. H. Scott Coal Co., Vincennes; Ayshire Coal Co., Oakland City; Tildesley Coal Co., Cincinnati, Ohio; Madison Coal & Supply Co., Madison, and Brazil Coal Co., Brazil. The contract will cover about 300,000 tons during the year.

Electric Road Scheme Revised.—The proposition to build an electric line from Owensboro, Ky., to Elnora, Ind., through the coal fields of Warrick, Pike, Daviess and Green counties in Indiana, has been revived. It is said that English capitalists are back of the move. The Interstate Commerce Commission refused to sanction the building of the road several months ago, but

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steps will be taken, it is said, to have the petition reconsidered. The company proposes to bridge the Ohio River near Rockport. It is said the aim of the company is to develop coal fields in southern Indiana.

Indiana coal fields are now operating at greater capacity than at the same period last year, according to William Mitch, secretary-treasurer of District No. 11. He said that indications pointed to normal production schedules during the summer months. About 70 per cent of the mines in Indiana are said to be in operation at the present time.

KENTUCKY

To Improve Russell Yard.—Railroad officials of Columbus have been advised that the Chesapeake & Ohio Ry. will spend approximately $500,000 in reconstructing the yards at Russell, Ky., which is across the river from Portsmouth, Ohio. The improvement is to facilitate the movement of coal from West Virginia mines to the lakes. The coal is shipped through Columbus over the Norfolk & Western Ry., going north to the Toledo docks over the Hocking Valley Ry. Additional automatic devices will be installed in order to speed up the movement of coal.

Construction work on the new $700,000 electric power plant to be erected by the Kentucky Electric Power Co. at Nortonville is scheduled to start soon. The Norton Coal Co.'s mines at Nortonville will be supplied with power from this plant, it has been announced.

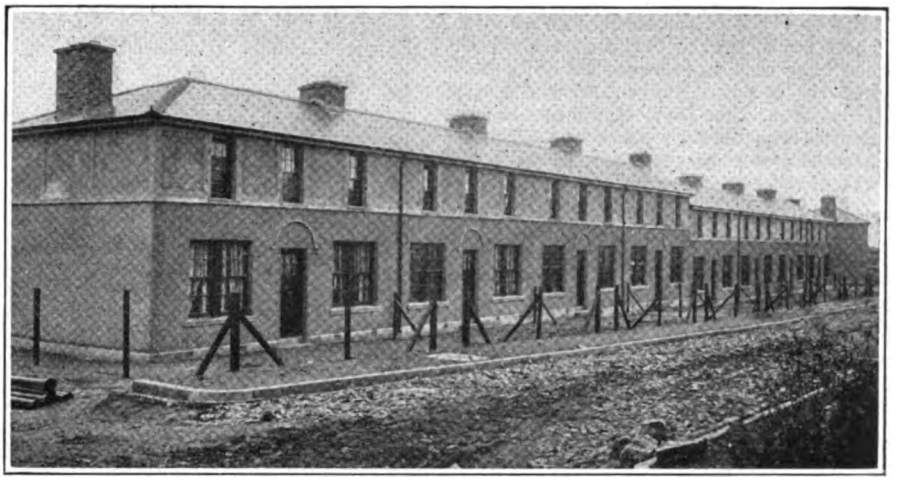
Storm King Mine Sold.—The C. L. Ryley Coal Co., of Lexington, has acquired the property of the Storm King Mining Co., of New York, located in Perry County. The property is located three miles east of Hazard on the Louisville & Nashville Ry. and includes the Storm King mine and more than 200 acres of land. The mine has a daily output of 400 tons. The purchaser paid $100,000.

Arnold Mine Suspends.—The West Kentucky Coal Co. has suspended operation of its Arnold mine, at Earlington, temporarily because of unfavorable market conditions. The suspension will continue for about three weeks. About 250 men are employed at the Arnold mine and they will be distributed among the other mines of the company.

PENNSYLVANIA

P. & R. C. & I. Has Deficit.—A net loss of $4,115,567, after depreciation, depletion, interest and taxes, is reported for the year ended Dec. 31, 1925, by the Philadelphia & Reading Coal & Iron Co. and subsidiaries. This is in contrast with a net income of $1,020,593, or the equivalent of 72c. a share earned on 1,400,000 shares in 1924. Coal sales in 1925 totaled $70,623,106 against $83,511,650 the year before. Other income was $320,498, against $612,406. Production costs, general expenses, etc., were $69,674,064, against $77,641,497; depreciation and depletion, $1,218,091, against $1,504,503; federal and local taxes, $2,498,504, against $2,346,771, and interest, $1,668,512, against $1,610,092.

Constitutionality of the anthracite tax law is involved in the case of the Commonwealth vs. the Hudson Coal Co., argued last week before the Pennsylvania Supreme Court at Harrisburg. The case was carried to the state's highest tribunal on appeal from a decision of the Dauphin County Court of Common Pleas which held that the company should pay the state the sum of $43,350 in taxes.



Houses at the Newtownkelly Mine, in Northern Ireland

Substantial work has been done by Sir Samuel Kelly at his new colliery in Ulster. Note the curbs on both sides of the street. The mine is at Coalisland, Tyrone, not far from Lough Neagh, the largest body of inland water in Ireland.

During the present spring thirty-seven mining companies of Pennsylvania planted more than 1,565,000 trees on their property. These trees will produce mine timbers, ties and props in from 25 to 40 years. The state Department of Forests and Waters has announced that up to the present time the mining companies of Pennsylvania have planted more than 8,383,000 forest trees supplied from the state nurseries.

Proctor Mine Deserts Union.—Proctor mine, located at Force, has resumed operations on the 1917 scale, adding another mine to the list of those that have deserted the union rate.

Randolph Disaster Due to Dynamite.—After hearing the testimony of almost a score of witnesses during a period of five hours, the coroner's jury convened to inquire into the cause of the fatal accident at the Randolph colliery, Port Carbon, on May 6, in which five men lost their lives, returned a verdict finding that the men met their death as a result of an explosion of dynamite. Mine Inspector Brennan testified that he visited the mine on March 18 and found gas and gave instructions regarding changes in ventilation to eliminate the trouble. The company had the changes under way when the explosion occurred. The inquest was conducted by Coroner K. M. Schultz at his office in Port Carbon.

As a reward for long and faithful service in the mines of the Pittsburgh Coal Co., 24 miners have been placed on the pension list by favorable action on their applications by the advisory committee governing the pension fund of the company. This makes a total of 246 miners on the pension roll. More than $45,000 is required to fulfill the pension payments for one year.

Supreme Court Allows Bell Appeal.—John A. Bell, Pittsburgh banker and coal operator, has been granted an appeal by the state Supreme Court of Pennsylvania from his conviction last fall on a charge of embezzling more than $600,000 of the funds of the defunct Carnegie Trust Co., of which he was president. The appeal is being taken on a constitutional point relating to the statute of limitations. Bell's counsel contended that the statute of limitations of four years should have governed his indictment under the act of 1878. The Superior Court declared that the act was unconstitutional. The law had been on the statute books of Pennsylvania for nearly 50 years without its constitutionality having been tried before the higher courts. The case will be argued before the next session of the state supreme court in Pittsburgh.

Poland Fire Loss $40,000.—Fire at the Poland coal plant of the Maple-Sterling Coal Co., in Greene County, May 25 destroyed two tipples, two coal bins, two dumps, three motors and the entire conveying and loading system, with a total estimated loss of $40,000. Origin of the flames is as yet undetermined. The flames were first discovered by John Barney, clerk of the coal company's commissary. With the aid of other men about the plant he succeeded in saving the main tipple. The plant will be rebuilt immediately, officials of the company say.

The Snowdon Coke Co. has completed the erection of coke crushing and screening equipment at its plant near Brownsville, Fayette County, and is trying it out.

WEST VIRGINIA

The Wilhelmina Collieries Co. has changed its name to the Morningside Land Co., and the Talbott Chambers Coal Co., a foreign corporation, will hereafter be known as the Dragon Coal Co.

The Buckeye Coal Mining Co. has filed a certificate of dissolution with the Secretary of State of West Virginia, and the **Vester Coal Co.** has been dissolved by deed of sale.

Since beginning to operate its No. 1

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mine in the Scotts Run field on an open-shop basis the Gilbert-Davis Coal Co. has been able to increase its daily loadings to a point above 14 cars a day. This was the last company in the Scotts Run field to cease operating its plants under an agreement with the union.

By foreclosure proceedings in Cincinnati on May 15, it is announced, the Otto Marmet Coal & Mining Co., of Raymond City, Putnam County, W. Va., obtained a clear title to its property, which was sold several years ago to J. C. McKinley, of Wheeling, who went into bankruptcy some time ago. Mortgages against the property totaled $1,250,000. The property consists of several mines at Raymond City, steamboats, barges, wharfs and coal yards in Cincinnati. The company proposes making some extensive improvements, according to reports.

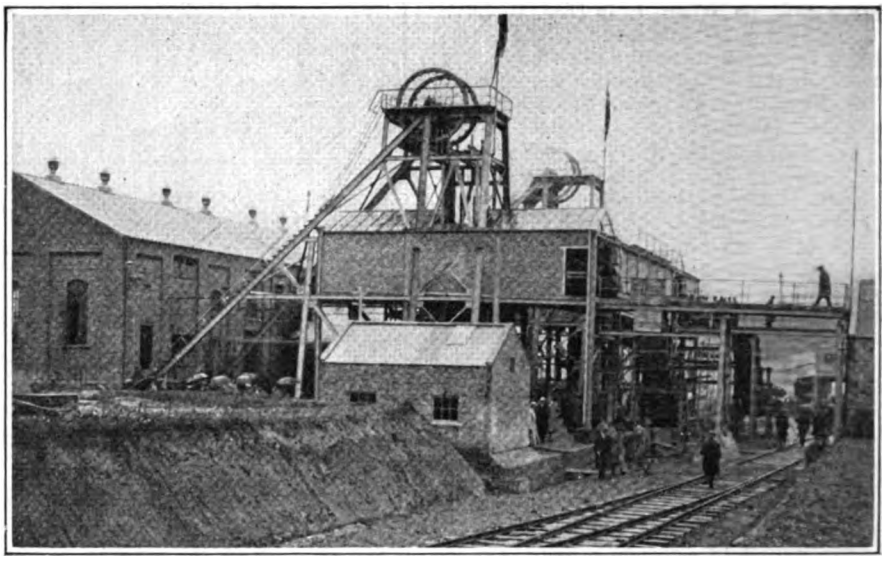
Judge Birk S. Strathers, of the Harrison County Circuit Court, has been asked to appoint a receiver for the Francois Coal Co., operating a mine at Norwood, in Harrison County; the Anna May mine, in Monongalia County, and the Vincent mine, in Marion County. The petition was made in the suit of the Clarksburg Trust Co., trustee, and John A. McNichol, president of the coal company, brought for the purpose of getting a court order for the sale of the property and at the same time have a receiver appointed to operate the mines but with authority to borrow not more than $20,000. Indebtedness of the company is approximately $180,000, it is said.

More Houses for Nelson Fuel.—The Nelson Fuel Co., Leslie, Greenbrier County, will soon start the erection of 50 new houses at its plant, which is located along the Sewell Valley Ry. It probably will require 60 days to do the work and about $50,000, it is reported, will be expended. The Sewell seam is mined there.

New Babcock Plant.—The Babcock Coal & Lumber Co., Cliff Top, Fayette County, is erecting a wooden tipple with shaker screens, loading booms and conveyor lines. The tipple will have a capacity of 1,500 tons daily. The plant is located along the Chesapeake & Ohio Ry. and will be completed in 90 days. The Sewell seam is mined there.

Safety Day Committee Named.—In preparation for the observance of Safety Day, to be held Aug. 31. Robert M. Lambie, chief of the state Department of Mines, who is acting as chairman, has named the following committee on general arrangements: Archie Forbes, Lundale; Clyde McDowell, Thomas; J. V. Berry, Bethlehem Mines Corp., Johnstown, Pa.; T. J. McParland, Gary; Vitus Kleir, Gary: G. L. Wilson, Minden; Edgar Blackwell, Scarbro; C. J. Flippen, Kingston: James Gatherum, American Rolling Mills Co., Middletown, Ohio; W. A. Eads, Fordson Coal Co., Stone, Ky., and W. H. Forbes, U. S. Bureau of Mines, Huntington. It is planned to hold a state first-aid and mine-rescue contest on Aug. 31. Huntington probably will be selected, but this has not been definitely decided.

Rock-Dusting Spreads Rapidly.—A year ago there were only the No. 2 and the No. 12 mines of the Boone County Coal Corporation, at Sharpless, were thoroughly rock-dusted. A year later finds 30 mines owned and operated by twenty-two companies as being rock-dusted—seven in the Panhandle district, five in the Pocahontas field, four in the New River field, two in the Logan field, two in Boone County and one in the Thacker field.



Newtownkelly Mine, in Ulster, Which Sir Samuel Kelly Owns

This mine at last reports was still operating, and Sir Samuel Kelly declared that he did not anticipate that the men would refuse to work or that the railroad would fail to give it service. The administrative area, known as Northern Ireland, like the Irish Free State, is free of the strike fever.

Plan Road to Untapped Field.—The Chesapeake & Ohio and the New York Central railroads will co-operate in buliding a 39-mile connecting line between branches of the two railroads through several counties of West Virginia rich in coal and timber hitherto inaccessible. A charter has been applied for at Charleston by the Nicholas, Fayette & Greenbrier R.R., capitalized at $8,000,000. The incorporators are equally divided between the New York Central and the Chesapeake & Ohio. The charter calls for the construction of a railroad from Swiss, in Nicholas County, the terminus of the Kanawha & Michigan, which is a subsidiary of the Central lines, to a point near Rainelle in Greenbrier County, on the Sewell Valley R.R., which in turn connects with the main line of the C. & O. at Meadow River.

Sale of the property of the Otto Marmet Coal Co. in West Virginia to Otto Reeselin, for $75,000, as authorized by the District Court for the southern district of West Virginia, has been approved in an ancillary decree handed down by the federal court at Cincinnati. The suit against the company was brought by the Fourth Central Trust Co. of Cincinnati and the property sold at Charleston under order of the U. S. Court there.

CANADA

Denies Seeking Subsidy.—"We have never, at any time, approached Mr. McCrea, or any other member of the Provincial Government, on the subject of a subsidy for the further development of anthracite at Larchwood, Ont.," said Albert Slade, secretary-treasurer of the British-Colonial Mines Co., in Toronto, commenting on a statement to the effect that the Minister had denied promising such a subsidy.

New Kay Moor Tipple Completed.—A new steel four-track tipple, among the best along New River, has been completed at Kay Moor No. 1 mine of the New River & Pocahontas Consolidated Coal Co. It has a capacity of 250 tons of coal an hour, and an output of 900 tons a day is now being handled. This mine, which was formerly owned by the Low Moor Iron Co., was purchased a little over a year ago by the New River & Pocahontas Consolidated Coal Co., which is the operating company in West Virginia for the Berwind-White Coal Mining Co., of Philadelphia.

Foreman "Exams" Announced.—The West Virginia Department of Mines announces examinations for mine foremen and firebosses as follows: Mechanical Hall, West Virginia University, Morgantown, July 26; Central School Building, Elkins, July 29; high school building, Welch, Aug. 9; high school building, Williamson, Aug. 12; Junior High School Building, Beckley, Aug. 16; Central Junior High School Building, Charleston, Aug. 19; high school building, Logan, Aug. 26, and high school building, Wheeling, Sept. 2.

Ontario Still Seeks Alberta Coal.—At a meeting on May 21 of the Ontario committee on coal, composed of mayors and other officials of a number of Ontario cities and towns, attended by producers and dealers of Ontario and Alberta, a sub-committee was appointed to inquire into the possibility of making a temporary arrangement for bringing a supply of Alberta coal eastward immediately. Premier J. E. Brownlee, of Alberta, will be assured of every assistance in any plan he proposes to obtain a lower freight rate on coal moving eastward. So far the determination of Sir Henry Thornton, president of the Canadian National Rys., to maintain the $9 rate remains unchanged.

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Among the Coal Men

Robert Grant, who for several years has been president of the New England Coal & Coke Co. and the New England Fuel & Transportation Co., with headquarters at Boston, has also been elected president of the Mystic Steamship Co. and of the new Mystic Iron Works.

Duncan C. Kennedy, secretary of the Kanawha Coal Operators' Association accompanied by his wife and daughter, will sail on June 26 on the "Transylvania" for a two months' trip abroad. They will visit England, Scotland, France, Switzerland, Belgium, Holland and Germany.

Dr. W. S. Blaisdell, an Allegheny Valley coal operator, residing at Punxsutawney, Pa., is in the Clifton Springs (N. Y.) sanitarium, suffering from intestinal trouble. He is much improved, however, and expects to be at home within two or three weeks.

Lee Long, vice-president of the Clinchfield Coal Corporation, Dante, Va., has been elected president of the Virginia Coal Operators' Association. The new vice-president is **Webb J. Willits**, president of the Norton Coal Co., Norton, Va. C. B. Neal, also of Norton, was re-elected secretary-treasurer at the recent annual meeting held there.

L. E. Young, general manager of the Union Colliery Co., of Dowell, Ill., has been elected president of the Apollo Club of St. Louis. This is one of the highest class vocal organizations in the Middle West.

A. H. Crane, secretary-treasurer of the West Virginia Coal & Coke Co.; **J. Blaine Moore**, chief accountant, of Fairmont, W. Va., and **C. C. Campbell**, auditor, of Omar, W. Va., were in Cincinnati, May 10 to 12 conferring with W. M. Wilshire relative to moving general headquarters of the company there

Kirby Thomas is examining coal properties in Butler and Armstrong Counties, Pennsylvania.

Dr. T. D. Scales, who for many years was heavily interested in the John Bull coal mine and the Erie Canal coal mine, near Boonville, Ind., is now engaged in banking on a large scale. He is president of the Farmers and Merchants National Bank at Boonville; president of the Newburgh State Bank at Newburgh; vice-president of the City National Bank at Boonville and director of the Citizens' National Bank at Evansville, Ind.

J. G. Julian, who for many years was associated in the development of the coal industry in Evansville and other southern Indiana towns, has been engaged as manager of the Luhring Investment Co. at Evansville, Ind., and will help promote real estate in that city.

Robert Z. Virgin, editor of the *Coal Trade Bulletin*, Pittsburgh, Pa., until it suspended publication recently, and former assistant director of the mining extension department of West Virginia University, Morgantown, has joined the sales force of the Koehler Manufacturing Co., Pittsburgh, which manufactures the Wheat super-electric cap lamps for miners.

L. T. Putman, for some years assistant to the general superintendent of the Old Ben Coal Corporation at Christopher, Ill., has been transferred to the company's newly purchased properties in West Virginia.



Photo by Underwood & Underwood.

Charles O'Neill

O'Neill Succeeds Clark.—When the executive committee of the Association of Bituminous Coal Operators of Central Pennsylvania met at Altoona on May 17, B. M. Clark, of Indiana, Pa., resigned as president, and Charles O'Neill, of Altoona, was elected in his place. The association deals with the wage scale for the Central Pennsylvania Coal Producers' Association, of which Mr. Clark is president and Mr. O'Neill secretary. The two bodies will hold their annual meeting June 8.

S. A. Bacon, of London, England, connected with D. L. Flack & Sons Co., Ltd., London, coal wholesalers, visited the mines of the New River Coal Co. in southern West Virginia on May 13.

Charles Fox, of Terre Haute, Ind., former secretary of District No. 11, United Mine Workers, and one of the most popular members of organized labor in Indiana, has been elected chairman of the Vigo County Democratic Committee. Mr. Fox at one time was president of the Indiana Federation of Labor and during the Goodrich administration was appointed a member of the state Industrial Board.

John Griffen, formerly assistant fuel engineer to the Lehigh Coal & Navigation Co., at Lansford, Pa., and later fuel engineer to the Hudson Coal Co., making tests on the burning of pulverized anthracite in stationary boilers and investigating the reclaiming of fine coal from breaker slush, after eight years spent installing equipment for such reclamation on behalf of the Dorr Co., has become sales engineer of the American Rheolaveur Co., of Wilkes-Barre, Pa.

Dr. Henry Mace Payne has been appointed consulting engineer and geologist to the Gulf, Mobile & Northern R.R. Dr. Payne will retain his connection as consulting engineer to the American Mining Congress, but has discontinued his office at 300 Madison Ave., New York City.

Clyde G. Brehm, of Uniontown, Pa., master mechanic and in charge of safety work at the coal and coke plants of the Oliver & Snyder Steel Co., has been appointed assistant general superintendent.

Charles H. Hinsey, of Uniontown, Pa., has been appointed general superintendent of the Oliver & Snyder Steel Co.'s coal and coke plants (Oliver Nos. 1, 2 and 3), near Uniontown, to succeed John H. Lane, who died last January. For many years Mr. Hinsey has been chief engineer of these properties, and shortly before Mr. Lane's decease he also was made assistant general superintendent.

George W. Hay has been appointed general manager of operations of the Consolidation Coal Co., with headquarters at Fairmont, W. Va.

P. J. Walsh, of Uniontown, Pa., has resigned the position of general superintendent of the Guy C. Corrado interests, with headquarters at Connellsville, Pa., and a number of small coal and coke plants scattered throughout the Connellsville coke region. Most of these plants have been closed down since the settlement of the anthracite strike, so that the position will not be filled at present. Mr. Walsh has not yet made any other connection.

William T. Payne, president of the East Boston Coal Co., Kingston, Pa., has been chosen chairman of the board of directors of Burns Bros., New York City, in succession to the late S. M. Williams. Mr. Payne, who also is vice-president of the Second National Bank of Wilkes-Barre, Pa., has been acting chairman.

Obituary

Albert Kemmerer Cosgrove, vice-president of the Cosgrove-Meehan Coal Corporation, of Johnstown, Pa., died in the Homeopathic Hospital, Pittsburgh, on May 25. He was stricken with pneumonia while on business in Pittsburgh. Mr. Cosgrove was born in Cambria County, Pennsylvania, Dec. 24, 1890. He was graduated from Lehigh University in 1913 with the degree of mining engineer. He entered the coal business with his brothers under the firm name of Cosgrove & Co., and for a time was located in Philadelphia, in charge of the offices there. He later was made vice-president of the Cosgrove-Meehan corporation and moved to Johnstown. He is survived by his mother, one sister and two brothers, George D. Cosgrove, of the Grazier Supply Co., of Johnstown, and John C. Cosgrove, chairman of the Cosgrove-Meehan corporation. The body was taken to Johnstown for interment.

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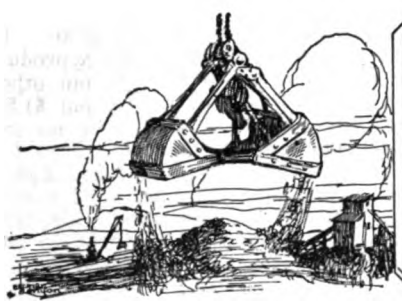


Production And the Market



Bituminous Coal Market Tone Firmer, Aided by British Strike and Heavy Lake Movement

The bituminous coal trade of the country enters the new month with its technical and actual market position improved. The chief factor in this betterment, of course, has been the steady flow of coal to the lakes. Although the season was slow in starting, the weekly movement now tops the 1,000,000-ton mark. This diversion of tonnage from all-rail channels has had a direct beneficial influence upon a large part of the Appalachian Region and indirectly has helped other fields.

A secondary favorable factor has been the prolongation of the British strike. To the speculative element in the industry the reaction, both in prices and in the volume of buying, has been disappointingly feeble. Nevertheless, there has been a moderate increase in foreign orders and an expansion in bunker trade. This has contributed to a healthier undertone in the Atlantic seaboard markets.

Production as a whole also has been cut closer to actual consumer demand. During the week ended May 22 the total bituminous output was estimated by the Bureau of Mines at 9,295,000 net tons—or 4,000 tons less than during the preceding week. Production rates recorded in those two weeks marked the first increase in output in a month. The increase, however, falls far short of equaling the weekly lake dumpings, which totaled 1,256,679 tons of cargo and 55,161 tons of vessel fuel for the week ended May 30.

Spot Prices Stronger

These favorable factors are reflected in an unevenly distributed increase in spot quotations. *Coal Age* Index of spot bituminous prices on May 31 was 160 and the corresponding price was $1.94. A week earlier the figures were 157 and $1.89, respectively. Eastern and southern slack prices were higher and there was a stronger tone to pool quotations along the Atlantic seaboard. Illinois and Indiana figures were unchanged. The price situation at the Head of the Lakes and in Colorado and Utah was unsettled.

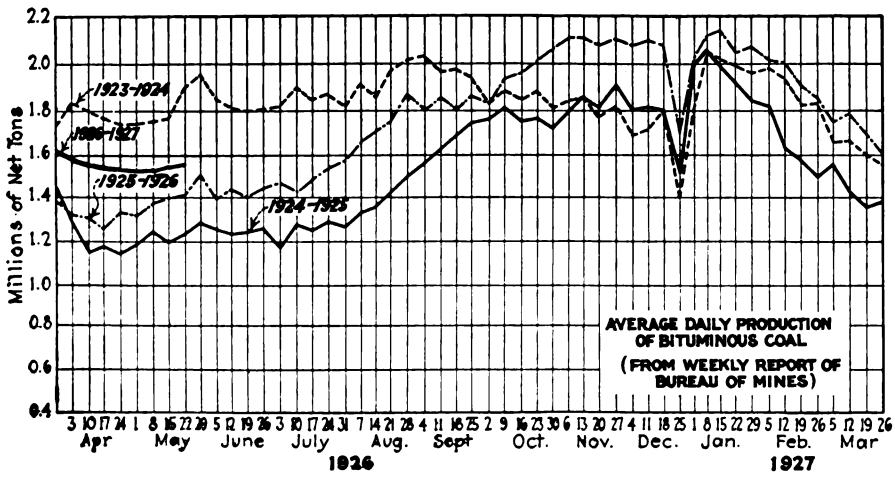
The Central Competitive Field probably is the hardest hit in the present struggle for business. Ohio, except for a few mines in the Pomeroy Bend district and operations with direct dock connections, is out of the lake picture. Non-union tonnage is growing in western and central Pennsylvania, but profits are not keeping pace with the increases.

Anthracite Decline Accelerated

Current weekly anthracite output is now making clear the justification for the complaints as to market conditions voiced in the hard-coal trade for some time back. During the week ended May 22 the estimated output dropped to 1,750,000 tons. Part of this decline, it is true, was attributable to time lost by the miners in voting and electioneering for Governor Pinchot. Consumer demand, however, will not absorb full-time production.

The larger companies have been able to move their tonnage of domestic sizes through the regular channels of trade. It is freely admitted, however, that these companies soon must look for new business unless the market improves. Nominal premiums are the best that average independent shipper can command and there are some who are ready to make concessions to move tonnage. Steam sizes, except barley, drag.

The Connellsville coke trade is dull. Production during the third week in May showed a small increase, but spot quotations on standard furnace and foundry grades, though nominally unchanged, were softer.



Estimates of Production

(Net Tons)

	1925	1926
BITUMINOUS		
May 8	8,277,000	9,039,000
May 15 (a)	8,350,000	9,299,000
May 22 (b)	8,451,000	9,295,000
Daily average	1,409,000	1,549,000
Cal. yr. to date (c)	187,454,000	215,074,000
Daily av. to date	1,552,000	1,779,000
ANTHRACITE		
May 8	1,987,000	1,985,000
May 15	1,950,000	1,904,000
May 22	1,708,000	1,750,000
Cal. yr. to date (c)	34,566,000	25,213,000
BEEHIVE COKE		
May 15 (a)	136,000	203,000
May 22 (b)	145,000	211,000
Cal. yr. to date (c)	4,532,000	5,583,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

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Middle Western Coals Weak

Neither steam nor domestic orders for Illinois and Indiana coals brightened the outlook in the Chicago market last week. There were some operators who favored raising the price on 6-in. lump 10 or 25c. on June 1, but the majority did not believe buying conditions would support such a move. Eastern quotations, on the other hand, are stronger —largely because of shipments to the lakes.

Potential overproduction and the inroads of non-union coal, rather than a decline in general industrial activity, explain the weak market for steam grades in the Middle West. Offerings from the strip pits also help depress prices on shaft-mined coal. In southern Illinois screenings and small nut sizes find a readier market than other offerings. The Duquoin and Jackson County fields are running less steady than southern Illinois proper.

The Mt. Olive group is in worse shape than the Jackson-Duquoin operations. In the Standard field the same unsatisfactory conditions of weeks' standing still prevail. All fields report accumulations of unbilled loads of large sizes. Many mines are compelled to crush coal to take care of screenings contracts. Local domestic demand is slow in both Chicago and St. Louis. Country trade, too, is backward.

Kentucky Improves Position

Moderate improvement marks the course of the Kentucky markets. The lake trade is absorbing increasing quantities of eastern Kentucky coal and there is some demand from Georgia and the Carolinas. Western Kentucky is picking up scattered orders for small screened coal in the South. The greater part of the western production, however, is moving northward.

The comparative scarcity and high prices commanded by screenings during recent weeks have strengthened the demand for mine-run. Eastern Kentucky slack is bringing $1.10@$1.25 and western Kentucky, $1@$1.25. Western Kentucky mine-run is $1@$1.40. In the eastern part of the state byproduct mine-run brings up to $1.65, but other grades range between $1.25 and $1.50. Prices on prepared coals show no important changes.

The docks at the Head of the Lakes have been kept busy unloading cargoes since the opening of navigation. The first week the movement got under way 67 vessels were unloaded; the second week, 48, and the most recent week for which figures are available, 65 cargoes, including 6 of anthracite. Dock interests now estimate that they will need 10,000,000 tons of bituminous coal this season and approximately 900,000 tons of anthracite.

Dock Price Situation Unsettled

Dock prices are badly unsettled. Concessions running up to 75c. have been reported on Youghiogheny, Hocking and splint lump. Pocahontas lump and egg are $7, and stove is $6.75. As a result of the decline in spot quotations many large industrial consumers refuse to

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	June 1, 1925	May 17 1926	May 24 1926	May 31 1926†
Smokeless lump	Columbus	$2.85	$3.10	$3.10	$3.00@$3.25
Smokeless mine run	Columbus	1.85	2.05	2.05	2.00@ 2.15
Smokeless screenings	Columbus	1.40	1.25	1.25	1.20@ 1.35
Smokeless lump	Chicago	3.00	3.10	3.10	3.00@ 3.25
Smokeless mine run	Chicago	1.85	2.00	2.00	2.00
Smokeless lump	Cincinnati	3.10	3.10	3.10	*3.00*
Smokeless mine run	Cincinnati	2.00	1.80	1.85	1.75@ 2.00
Smokeless screenings	Cincinnati	1.30	1.30	1.30	1.25@ 1.50
*Smokeless mine run	Boston	4.25	4.85	4.40	4.60@ 4.75
Clearfield mine run	Boston	1.80	1.85	1.80	1.65@ 2.00
Cambria mine run	Boston	2.10	2.10	2.05	1.95@ 2.25
Somerset mine run	Boston	1.95	1.95	1.90	1.85@ 2.15
Pool 1 (Navy Standard)	New York	2.55	2.60	2.60	2.50@ 2.75
Pool 1 (Navy Standard)	Philadelphia	2.60	2.80	2.65	2.50@ 2.80
Pool 1 (Navy Standard)	Baltimore	1.85	1.95	1.95	1.95@ 2.05
Pool 9 (Super. Low Vol.)	New York	2.00	2.10	2.10	*1.90@ 2.25*
Pool 9 (Super. Low Vol.)	Philadelphia	2.00	2.35	2.10	2.00@ 2.25
Pool 9 (Super. Low Vol.)	Baltimore	1.75	1.75	1.75	1.75@ 1.85
Pool 10 (H.Gr.Low Vol.)	New York	1.85	1.85	1.85	1.75@ 2.00
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.70	2.05	1.85	1.75@ 2.00
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.60	1.60	1.60	1.60@ 1.70
Pool 11 (Low Vol.)	New York	1.55	1.60	1.60	1.55@ 1.75
Pool 11 (Low Vol.)	Philadelphia	1.55	1.70	1.55	1.45@ 1.70
Pool 11 (Low Vol.)	Baltimore	1.40	1.45	1.45	1.55@ 1.65
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.55	1.40	1.40	1.30@ 1.55
Pool 54-64 (Gas and St.)	Philadelphia	1.50	1.45	1.45	1.35@ 1.55
Pool 54-64 (Gas and St.)	Baltimore	1.45	1.25	1.25	1.40@ 1.45
Pittsburgh scr'd gas	Pittsburgh	2.40	2.30	2.25	2.20@ 2.30
Pittsburgh gas mine run	Pittsburgh	2.15	2.05	2.00	1.90@ 2.10
Pittsburgh mine run (St.)	Pittsburgh	1.95	1.80	1.80	1.75@ 1.90
Pittsburgh slack (Gas)	Pittsburgh	1.55	1.50	1.35	1.35@ 1.40
Kanawha lump	Columbus	2.10	2.05	2.05	1.85@ 2.25
Kanawha mine run	Columbus	1.40	1.55	1.55	1.40@ 1.75
Kanawha screenings	Columbus	1.10	.95	.90	.90@ 1.05
W. Va. lump	Cincinnati	2.15	1.85	1.85	1.75@ 2.50
W. Va. gas mine run	Cincinnati	1.50	1.50	1.45	1.40@ 1.65
W. Va. steam mine run	Cincinnati	1.35	1.30	1.30	1.25@ 1.45
W. Va. screenings	Cincinnati	1.10	1.05	1.05	1.00@ 1.15
Hocking lump	Columbus	2.25	2.35	2.35	2.25@ 2.50
Hocking mine run	Columbus	1.50	1.55	1.55	1.40@ 1.70
Hocking screenings	Columbus	1.30	1.05	1.05	1.00@ 1.20
Pitts. No. 8 lump	Cleveland	2.25	2.10	2.10	1.80@ 2.50
Pitts. No. 8 mine run	Cleveland	1.90	1.65	1.70	1.70@ 1.75
Pitts. No. 8 screenings	Cleveland	1.40	1.30	1.20	1.25@ 1.35

Midwest	Market Quoted	June 1 1925	May 17 1926	May 24 1926	May 31 1926†
Franklin, Ill. lump	Chicago	$2.60	$2.60	$2.60	$2.60
Franklin, Ill. mine run	Chicago	2.35	2.40	2.40	2.35@ 2.50
Franklin, Ill. screenings	Chicago	2.10	1.90	1.90	1.85@ 2.00
Central, Ill. lump	Chicago	2.35	2.30	2.30	2.25@ 2.40
Central, Ill. mine run	Chicago	2.10	2.05	2.05	2.00@ 2.15
Central, Ill. screenings	Chicago	1.85	1.70	1.75	1.60@ 1.90
Ind. 4th Vein lump	Chicago	2.60	2.40	2.40	2.25@ 2.60
Ind. 4th Vein mine run	Chicago	2.35	2.15	2.15	2.10@ 2.25
Ind. 4th Vein screenings	Chicago	2.00	1.80	1.80	1.75@ 1.90
Ind. 5th Vein lump	Chicago	2.25	2.15	2.15	2.00@ 2.35
Ind. 5th Vein mine run	Chicago	1.95	1.95	1.95	1.85@ 2.10
Ind. 5th Vein screenings	Chicago	1.60	1.35	1.35	1.30@ 1.45
Mt. Olive lump	St. Louis	2.50	2.35	2.35	2.25@ 2.50
Mt. Olive mine run	St. Louis	2.25	2.15	2.15	2.15
Mt. Olive screenings	St. Louis	1.75	1.55	1.55	1.50@ 1.60
Standard lump	St. Louis	2.25	2.25	2.25	2.25
Standard mine run	St. Louis	1.80	1.80	1.80	1.75@ 1.85
Standard screenings	St. Louis	1.70	1.30	1.30	1.25@ 1.40
West Ky. block	Louisville	1.60	1.75	1.75	1.65@ 1.85
West Ky. mine run	Louisville	1.30	1.25	1.20	1.00@ 1.40
West Ky. screenings	Louisville	1.15	1.10	1.10	1.00@ 1.25
West Ky. block	Chicago	2.00	1.75	1.75	1.65@ 1.85
West Ky. mine run	Chicago	1.30	1.15	1.15	.80@ 1.50
South and Southwest					
Big Seam lump	Birmingham	2.40	2.15	2.15	2.05@ 2.55
Big Seam mine run	Birmingham	1.75	2.00	2.00	1.75@ 2.25
Big Seam (washed)	Birmingham	1.85	2.00	2.00	1.75@ 2.25
S. E. Ky. block	Chicago	2.25	2.30	2.40	2.10@ 2.75
S. E. Ky. mine run	Chicago	1.70	1.65	1.65	1.50@ 1.85
S. E. Ky. block	Louisville	2.20	2.05	2.05	*1.75@ 2.25*
S. E. Ky. mine run	Louisville	1.30	1.50	1.50	*1.25@ 1.50*
S. E. Ky. screenings	Louisville	1.05	1.05	1.10	1.10@ 1.25
S. E. Ky. block	Cincinnati	2.30	2.35	2.10	2.00@ 2.30
S. E. Ky. mine run	Cincinnati	1.45	1.50	1.50	1.25@ 1.75
S. E. Ky. screenings	Cincinnati	1.05	1.00	1.00	1.00@ 1.15
Kansas lump	Kansas City	3.85	4.00	4.00	4.00
Kansas mine run	Kansas City	2.85	3.00	3.00	3.00
Kansas screenings	Kansas City	2.60	2.50	2.50	2.50

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**; declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	June 1, 1925 Independent	June 1, 1925 Company	May 24, 1926 Independent	May 24, 1926 Company	May 31, 1926† Independent	May 31, 1926† Company
Broken	New York	$2.34	.....	$8.10@$8.70	.....	$8.25@ $9.25	.....	$8.25@$9 25
Broken	Philadelphia	2.39	.....	8.60	$9.25	9.00@ 9.25	$9 25	9.00@ 9.25
Egg	New York	2.34	$8.40@ $9.25	8.35@ 8.60	8.75@ 9.25	8.75@ 9.25	8.75@ 9.25	8.75@ 9.25
Egg	Philadelphia	2.39	8.60@ 9.30	8.40@ 8.60	9.25@ 9.75	9.15@ 9.25	9.25@ 9.75	9.15@ 9.25
Egg	Chicago*	5.06	7.86@ 8.50	7.44@ 8.18	8.48	8.13	8.48	8.13
Stove	New York	2.34	8.75@ 9.25	8.85@ 9.10	9.25@ 9.75	9.25@ 9.50	9.25@ 9.75	9.25@ 9.50
Stove	Philadelphia	2.39	9.20@ 9.75	8.85@ 9.00	9.60@ 10.00	9.35@ 9.50	9.60@ 10.00	9.35@ 9.50
Stove	Chicago*	5.06	8.22@ 8.70	7.92@ 8.10	8.84	8.33@ 8.58	8.84	8.33@ 8.58
Chestnut	New York	2.34	8.25@ 8.50	8.35@ 8.60	8.75@ 9.25	8.75@ 9.15	8.75@ 9.25	8.75@ 9.15
Chestnut	Philadelphia	2.39	8.60@ 9.45	8.50@ 8.60	9.25@ 9.50	9.00@ 9.15	9.25@ 9.50	9.00@ 9.15
Chestnut	Chicago*	5.06	8.14@ 8.35	7.69@ 8.00	8.71	8.38@ 8.50	8.71	8.38@ 8.50
Pea	New York	2.22	5.00@ 5.50	5.00@ 5.60	6.50@ 7.25	6.00@ 6.25	*6.25@ 7.00*	6.00@ 6.25
Pea	Philadelphia	2.14	5.40@ 5.75	5.00@ 5.40	6.50@ 7.00	6.00@ 6.50	6.50@ 7.00	6.00@ 6.50
Pea	Chicago*	4.79	4.91@ 5.36	4.69@ 5.00	6.03	5.65@ 5.80	6.03	5.65@ 5.80
Buckwheat No. 1	New York	2.22	2.00@ 2.50	2.50	1.70@ 2.25	3.00@ 3.50	1.70@ 2.35	3.00@ 3.50
Buckwheat No. 1	Philadelphia	2.14	2.25@ 2.75	2.50	2.00@ 2.50	2.50@ 2.75	2.00@ 2.50	2.50@ 2.75
Rice	New York	2.22	1.70@ 2.00	2.00	1.50@ 1.85	2.00@ 2.25	1.50@ 1.85	2.00@ 2.25
Rice	Philadelphia	2.14	1.90@ 2.00	2.00	1.75@ 2.25	2.00@ 2.25	1.75@ 2.25	2.00@ 2.25
Barley	New York	2.22	1.35@ 1.50	1.50	1.25@ 1.50	1.50@ 1.75	*1.00@ 1.50*	1.50@ 1.75
Barley	Philadelphia	2.14	1.50	1.50	1.50@ 1.60	1.75	1.50@ 1.60	1.75
Birdseye	New York	2.22	1.60@ 1.85	1.60	1.30@ 1.60	2.00	1.30@ 1.60	2.00

*Net tons, f.o.b. mines. †Advances over previous week shown in **heavy type**; declines in *italics*.

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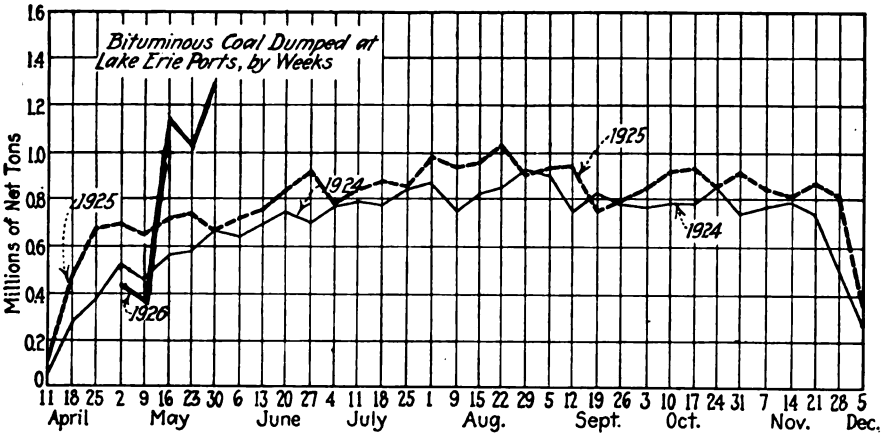


renew contracts. Current movement of coal off the docks also is falling.

Trade at the Twin Cities is normal, but economies in fuel consumption and shifts in manufacturing enterprise have reduced the total demand. Prices on all-rail coal for steam and domestic purposes are well maintained. Local trade at Milwaukee is quiet. The docks, however, are working at a rapid rate to take care of the cargoes coming from the lower ports. Anthracite receipts are increasing.

Southwestern operations are marking time. Kansas mines are selling little but screenings. Early orders for threshing coal are the only bright spot in the Oklahoma situation. There has been little tonnage mined in Arkansas since the new coal year opened, but operators in that state are laying plans to push sales of storage coal this month.

West Drives for Storage Orders

Utah operators are staging an energetic drive for summer storage orders on domestic lump. Coal is being offered to the householder at Salt Lake City for $6.45@$7, as against an earlier price of $9. Consumers are making some response to these inducements, but are not working the retail distributors to death filling orders. Two C. O. D. retail companies which have not met these prices are urging buyers to ignore the storage rates on the ground that there will be no increase in their prices next winter.

How long this price drive will last is uncertain. It was started, it is reported by the insistent demands of the smelters and other large industrial users for more slack coal. As a result of the low lump prices, there has been a substantial reduction in the number of "no bills," which two weeks ago had passed the 1,000-car mark.

Storage prices have been less successful in stimulating demand in Colorado. As a matter of fact, production has been declining. Steam sizes are going for what the market will bring. Effective June 1, Walsenburg-Canon City lump was quoted at $4.75; nut, $4.50; chestnut, $3; Trinidad lump, nut and fancy chestnut, $2.95; Crested Butte bituminous lump, $4.75; nut, $4.50. Crested Butte anthracite is $6.75 to $8.25, depending on size. Kemmerer-Rock Springs domestic sizes are $3.50, mines; steam coal, $1@$1.30.

Cincinnati Market Stronger

On the whole, the market at Cincinnati was slightly stronger last week, despite some congestion in lake movement. High-volatile producers were heartened by the announcement that the Island Creek Coal Co. schedules for June would show advances. This company is now asking $2.50 for 6-in. lump, $2.25 for 3-in. lump, $2 for egg and 1¼-in. coal. One or two other large West Virginia operators already have followed suit and several Hazard shippers have advanced their price on block to $2.30. High-volatile slack is stronger and mine-run maintains its position.

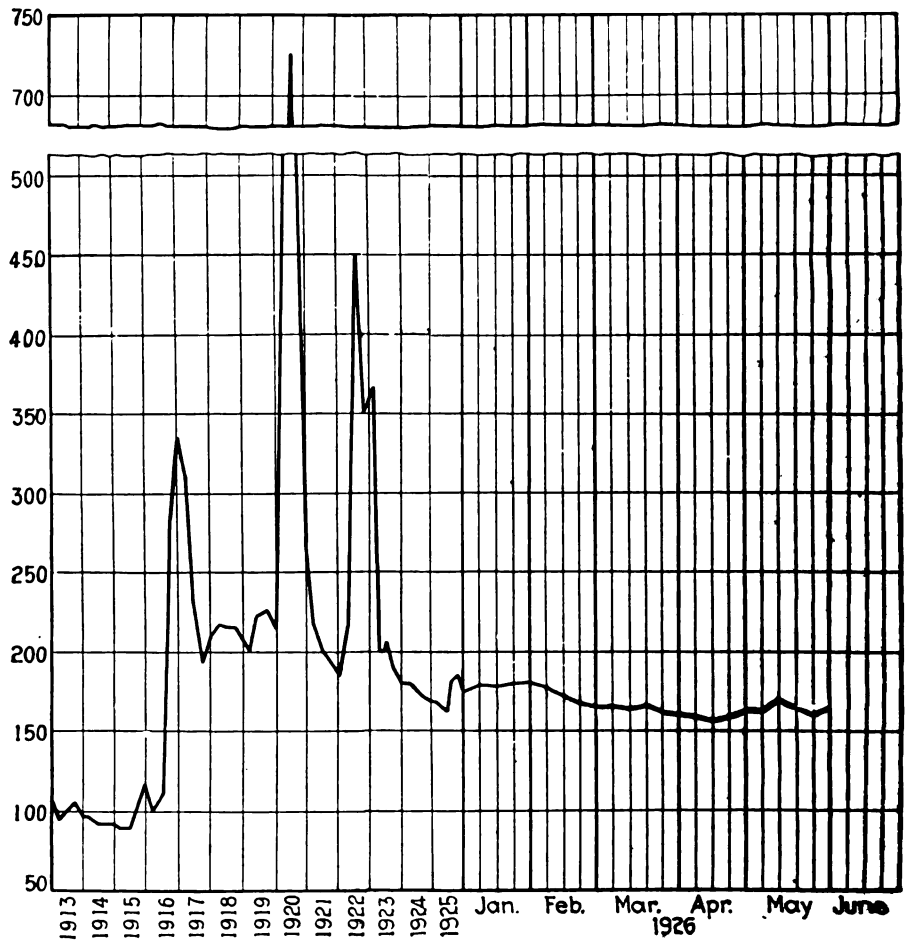
Pocahontas producers will endeavor to hold to the $3 price on lump throughout June. The same price is asked for egg; stove is $2.50, and nut, $2.25. The standard circular price on mine-run is $2, but spot sales have been made at 15@25c. under that figure. Slack is the weakest member of the low-volatile family.

During the week ended last Saturday 14,864 carloads of coal were moved through the Cincinnati gateway. This total, which was an increase of 306 cars over the preceding week, including 4,654 loads en route to Toledo and Sandusky for lake shipment. There also was a slight increase in the number of empties sent to the mines.

Lake Embargo Hits Columbus

Another embargo on lake coal to Toledo and Sandusky, placed early last week, reacted unfavorably upon the Columbus market. Prompt modification of the Toledo embargo relieved the situation somewhat, but enough track coal was offered at concessions to worry the Columbus coal men. Aside from screenings, the all-rail industrial market is dull and featureless. Little domestic tonnage is moving. Southern Ohio production is between 15 and 18 per cent of capacity.

Northern Ohio is no better off than the central and southern parts of the



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926				1925	1924
	May 31	May 24	May 17	May 10	June 1	June 2
Index	160	157	159	161	162	169
Weighted average price	$1.94	$1.89	$1.93	$1.95	$1.96	$2.04

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.

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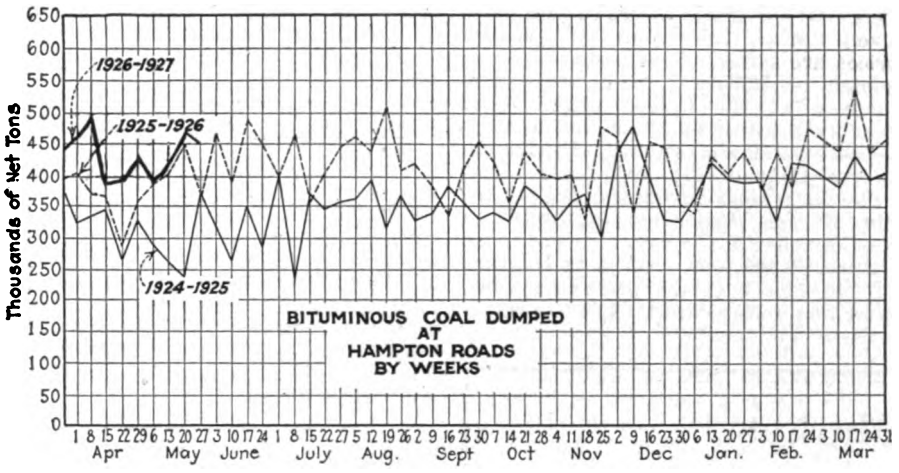


Car Loadings and Supply

	Cars Loaded — All Cars	Coal Cars
Week ended May 15, 1926.....	1,030,162	167,673
Preceding week.....	996,527	162,453
Week ended May 16, 1925.....	984,916	155,630

	Surplus Cars — All Cars	Coal Cars	Car Shortages — All Cars	Coal Cars
May 15, 1926..	259,699	90,295	.....	.....
May 8, 1926..	270,385	105,108	.....	.....
May 14, 1925..	330,433	141,258	.....	.....

state. Slack quotations in the Cleveland market are up 5 to 10c. Stripping operations are holding their own against non-union competition for steam business, but the shaft mines are waging a losing battle.

During the week ended May 15 the No. 8 field produced approximately 188,000 tons, or about 26 per cent of capacity. This was 22,000 tons less than during the preceding week and 28,000 tons under the figure for a year ago. Except in the case of mines with close dock affiliations, Ohio is shipping little coal to the lakes.

Pittsburgh Non-Union Output Grows

There is a slow but persistent gain in commercial non-union production in the Pittsburgh district. The strength of the union output in that field lies in the captive mines. General demand for coal shows no improvement. The Connellsville region is selling only a small quantity of coal in the steam market. Its business in gas and byproduct coals is less than normal.

Central Pennsylvania conditions show little change. During the week ended May 22 the district loaded 12,887 cars, as compared with 12,965 cars the week preceding. Pool 1 coal is quoted at $2.50@$2.75; pool 71, $2.30@$2.50; pool 9, $2.10@$2.25; pool 10, $1.75@$1.95; pools 11 and 18, $1.60@$1.65.

An increase in the quantity of unsold coal on tracks has further dampened the sodden spirits of the Buffalo bituminous trade. Nominal mine quotations, however, are: Youghiogheny gas lump, $2.15@$2.35; Pittsburgh and No. 8 steam lump, $1.65@$1.85; gas or steam slack, $1.30@$1.50; Allegheny Valley mine-run, $1.50@$1.75. Cambria County mine-run is $2@$2.25; Indiana County mine-run, $2.10, and lump, $2.85.

Export Demand Relieves Piers

There now is enough export demand to relieve Hampton Roads shippers of heavy accumulations of coal at the piers, but this has had little effect upon spot prices for New England delivery. Quotations on Navy Standard coal at the Southern piers have oscillated between $4.50@$4.65 and $4.65@$4.85. On cars at Boston and Providence an effort has been made to establish a $5.60 basis for future business, but some September tonnage has been closed at $5.40.

The course of the trade during June is highly problematical. There is no domestic support for a strong market. As soon as the British strike is over, renewed dullness and lower prices are forecast. Current buying is on a hand-to-mouth basis. There is, however, a slightly more optimistic feeling in industrial circles, but nothing to warrant belief in a booming demand for coal.

The all-rail situation on central Pennsylvania offerings is unchanged. There is little general spot buying. Most of the movement is restricted to the usual narrow strip of territory not far east of the Connecticut River.

Seaboard Watches British Situation

New York, Philadelphia and Baltimore find it more cheering to speculate on export prospects than to contemplate bituminous demand at home. Some charters have been closed since the British strike began, bunkering activity has increased and there is more inquiry from prospective foreign buyers. In the New York market dumpings have been steady, but consumers are not buying freely.

Industrial purchasers placing business with Philadelphia houses are making no move to increase their stockpiles. Producers are hoping that the railroads will place contracts before long. In the spot market the most active feature is gas slack, but there have been no sharp advances in prices. Competition for business is too keen at Baltimore to worry purchasing agents over prices, quantity or quality.

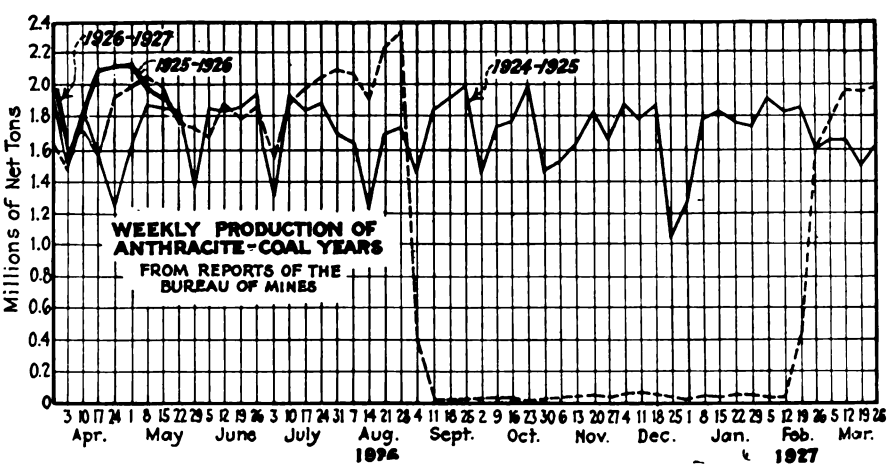
While there has been a gradual slowing down in the Birmingham district, the underlying situation is sound. There is no overproduction of high-grade coals and little surplus of less favored grades. Contract orders are absorbing the bulk of the steam-coal output. The limited quantity of high-grade domestic tonnage offered on the spot market finds a ready sale; medium and lower grades are sluggish. Foundry coke is firm at $6@$6.50, ovens. There is a fair demand for egg coke at $5 and nut at $3.50.

Company Anthracite Steady

The New York market reports a steady but unhurried movement of company anthracite. Most of the tonnage is going to old customers, but, unless the situation changes, it will not be long before some of the companies will be able to take on business from other sources. Except for occasional sales of straight stove at 10@15c. above company circular, independent shippers are unable to sell the larger sizes at a premium. Barley is the only steam size showing any strength.

At Philadelphia, on the other hand, backward consumer buying has slowed up the movement of both company and independent domestic coal. Pea is the only size which maintains any great strength. The disposition of nut threatens to assume the proportions of a real problem. Further reductions in premiums are resorted to by independents to move coal, but buyers show little interest in anything above company circulars. There is a surplus of all steam sizes. The Baltimore anthracite trade still marks time.

Buffalo demand for anthracite and for anthracite substitutes is quiet. Ice conditions outside the harbor still interfere with the free movement of lake tonnage. Loadings for the week totaled 52,900 net tons, of which 22,100 tons cleared for Superior and Duluth, 20,500 tons for Milwaukee, 6,800 tons for Chicago and 3,500 tons for Racine. Vessel rates will be the same as last year, viz., 90c. to Racine, 55@60c. to Chicago, 50c.



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to Milwaukee and 40c. to Duluth and Superior.

Canadian Demand Maintained

Although more moderate weather has taken the edge off household demand for hard coal at Toronto, retail deliveries are being kept up by fill-up orders for next winter. Coke, too, is in good demand. Welsh anthracite also finds a ready sale. The bituminous market is quiet. Retail prices are: Anthracite stove, $15.75; egg and nut, $15.25; pea, $12.50; coke, $12.50.

The outlook for spot coke in the Connellsville region grows progressively darker. Movement is light and prices are softer, Spot furnace coke is quoted at $2.85@$3, with very little tonnage at the higher price. Spot foundry holds at $4@$4.50, but there is no real volume of buying. Production in the Connellsville and Lower Connellsville regions during the week ended May 22 was 155,450 tons, according to the Connellsville *Courier*. Furnace oven output, 90,840 tons, showed an increase of 140 tons over the preceding week. Merchant oven output, 64,610 tons, increased 440 tons.

Foreign Market And Export News

British Coal Subsidy Hit German Export Trade

March returns for Germany show rising imports and declining exports. The explanation given in German mining circles is that the British subsidy has enabled importers to offer British coal at prices at or slightly below even the recently reduced German summer season prices. At the same time it is reported that in markets outside of Germany competition from British coal has become considerably keener. In several reports it is noted for the first time that Dutch coal is coming into evidence on foreign markets.

German imports and exports in the first quarter of the current year are set out in the accompanying table. The corresponding figures for 1913 are added for comparison.

Coal Imports by Germany

		January to March 1926 Metric Tons	January to March 1913 Metric Tons
Bituminous		1,231,546	2,177,843
Coke		12,708	139,996
Brown Coal		426,155	1,732,519
Patent Fuel:	Bituminous	579	6,231
	Brown Coal	33,189	35,693

Coal Exports from Germany

Bituminous		3,563,332	8,460,214
Coke		1,220,243	1,698,747
Brown Coal		8,130	19,730
Patent Fuel:	Bituminous	329,444	613,621
	Brown Coal	220,599	261,972

As the deadlock between Germany and Poland concerning exports from Polish Upper Silesia continues, Great Britain is now practically Germany's chief supplier of foreign coal. In districts reached by water British coal enjoys an advantage in price over German coal and a number of consumers, chiefly gas works, give it preference on account of quality. This preference is so marked that a sharp differential in favor of German coal would be needed to eliminate British coal from German markets. So far the German syndicates have not been able to establish such a differential. But some sort of working arrangement between German and British mining interests is ultimately expected as an outcome of the British crisis.

In exports a broadening of the German foreign market is noticeable in spite of the slight drop of the total. This decrease is due chiefly to reduced shipments to certain European countries, principally France, which gets most of her German coal on reparation account. (Reparation coal is not included in the export returns). The wide span which is still separating the present volume of foreign coal business from that of 1913 is caused in the main by the loss of business in the case of a few Europeaen countries, notably that of Austria-Hungary, Russia and Switzerland.

Belgian Market Stronger

Brussels, Belgium, May 20.—Some improvement has taken place in the Belgian coal market since the first of the month. The full force of the British strike, however, has not yet been felt. There are still many consumers who refuse to augment their coal stocks. When these buyers enter the market it is felt that a shortage will be inevitable and that prices will advance sharply.

French Prices Advanced

Paris, France, May 20.—Prices in the Nord and Pas-de-Calais were increased May 16 to cover the advances in wage rates which went into effect at that time. The new schedules raise the price on raw smalls and on screened and unscreened industrial coals 10 fr. per ton; washed coals, 11 to 13 fr.; ovoids, 10 fr.; briquets, 12 fr.; coke, 15 fr.; domestic coals, 20 fr.

Demands for higher wages are pending in other districts and there seems to be no doubt that increases will be granted. Collieries in the Center and the South already have anticipated this move by increasing prices 10 to 15 fr.

Demand for French coals is naturally more active as a result of the British strike. The government also is facilitating the entrance of non-reparation coals.

April imports of coal into France totaled 1,571,105 metric tons; coke, 436,827 tons; patent fuel, 73,966 tons. During the same month this country exported 386,400 tons of coal, 31,311 tons of coke and 15,642 tons of patent fuel. Germany and Great Britain were the chief sources of coal imports; Germany, Belgium-Luxemburg and Holland, of coke; Great Britain, Belgium-Luxemburg and Germany, of patent fuel.

May End Australian Strike

The sympathetic strike of coal miners and engine drivers called in Australia probably will experience an early settlement, according to a recent cable to the Department of Commerce at Washington. The relief funds are exhausted and the miners are anxious to return to work. The unions are permitting coal shipments to the Broken Hill Steel Works, one of the important Australian mills.

Export Clearances, Week Ended May 27

FROM HAMPTON ROADS

	Tons
For Danish West Indies:	
Dan. Str. Niels R. Finsen, for Curacao	2,685
Br. Str. Trafalgar, for Curacao	6,971
For Canada:	
Amer. Str. Frank J. Peterson, for Quebec	2,624
Amer. Schr. R. R. Govin, for Gaspe	1,086
Nor. Str. Lovstakken, for Montreal	2,788
Dan. Str. Ivar, for Montreal	3,051
For Miquelon:	
Nor. Str. Laly, for St. Pierre	2,166
For Argentine:	
Br. Str. Llangallen, for Buenos Aires	5,411
Amer. Str. Crofton Hall, for Montevideo	2,344
Nor. Str. Neptunian, for Montevideo	5,469
Br. Str. King Edward, for Buenos Aires	6,409
Br. Str. Homecliffe, for Montevideo	6,273
Br. Str. Tafna, for Buenos Aires	5,901
For Gibraltar:	
Br. Str. Baron Belhaven	9,505
For Cape Verde Islands:	
Nor. Str. Capto, for St. Vincent	5,785
Br. Str. Blairodom, for St. Vincent	4,211
For Jamaica:	
Nor. Str. Geflon, for Kingston	8,710
Amer. Schr. Orleans, for Salt River	1,110
Swed. Str. John Lundwall, for Kingston	1,991
For Canary Islands:	
Br. Str. Antar, for Las Palmas	9,453

FROM BALTIMORE

For Italy:	
Ital. Str. Color, for Civitavecchia	6,246
For France:	
Ital. Str. Humilitas, for St. Nazaire	6,201
For Gibraltar:	
Br. Str. Romera (for Italy)	6,927

Hampton Roads Coal Dumpings*

(In Gross Tons)

	May 20	May 27
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week	173,349	163,595
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	90,355	93,754
C. & O. Piers, Newport News:		
Tons dumped for week	156,752	150,259

*Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS

	May 22	May 29†
Pool 1, New York	$5.50@$5.75	$5.50@$5.75
Pool 9, New York	4.90@ 5.20	4.90@ 5.20
Pool 10, New York	4.70@ 4.90	*4.70@ 4.85*
Pool 11, New York	4.40@ 4.65	4.40@ 4.65
Pool 9, Philadelphia	4.95@ 5.30	4.95@ 5.30
Pool 10, Philadelphia	4.70@ 5.00	4.70@ 5.00
Pool 11, Philadelphia	4.35@ 4.65	4.35@ 4.65
Pool 1, Hamp. Roads	4.50	*4.45@ 4.50*
Pool 2, Hamp. Roads	4.30	*4.10@ 4.15*
Pool 3, Hamp. Roads	4.00@ 4.10	4.00@ 4.10
Pools 5-6-7, Hamp. Rds.	4.00	*3.90@ 4.00*

BUNKERS

Pool 1, New York	$5.75@ $6.00	$5.75@ $6.00
Pool 9, New York	5.15@ 5.45	5.15@ 5.45
Pool 10, New York	4.95@ 5.15	*4.95@ 5.10*
Pool 11, New York	4.65@ 4.90	4.65@ 4.90
Pool 9, Philadelphia	5.20@ 5.55	5.20@ 5.55
Pool 10, Philadelphia	4.95@ 5.25	4.95@ 5.25
Pool 11, Philadelphia	4.60@ 4.90	4.60@ 4.90
Pool 1, Hamp. Roads	4.60	*4.50*
Pool 2, Hamp. Roads	4.40	*4.15*
Pools 5-6-7, Hamp. Rds.	4.10	*4.00@ 4.10*

†Advances over previous week shown in heavy type; declines in *italics*.

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Coming Meetings

American Wholesale Coal Association. Annual meeting at Toledo, Ohio, June 7-9. Treasurer, R. B. Starek, Union Fuel Bldg., Chicago, Ill.

Association of Iron & Steel Electrical Engineers. Exposition and convention at Hotel Sherman, Chicago, Ill., June 7-10. Secretary, J. F. Kelly, 1007 Empire Bldg., Pittsburgh, Pa.

Coal Operators' Association of 5th and 9th Districts of Illinois. Annual meeting, St. Louis, Mo., June 8. Secretary, O. L. Lumaghi, St. Louis, Mo.

Southwestern Interstate Coal Operator's Association. Annual meeting, Kansas City, Mo., June 8. Assistant Secretary, George Manuel, Kansas City, Mo.

National Coal Association, June 9-11, at Drake Hotel, Chicago, Ill. Executive secretary, Harry L. Gandy, Southern Bldg., Washington, D. C.

The National Association of Purchasing Agents. Annual convention at Los Angeles, Calif., June 9-12. Secretary, W. L. Chandler, Cleveland, Ohio.

American Society for Testing Materials. Convention at Haddon Hall, Atlantic City, N. J., June 21-25. Secretary, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

American Institute of Electrical Engineers. Annual convention, White Sulphur Springs, W. Va., June 21-25. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

Illinois Mining Institute. Annual summer meeting on steamer "Cape Girardeau," leaving St. Louis, Mo., June 24 and returning June 26. Secretary, Frank F. Tirre, Central National Bank Bldg., St. Louis, Mo.

American Society of Mechanical Engineers. Spring convention at San Francisco, Calif., June 28-30. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

Illinois and Wisconsin Retail Coal Dealers' Association. Thirty-first annual convention, Highland Hotel, Lake Delavan, Wis., June 28-30. Managing Director, N. H. Kendall, Great Northern Hotel, Chicago, Ill.

Fifth International First-Aid and Mine-Rescue Contest, San Francisco, Calif., during the first week of September, 1926, under the auspices of the Bureau of Mines, Department of Commerce.

Coal Mining Institute of America. Annual meeting, Chamber of Commerce, Pittsburgh, Pa., Dec. 8, 9 and 10. Secretary, H. D. Mason, Jr., Box 604, Ebensburg, Pa.

Trade Literature

Safety "Arktite" Plugs and Receptacles, Interlocking Switches and Plugs, Safety Hand Lamps. Crouse-Hinds Co., Syracuse, N. Y. Bulletin No. 2086. Pp. 8; 8x10½ in.; illustrated.

Chicago Pneumatic Tool Co., Chicago, Ill., has issued a folder illustrating and describing its various types of **electric and steam-driven compressors.**

New Equipment

Shovel Cleans Back of Kerf, Aiding Fall of Coal

Bugdust from the undercut made by a mining machine heretofore has been removed in a more or less desultory and haphazard manner by means of hoes, shovels, scrapers and the like, equipment in the majority of cases but ill-adapted to the work in hand. The need for an efficient tool for this purpose became so great that the Pittsburgh Shovel Co., 1832 Oliver Bldg., Pittsburgh, Pa., has developed and placed on the market the special shovel shown in the accompanying illustrations. This tool is capable of removing



Clean the Kerf and Save Powder

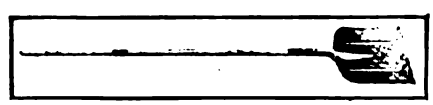
This scraper's shovel has a broad flat blade and a long handle with an almost negligible lift. It can be thrust clear to the back of any ordinary undercut, removing all the bugdust and leaving the kerf in the best possible condition for shooting. No undercut attains its maximum possible efficiency unless it is thoroughly cleaned out.

practically all bugdust from a kerf, leaving the undercut in the most effective possible condition for blasting.

The blade of this shovel is of special design and shape, built of high-carbon steel, 14⅛ in. wide and 16 in. long. The handle is of selected second-growth Northern ash, 6 ft. long, the total length of the finished shovel being 7 ft. 2 in. The lift is extremely low—almost but not quite negligible. This permits the tool to be thrust to the extreme rear of the undercut.

The following advantages are claimed for this shovel by the manufacturers: All bugdust can be easily and quickly removed from an undercut; one-third less explosive is required to bring down the coal; a larger percentage of lump is produced; cleaner coal containing less slate, ash and fine material is obtained. Safety is greatly increased through the removal of dangerous fines, and the safety provisions of the state laws are effectively carried out. This results in lower insurance premiums because of total bugdust removal. All of these advantages are made possible because men will willingly and thoroughly remove all bugdust from an undercut when this can be done with the ease resultant upon the use of a tool suited to the purpose.

Many mining officials regularly assure themselves that the working faces are being undercut in an efficient and workmanlike manner, yet forfeit many of the advantages realizable from such undercutting by not making sure that the cuts are thoroughly cleaned out. A machine kerf is narrow at best; to attain its fullest possibilities it should be entirely unobstructed.



Shovel that Gets in Under

It is a peculiarity of human nature that men will do willingly and thoroughly that which is easy, but are likely to shirk if the task in hand is hard. The special blade, long handle and low lift of this tool admirably adapt it to removing the bugdust to the extreme rear of the undercut and, what is perhaps equally important, they make this operation easy.

Electric Heater Makes Sand Flow Freely from Pipe

In order to eliminate the uncertainty and danger incident to clogging of a locomotive's sand pipe from water or freezing, the Crawford Machinery Co., Bessemer Building, Pittsburgh, Pa., is marketing the safety electric sander shown in the accompanying illustration. This simple device assures a dry and unobstructed end on the sanding pipe and a dependable flow of sand at all times.

As is well known, dry sand will not flow from the end of a wet pipe without some of it sticking to the interior surface. This decreases the effective delivery area, and if it becomes cumulative, as is frequently the case, the entire cross-section of the pipe may be effectively clogged. Many accidents and much delay to traffic have occurred on railroads, street-car lines, and on mine and industrial roads generally from this cause.

Electric Heating Averts Clogging

After long study and experimentation, a railroad locomotive engineer who, during his 32 years of active service, encountered many difficult trips, because of the clogging or freezing of the sand pipe on the engine, devised the equipment here shown. In construction this device is extremely simple. It may be attached to the end of the sand pipe nearest the rail and is heated electrically. By this means it is possible to drive moisture out of the pipe, keep it out, and positively avoid clogging.

This electric sander is fastened to the lower end of the sand pipe next to the rail. If rubber hose is used at this point it is removed and the pipe extended so as to permit proper attachment. The sleeve of the sander is slipped over the end of the pipe and made fast by heavy set screws and lock nuts.

The necessary wire connections to any convenient source of electrical sup-

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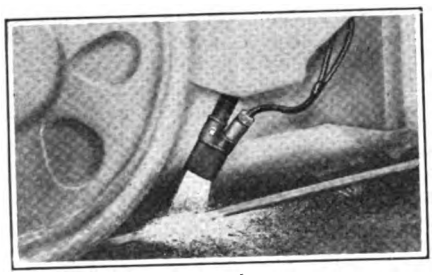
ply are easily made and are readily accessible for inspection. The function of the device is to keep the delivery orifice dry, and thus to permit of a flow of sand thereby assuring adequate traction and maximum adhesion for braking whenever this is needed.

Should the end of the sand pipe be submerged in water, the sander will immediately respond as soon as the device rises above the surface of the liquid. The heat generated by the passage of current is sufficient to dry the end of the pipe in a few seconds. It is thus positively effective in operation, and may be applied to any sand pipe on any type of locomotive or street car.

Mine locomotives thus equipped are able to handle trips on heavy grades with greater efficiency and with perfect confidence on the part of the motorman, as moisture in the mines or water through which the machine may be



Sander with Electric Heater in Operation

This device consists of an electrically heated orifice or nozzle that may be slipped over and fastened to the end of the sand pipe. This will effectively dry out the pipe and permit an unobstructed flow of sand within a few seconds after total submergence in water.

compelled to pass will not in any manner clog the sand pipe.

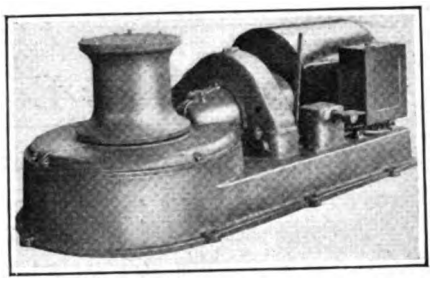
Many motormen have been badly injured and some have been killed in trying to release sand from clogged pipes while the trip was running away on a heavy grade. As a rule the motorman has no recourse when he is unable to release sand on a wet or slippery rail.

Electric Capstan Pulls Cars

In the accompanying illustration may be seen the improved electric capstan car puller designed and manufactured by the Clyde Iron Works, of Duluth, Minn. In this machine a vertical winch head, or capstan, is bolted direct to a rugged bevel gear which is driven by an electric motor through two sets of intermediate gears and a bevel pinion.

The unit is said to be of exceptionally sturdy construction, having all parts totally inclosed and covered with a semi-steel housing so as to be dust- and weatherproof. This is a valuable detail of construction, as a car puller is exposed to the elements at all seasons of the year. The capstan head is fitted with renewable bronze bushings.

All the gears are of steel, except the intermediate gear, which is semi-steel, and the motor pinion, which is of Bakelite Micarta, making operation practically noiseless. The frame is so constructed that all gears run in a bath of oil, insuring perfect lubrication. An Alemite greasing system is provided throughout. A hand-operated pawl for



Despite Rail Conditions, Places Cars Wherever Desired

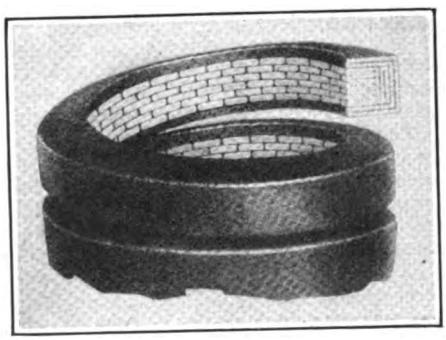
Fitted with electric motors wound for any desired current, these machines are said to form reliable units for spotting or respotting coal cars under the tipple or material cars elsewhere.

holding the load when the capstan is stationary also is furnished. The operation is controlled by a push button arranged for foot control. Over-load and low-voltage protection is provided.

These car pullers are built in three sizes, having line pulls of 3,000, 6,000 and 10,000 lb. at a speed of approximately 40 ft. per minute. They are equipped with 5-, 10-, and 15-hp. motors respectively for the available current.

New Metal-Filled Packing

A type of metal-filled packing designed for use on piston and valve rods and other services where high steam pressures are encountered has been brought out recently by the Garlock Packing Co. of Palmyra, N. Y. It has a wearing surface of soft metal inclosed on three sides by a covering of asbestos and rubber. The metal filler in the channel of the packing is of special design and is perforated and cut to fit the various sizes of rod. The design of the filler is such that it tends to hold a large percentage of lubricant and to make the sections or studs seal one another against the pressure.



Metal Filled High-Pressure Packing

Within the channel of the packing is a specially perforated and cut metal filler that is porous and capable of holding much lubricant. This packing, therefore, is capable of being used without other lubrication for a long time.

New Companies

Rosedale Fuel Co., Fairmont, W. Va., recently was organized with a capital of $1,000,000, by C. H. Humphreys, Charles E. Hawker and R. S. Waller, all of Fairmont, and James E. Gaskins and Robert D. Bradford, both of Morgantown, W. Va.

The Magnolia Coal Co., Poteau, Okla., with a capital of $15,000, has been incorporated by William F. Faither, Paris, Ark., and Joe R. Edelmann, Poteau.

The Vermillion Coal Co., of Charleston, W. Va., was organized recently with George E. Merryman, Charleston, president; J. P. Bess, Orgas, vice-president, and H. N. Greenlee, Charleston, secretary and treasurer. The company recently acquired the mine of the late A. E. Moore, of Charleston, which is located on the Chesapeake & Ohio Ry. at Orgas, Boone County. The Cedar Grove seam is being worked there.

The Kimbolton Co-operative Coal & Mining Co., Kimbolton, Ohio, has been chartered with a capital of $10,000 to mine and sell coal on the co-operative plan. Incorporators are: James Hardwidge, Joseph Latchic, Everett Rose, John S. Dobransky and John B. Dobransky.

The Roach Creek Coal Mines, Inc., Cincinnati, Ohio, has been chartered with a capital of 10,000 shares of stock, no par value, to operate mines and deal in coal. The incorporators are Loyal S. Martin, Bernard J. Giliday, W. M. Mance, Anna F. Watts and Ruth McConnell.

The Hilltop Coal Co., Crooksville, Ohio, has been incorporated with a capital of $50,000 to mine coal in the Crooksville field. Incorporators are Frank Sample and Charles Sample, of Saltillo, and Ruth Wall, Mary Detenbeck and C. F. Ribble, of Zanesville, Ohio.

The Canada Process Fuel Co., Ltd., of Halifax, N. S., has obtained papers of incorporation for the purpose of mining coal and kindred mineral products, with a capital of $1,000,000, by William Marshall Rogers, Henry Poole MacKeen, Joseph Patrick, Connolly, and others, of Halifax.

A charter has been granted to the **Maywood Coal Co.**, Laville, Boone County, W. Va., with a capitalization of $10,000. The incorporators are C. L. Burns, C. L. Milligan, E. R. Milligan and W. M. Erwin, all of Laville, and N. E. Milligan, of St. Albans.

The Ideal Fourth Vein Coal Co. has been incorporated at Jasonville, Ind., with a capital stock of $25,000 to do a general coal mining business. The incorporators are Vaughn Daugherty, Sam Harrison, Oscar Lafoon, Ross Bond and Charles Stewart.

A charter was issued recently to the **Raleigh-Wyoming Mining Co.**, of Charleston, W. Va., with a capitalization of $50,000. The incorporators are W. G. MacCorkle, T. L. Johnson, J. M. Britton, Y. Riffe and T. S. Clark, all of Charleston.

The Minot Colliery Co. has been incorporated in Minot, N. D., with a capital stock of $50,000, and will manufacture briquets. John Nedreloe, L. J. Wood and J. A. Verzott are interested.

The Big Run Coal & Clay Co. has been incorporated in Ashland, Ky., with a capital of $313,000, by C. A. Coleman, John R. Means and S. F. Hoge.

W. H. Bowater, Inc., has removed its offices to the Whitehall Building, 17 Battery Place, New York City.

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Are the Overhead Costs at Your Store Excessive? See p. 828

JUN 12 1926

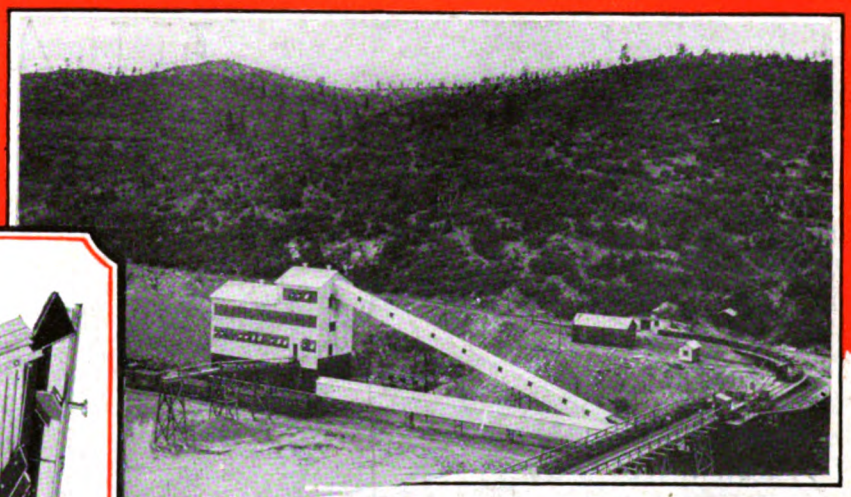
COAL AGE

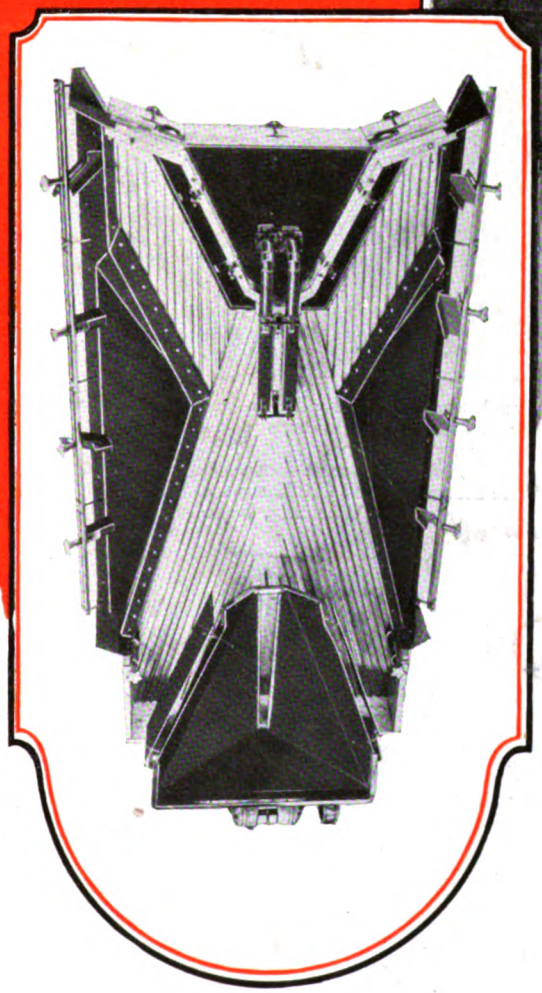
The World's Accepted Authority on Coal Mining

McGraw-Hill Publishing Company, Inc

June 10, 1926

Price Twenty Cents per Copy





3" to O"
and double capacity with the
Y Type Separator

The industry is fast taking advantage of the greater efficiency and lower cost of investment and operation of the American Y Type Pneumatic Coal Separator.

This new Y Type Separator not only has twice the capacity of the older type, but also handles increased range of sizes.

Coal Mine Officials are cordially invited to investigate results obtained in the many American Pneumatic Separator Plants installed throughout the country. We'll be glad to make arrangements for a complete commercial test and demonstration. Get in touch with us.

American Coal Cleaning Corporation
Welch, West Virginia

AMERICAN
PNEUMATIC COAL SEPARATOR

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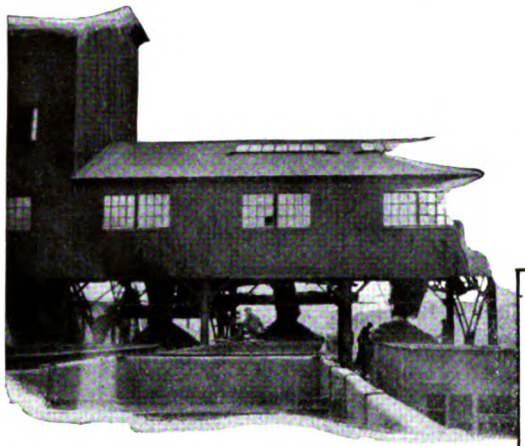
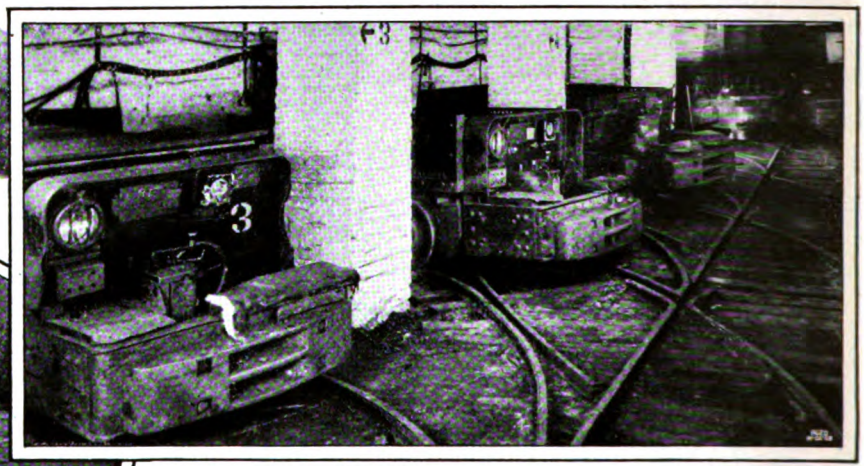
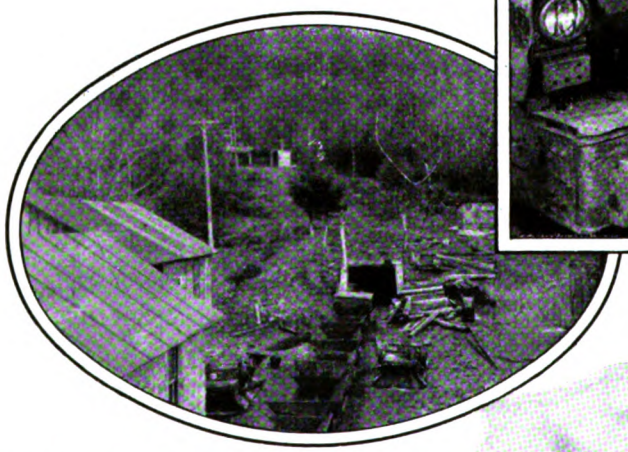
The more cars that pass under this tipple each day the more profit the mine makes. Yet those cars can be loaded with coal no faster than the mine's haulage system can bring that coal to the surface. That is why it is so important that you use Exide-Ironclad Batteries in your haulage motors—they make a good haulage system even more efficient.

Efficient

ON CHARGE *as well as* IN ACTION

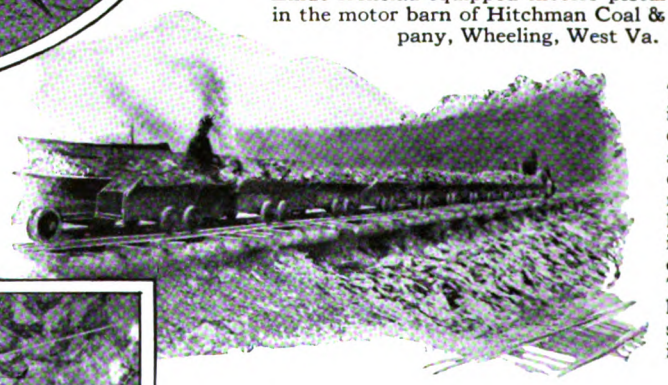




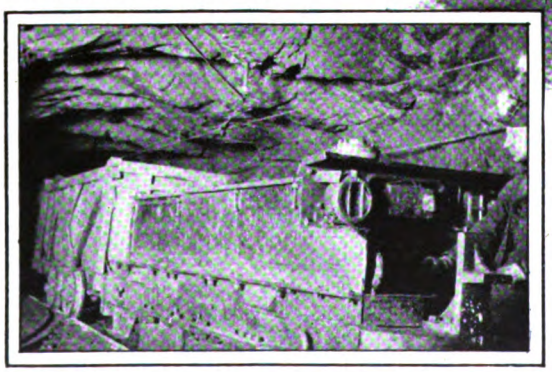


If you've never seen an Exide-Ironclad Battery on charge, you've a pleasant surprise in store. It takes current in quickly, easily and with little waste. The Exide-Ironclad-equipped motors pictured here are in the motor barn of Hitchman Coal & Coke Company, Wheeling, West Va.

There won't be any waiting for these empties at the face, for the motor is powered by an Exide-Ironclad, and the great speed of this battery hustles the cars in and the loads out with no delays. Furthermore, the speed of this battery holds up well all day long.



The last trip of the day is out, bringing with it extra cars of rock and all the miners that could crowd on the motor. Yet the motor has power to spare, for it has an Exide-Ironclad in the battery box. This battery always has extra power in reserve when extra power is needed.



Rugged as the rock roof above is the battery in this motor. That battery is an Exide-Ironclad, built by a company that has been making storage batteries for thirty-eight years. Is it any wonder that an Exide-Ironclad stays on the job year after year without needing repair?

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 29 — New York, June 10, 1926 — *Number* 23

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With which is consolidated "The Colliery Engineer" and "Mines and Minerals"
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Three Illinois Mines Generate Their Own Power 825
BY E. STECK.

Vibrating Screens and Tumbling Breakers in Smokeless Field 828

Company Store Run by Better Business Methods Lowers Costs and Gives Improved Service 829
BY LOUIS SPILMAN.

Other Exhibits at Mining Congress Exposition 833
BY FRANK H. KNEELAND.

Wholesalers Want Positive Policy Instead of One of Negation Only 839

Feared That Stiff Stand of Operators May Speed Unfavorable Legislation 841
BY PAUL WOOTON.

Move to End British Strike 840
Eight Research Fellowships at Carnegie Tech 841
Predicts "Cultural Wage" Instead of Living Pay 841
Seek Modified Metric System, Failing Real Thing 842
Development of Explosives Outlined in Lecture 842
130 Mine Workers Die From Accidents in April; Months' Death Rate Low 843
Brotherhood Mining Company Elects Officers 843

Editorials 823
Underground Operation 837
News Items from Field and Trade 844
Weekly Review and the Market 849
Foreign Market and Export News 854
New Equipment 855

Next Week's National Coal Association Issue

Coal Age has Sydney A. Hale covering the National Coal Association Meeting at Chicago. Next week the issue will be largely devoted to the meeting and to the various articles that were delivered there.

The National Coal Association deals with some of the most vital problems of the coal industry, and the program which it has prepared on this occasion touches those vital matters in their most important phases. Engineering problems are fundamental, but so also are those which appertain to the direction of business and of industry.

Coal Age, as usual, will cover the meeting adequately, as you will note when you open next week's issue.

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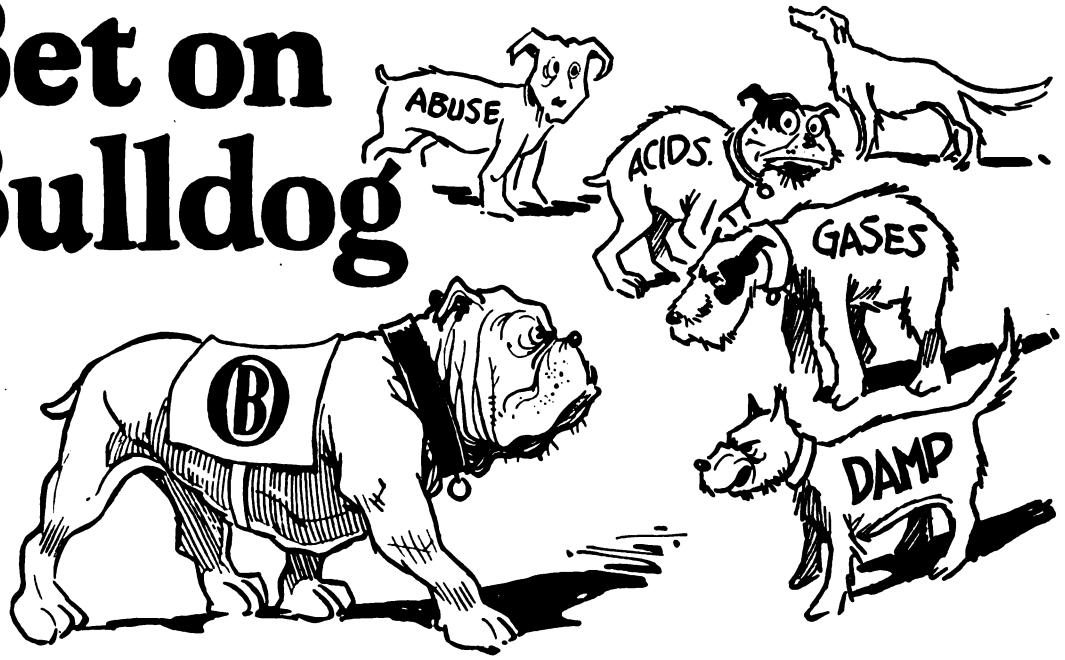

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 29 | NEW YORK, JUNE 10, 1926 | Number 23

Holding Down the Peaks

IN MINING and other plants that operate on purchased current, peak loads carry a strong penalizing charge. The monthly peak thus has almost as much influence on the power bill as does the actual consumption of current. The high points, or excessive demands, therefore, should be avoided by all means possible.

Certain industries that have a highly fluctuating load and a peak that can be foretold with a fair degree of accuracy have found it advantageous to install internal combustion engines of the Diesel type that can be started promptly and which will shoulder the load in excess of a certain predetermined quantity.

At the mines the maximum demand usually develops about 8 a.m. and begins to fall off sometime before noon. At some operations a secondary peak makes its appearance at about 3 p.m. and subsides within about an hour. In both of these cases an auxiliary source of power could be advantageously employed to keep the demand upon the central station within reasonable bounds, or such that heavy demand charges would be avoided.

In addition to its use in alleviating or lessening the demand charge, and which results in some industrial cases in savings sufficient to pay for the equipment in from 3 to 4 years, such a unit would always be available as a standby in case of power failure on the line. A unit of this kind can be started quickly and should logically be made of such power as to be capable of operating the fan and material hoist in case of emergency. It would thus serve as a standby as well as an auxiliary.

It would probably be quite possible to so arrange a unit of this kind that it could be started and stopped automatically. It would thus come into operation whenever the load reached a certain predetermined amount and would be stopped when the load had fallen to some other pre-established lower level. Such an arrangement would not only prove ideal from the standpoint of peak-load avoidance, but would furnish a ready source of energy in case of power failure or on idle days.

Evading Acid

FOR MANY of his pump-, pipe- and screen-corrosion troubles the mine manager can largely blame himself because he has not learned as yet how to protect from the pollution of water that he has to remove from the mine. If he creates a storage place for water in the mine he will do well to remove all slack and loose coal before turning in the water, because the slack inevitably contains a quantity of pyrite which oxidation in the presence of water will turn to iron hydrate and sulphuric acid.

The tendency today is to limit electric load peaks by shifting the pumping load to the night and to arrange immense storage spaces against floods, but if the old rooms are full of slack there will be increased cost in the repair of all pumps and pipes. Too often the rooms chosen for such storage have been abandoned for years and cannot safely be cleaned, and the water has to be dammed back to such a height, in order to reach all parts of the territory, that it rises high on the coal and procures acid from the ribs.

Where it is possible it is best from an acidity standpoint to pump water in a single lift thus reducing its opportunity to take up acid along its path.

"Eating Their Heads Off"

TO MANY MINING executives the words "obsolete" and "worn out" appear to be synonymous. This may or may not be the case, but probably in the majority of instances equipment, tools and appliances become obsolete long before they are worn out. In any good museum may be seen numerous articles that are, to all intents and purposes, exactly as serviceable today as when they were first constructed hundreds or possibly thousands of years ago. A stone mace, for instance, might crack a skull just as efficiently now as in the days of the Pharaohs, but who would think of attempting to rout a burglar from his home with such a weapon when he has every reason to believe that that intruding individual will be armed with a modern automatic pistol?

One of the chief reasons why this country has forged ahead of its competitors in manufacturing is because it has consistently and persistently thrown perfectly good machinery on the scrap heap. Thus a manufacturing lathe might be capable of lasting for 20, 30 or even 50 years and do just as good and accurate work at the end of that period as at the beginning. At the termination of the first decade, however, the probabilities are that such marked improvements will have been made in the design of machines of this kind that one that is 10 years old can be operated only at a loss. In other words it would be far cheaper to sell the old, albeit perfectly serviceable machine, for junk and buy a new one than to continue its operation.

And what is true of such machines as lathes in a manufacturing plant often is true of production machinery at the coal mine. During the past few years such improvements have been made in boilers and power-generating machinery in general, that many pieces of equipment that were installed only a comparatively short time ago and were at their installation justly considered efficient, are today obsolete in the sense that it would be cheaper to scrap them and install newer and more up-to-date apparatus. The ever-increasing consumption of energy resulting from the mechanization of mining processes formerly performed by the muscles of men or animals makes this only the more advisable.

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The sickle and flail are unquestionably just as efficient agricultural implements today as they ever were but they are seldom used because they cannot compete with the self-binder and the threshing machine. Cheap as these devices are, because of the muscular energy that must be expended in their use, they are obsolete and discarded. Although just as efficient as ever were they to be used today they would, figuratively, "eat their heads off." The same is true of many other pieces of equipment in all industry, mining included, which, because of the onward march of progress, have gone, are going, or are doomed to go the same road.

Because of this obsolescence, therefore, every progressive mining official may with wisdom periodically ask himself the question: "How much longer can I afford to operate this or that particular piece of equipment?" If the conditions and possibilities involved are carefully weighed some executive might be surprised at the proportion of his equipment that would find its way to the scrap heap to be replaced by newer and more efficient machines. Many an old engine, boiler, coal cutter and the like, although in perfectly good condition and capable of rendering years of service, is in reality "eating its head off."

Stronger Than Statutes

THE ORGANIC ACT creating the Bureau of Mines gives that agency of the federal government no mandatory powers over the operation of the coal mines of the country. In the light of the Supreme Court ruling that mining is not interstate commerce, any attempt to vest such authority in the Bureau would be open to challenge on constitutional grounds. And yet, in certain directions, the Bureau of Mines exercises a control more potent than probably would be possible under a specific statutory grant of authority.

The Bureau of Mines determines what explosives may be used with safety. It pronounces judgment upon this and that type of equipment. In the course of its studies to make the mining of coal a less hazardous occupation, it condemns this practice and sets the seal of approval upon that—and its recommendations are written into the laws of certain coal-producing states. Even where state laws are silent upon the practices indorsed by the Bureau, there are few operating officials of coal-producing companies who care or dare to run counter to the seasoned opinion of the Bureau's staff.

Whence comes this power? How is the Bureau of Mines, lacking authority itself, able to establish and maintain its control? Public opinion is the answer. As an independent, non-political, technically-trained organization, the Bureau of Mines has enlisted public confidence in its work. Because of that public confidence, its leadership in the safety movement is unquestioned. Manufacturers of explosives and mining machinery strive for its indorsement. State mine inspectors, coal-operating officials and their subordinates seek to keep within the lines of the Bureau's recommendations as a sure protection against public censure in the case of accidents.

No one will deny that the industry is better for this co-operation. Voluntary in its inception, public opinion makes that co-operation more compelling, more binding, more effective than direct Congressional mandate. The success which has attended the Bureau's endeavors ought to impress itself upon our national law-makers. Industry, too, will be blind to its own best interests if it does not recognize the value of massing public opinion in its favor by showing a willingness to co-operate in voluntary movements for industrial betterment. The industry which is backed by public opinion need fear no threats of repressive regulation.

Roof Control

NO ONE CAN fail to realize that the study of roof action and control always will be troubled by elements of uncertainty but that is true of kindred studies. The kinetics of beam and plate action under stress is none too clearly understood, though the study has in years past made wonderful progress. The analysis of roofs and girders is hedged with assumptions which we know are too often incorrect. Nevertheless they afford solutions that are indicative of the true conditions and therefore are of value if not wholly reliable. Despite assumptions and uncertainty the stresses in dams are also calculated.

But with all the difficulties apparent and hidden in the problems involved, engineers have not hesitated to theorize, and the results are so much better than guesses that no one would design a bridge, a dam or a girder or place a beam without them.

The problems of the roof are greater, but theories, mathematical studies and tests are of more value than vague surmises. Erratic conclusions that may be readily proved fallacies are the necessary outcome of not sitting down resolutely to make certain assumptions and argue mathematically from them.

We shall find that the roof is not what the assumptions would make it; we shall discover that there are exceptions where the measures slide readily on each other or are badly creviced, or faulted, or subjected to preliminary strains, thus confounding our theories.

Our trouble is that we declare that a solution of the problem is impossible and refuse to attempt it. Yet when we begin to operate we assume not merely the conditions on which a solution of the problem might be approximated but the final result. We make not one or two assumptions but several and those less nearly correct than those we have refused to make.

One assumption that lies at the basis of all reasoning regarding the roof is that it is a monolith except for two main layers that lie above and below the central mass respectively. The bottom layer is the drawslate, the top layer, the surface material. Now, it is to be admitted that there are often uncertainties as to the monolithic character of the mid-roof, but our trouble is to break a strong roof, not a weak one, so if we assume that the mid roof is integral we get a safety factor, which is what we sometimes need.

In any event by assuming a monolithic structure we make a start. We discuss, at least, one type of roof; in the parlance of the street "we get down to cases." Later we can take up the exceptions. Meantime we clarify our ideas. Our study of roof action today is altogether too nebulous. One man has a good roof, another a bad roof and what is meant by good or bad no one knows. There are different kinds of goodness and badness and a good roof at one time is a bad roof at another. Such vague terms cannot profit anyone. Only analysis will afford an adequate terminology.

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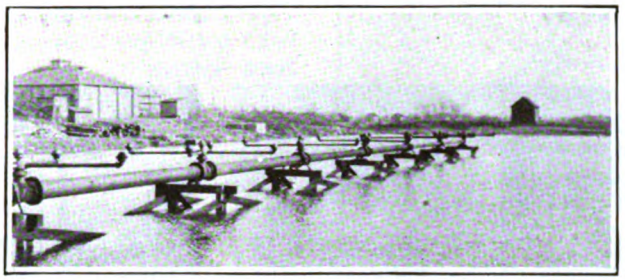

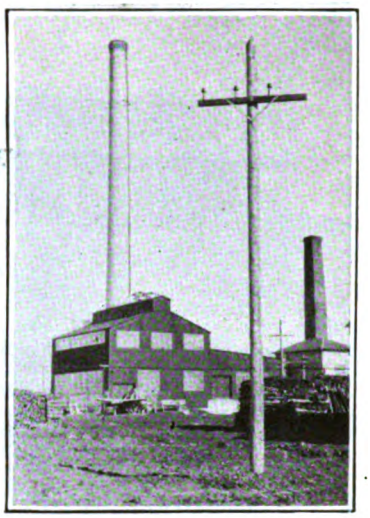

Three Illinois Mines Generate Their Own Power

Install Three Water-Tube Boilers Each Capable of Producing 700 Hp. and Two 1,872 Kva. Generators Driven by Direct-Connected Condensing Steam Turbines

By E. Steck
Mine Equipment and Service Bureau,
Chicago, Ill.



E. Steck

THE Indiana & Illinois Coal Corporation operates a mine at Nokomis, having a capacity of 6,000 tons, and two at Witt, one with a capacity of 3,500 tons, and the other with a capacity of 2,500 tons per day. These mines are known as Nos. 10, 14 and 12 respectively. No. 10 mine is completely electrified and purchases power from a central station. Nos. 14 and 12 purchase power for operating motor-generator sets, for underground electrical equipment and generate their own steam for hoisting and miscellaneous use.

The boiler plants are typical old-style mine plants, using mostly 150-hp. return-tubular boiler, with no attempt at consistent engineering layout for boilers, piping, water treatment, buildings or coal and ash handling. Naturally the quantity of coal burned is excessive and the costs of maintenance and operation are heavy.

The cost of purchased power for No. 10 mine became especially burdensome, due partly to the mine only working part time during the last few years. In 1923, the coal company used 1,655,400 kw.-hr. at a net cost of $56,837 or a charge of 3.43c. per kw.-hr. That year the run was irregular and power consumption low.

A study was made as to the cost of power, part purchased and part generated, and also what would be the cost of producing it at the company's own central station. The investigation showed that a large saving would be effected by the company building its own central station and abandoning its boiler plants at mines Nos. 12 and 14. In view of the future development of the properties and the present operating conditions, it was decided to locate the plant at mine No. 12 and to transmit power to mines Nos. 14 and 10, a distance of approximately 10 miles.

Steam for No. 12 mine will be supplied by the new plant, but at mine No. 14 there still remains a steam hoist which must be electrified before that boiler plant can be shut down. Labor released at mines Nos. 12 and 14 will be more than sufficient to operate the new plant. Little more coal will be burned at the new power plant to operate all three mines than was used formerly at mines Nos. 12 and 14 alone.

A track hopper near the shaft of mine No. 12 takes screenings direct from the tipple or from a hopper-bottom car from one of the other mines in case No. 12 is shut down and by means of a reciprocating feeder delivers it to a belt conveyor which discharges into a screw conveyor over the coal bunker. The coal bunker is made of steel and has a capacity of approximately 125 tons. From the bunker the coal is delivered by swinging spouts to hoppers that feed the chain grates.

Adequate Indicating Equipment Used

Three water-tube boilers having normal capacity of 353 hp. and maximum capacity of 700 hp. each have been installed, each having two drums 36 in. in diameter and 21 ft. 9 in. long and 175 straight tubes of 4 in. diameter and 18 ft. long. The boilers are equipped with flow meters, carbon-dioxide recorders, draft gages, pyrometers and regulators for the feed water and dampers. Steam is generated at 175 lb. and delivered to the header with 100 deg. of superheat.

From the chain grates the ashes are discharged into concrete hoppers and thence into ash cars under the boiler-room floor. These are drawn out and emptied on the mine property.

A water-softening plant was erected, consisting of

The headpiece shows scenes at the Witt power house. On the left is the conveyor for transporting coal from the track hopper to the coal bunkers in the boiler room. In the center is the spray pond, and the third illustration is of the boiler room and turbine house, the latter being on the extreme right.

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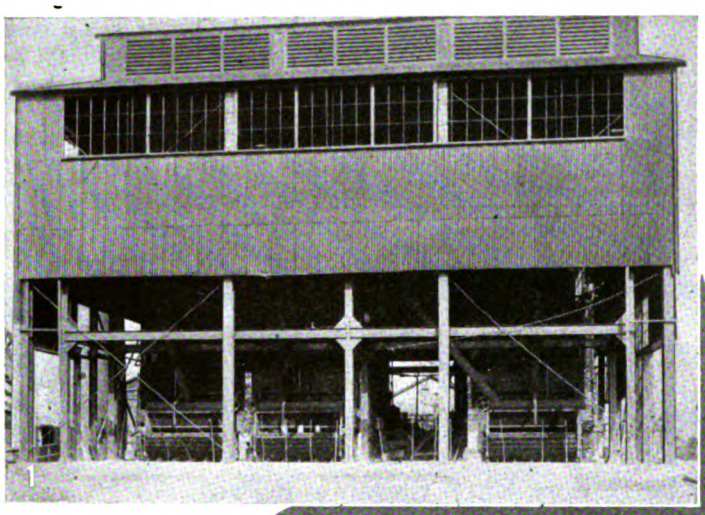

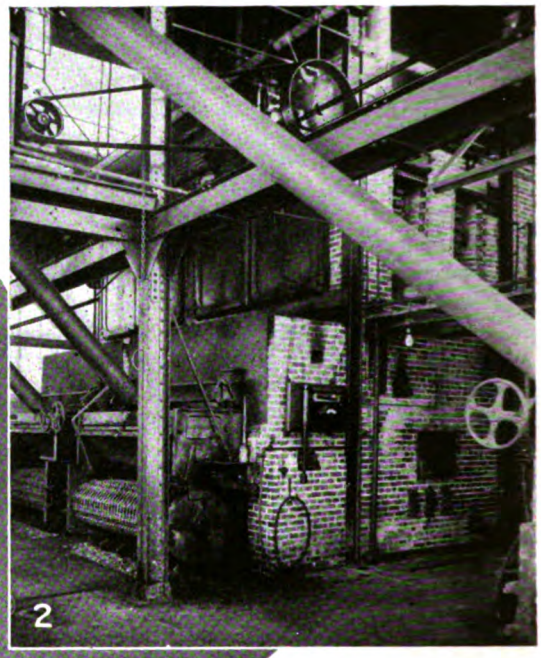



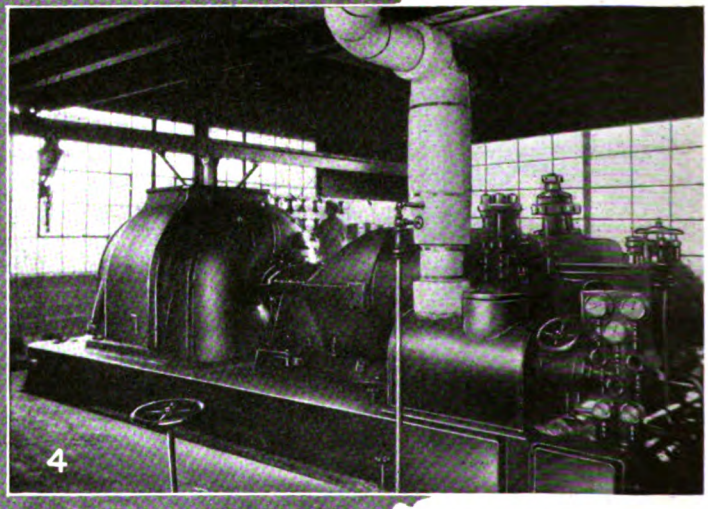

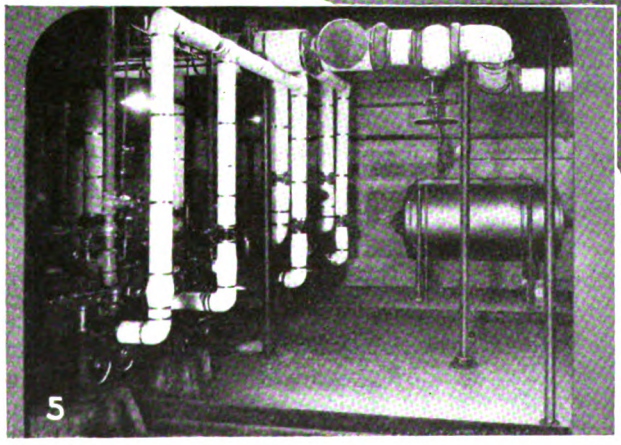

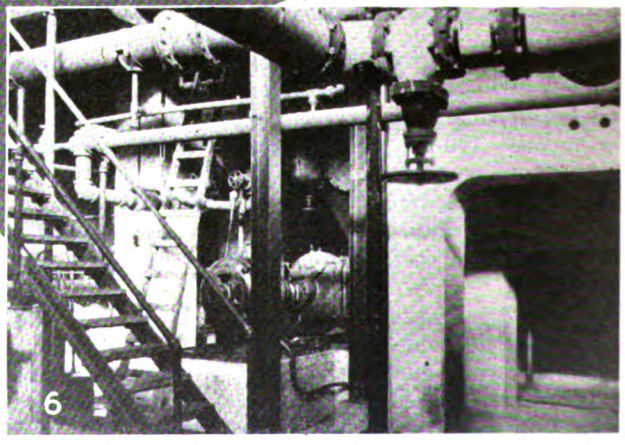

Scenes in the Boiler House of the Indiana & Illinois Coal Corporation

(1) Front of boilers before building was finished. (2) Spray pond. (3) Aisle between boilers. (4) Turbines. (5) Pumps. (6) Turbine foundations and condensers.

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a feed-water heater, filtering and chemical tank, supply pumps and a meter proportioner which supplies a fixed proportion of chemical to the water, no matter what the demands are on the plant.

Two boiler-feed pumps, 10x6x12-in. duplex, equipped with pump governors are located in the condenser room basement under the water-softening plant thus giving them a considerable suction head. The exhaust steam from the pumps, exciter turbine and air ejector is used for heating the feed water in the water-softening plant.

An air compressor, electrically driven, is installed for operating boiler-tube cleaners and air tools and for cleaning the electrical equipment.

The chimney 202 ft. 6 in. high is made of re-inforced concrete and lined with radial brick for a distance of 50 ft. with an inside diameter at the base of 11 ft. 5 in. and at the top of 8 ft.

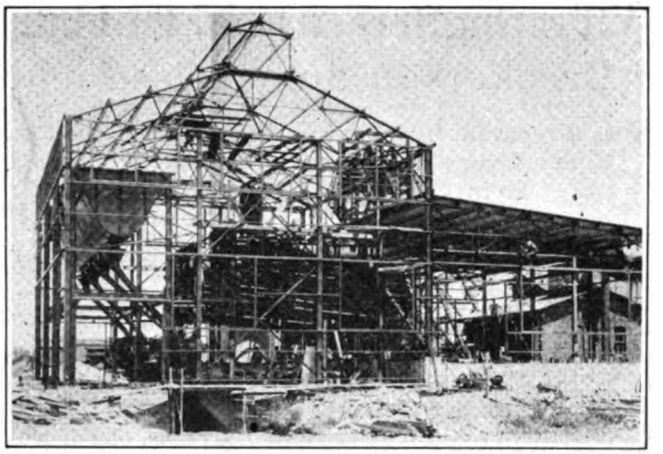
The prime movers consists of two 1,875-kva., 3-phase, 60-cycle, 2,400-volt generators driven by direct-connected condensing steam turbines operating on 175-lb. steam pressure and 100 deg. superheat. A 35-kw. turbine-driven exciter is furnished to supply excitation to the two turbo-generators and to supply power for the station lights in case of emergency. Additional space is povided in the turbine room for a smaller unit to be installed later to take care of the night and idle-day load. Both condensers are of the jet type, one being equipped with a two-stage steam-air ejector, and the other with an air pump.

Abundant Water Supply Is Provided

A pond is located near the power house which is used for both boiler-feed water and for operating the condensers. Water from the pond is taken by gravity through a concrete basing with removable screen and settling chamber to cold wells in the condenser room, whence the condensers lift it by short suction lines. A pipe line is run from the washhouse tank for priming the condensers. The discharge water from the condensers is taken back to the opposite end of the pond from the intake water to a concrete basin which overflows into the pond. The pond level is below the condenser discharge so that little power is taken by the discharge. A centrifugal pump is located at the afore-mentioned basin which is connected to the spray system for cooling the water. This cooling system is independent of the condenser discharge which permits operating the sprays in the summertime at night when the turbines are shut down and shutting them down in the winter time when they are not needed.

The switchboard consists of two generator panels, one exciter, two 2,300-volt feeders, and one 440-volt distributing panel. The generators and feeders are supplied with recording wattmeters which record the power delivered by each generator and furnished to each mine. Each generator panel is supplied with an alternating- and a direct-current ammeter, an alternating voltmeter, an indicating wattmeter and a non-automatic oil switch. The 2,300-volt circuits each have an oil circuit breaker and recording wattmeter. Both turbines have motor-driven synchronizers, with control switches on their respective generator panels. On a swinging bracket is a synchroscope and a power-factor meter.

A bank of three 75-kva., 2,300/440-volt transformers is used to supply power to the motors in use at the power plant such as condenser drives, compressors, pumps, conveyors, etc.



Witt Power House in Process of Erection

Bunkers, boilers and ash pit can be seen to the left of the illustration. The boilers have a maximum aggregate capacity of 2,100 hp., the normal capacity being 1,059 hp.

Mine No. 14, which is less than a mile away, is operated by a 2,300-volt transmission line, and No. 10, which is about 9 miles distant, by a 23,000-volt line. For operating No. 10 mine there are two transformer substations, delta-star connected, each consisting of three 667-kva. transformers, one at the generating end, and the other at the receiving end. Each transformer station is equipped with high- and low-tension disconnecting switches, air-brake switches, lightning arresters, high-tension expulsion fuses and choke coils.

The engine room for a height of 3 ft. and the boiler room for a height of 7 ft. above the ground level is constructed of reinforced concrete, and the remainder of the building is steel-frame construction and sided with asbestos-covered corrugated-steel siding. Steel window sash is used with wire-ribbed glass in the lower sashes, plain glass being used in the upper windows. The water-softening plant is built of reinforced concrete up to floor level, the upper part being of concrete block with steel sash. The turbine foundations are built entirely of reinforced concrete. The plant, except the brick work in the chimney and boilers, was built by men at one time connected with the coal company.

Savings Will Depend on Running Time

The cost per kilowatt-hour for generating power at the new plant depends on many elements entering into the cost, that is, the efficiency and care with which the plant is operated, the cost of repairs and depreciation and the working time of the mine. In making a comparison with the purchased power, it should be remembered that the plant will not only replace this power but will furnish steam to Mine No. 12, which will abandon its power plant and eventually supply additional electric power to Mine No. 14, which will also shut down its boiler plant.

Making no allowance for savings in maintenance, coal and labor in these old plants, the new power station will show a reduction in the power costs of from $20,000 to $50,000 per year over purchased power, depending on the running time of the mines. This saving is greatly increased by shutting down the old steam plants, so that this new power plant will pay for itself in from three to six years. After the plant has paid for itself, the cost of producing power will be further decreased. The plant was designed, built and put into service in 1925 by the Mine Equipment & Service Bureau, of Chicago, Ill.

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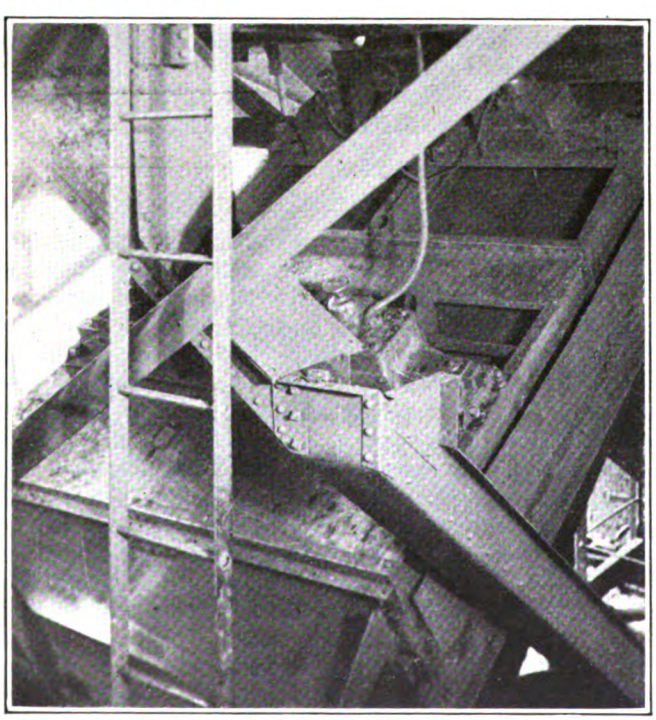
Vibrating Screens and Tumbling Breakers in Smokeless Field

Pea Prepared by Passing Slack, One Inch and Under, Over a Vibratory Screen—Rock Cleaved from Coal by Mechanical Means

DURING the past winter a substantial market developed for bituminous coal of pea size, especially for smokeless fuels. With proper equipment low-volatile coal of this grade can be utilized as successfully for domestic heating as for steam raising.

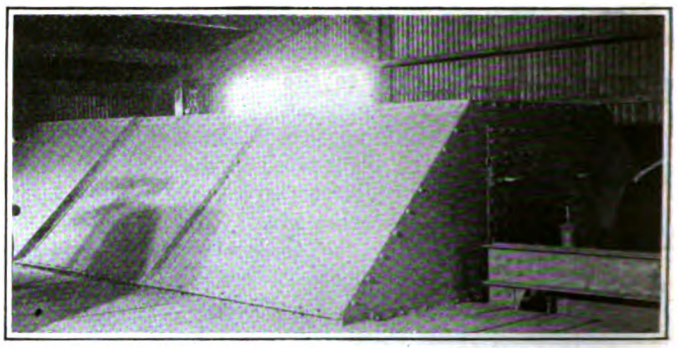
At the new tipple of the Crozer Coal & Coke Co., Elkhorn, W. Va., pea coal from the Pocahontas No. 3 bed is prepared over Hum-mer electric screens, one of which is shown in the accompanying illustration. The installation in this tipple consists of two single-deck screens, each 6 ft. long and 4 ft. wide. These are placed in tandem on a slope of 30 deg. The screen unit thus formed takes a feed varying in size from nothing to 1 in. From this it separates all coal over ½ in. It is capable of handling this material at a maximum rate of 25 tons per hour. The tipple is provided with facilities for loading upon only four tracks, and accordingly pea coal is elevated to a 220-ton bin, which holds a day's supply.

At the mine of the Upland Coal & Coke Co., adjoining the property of the Crozer company and operating under the same management, the tipple is likewise equipped for the preparation of pea from Pocahontas No. 3 coal. At this plant, however, a 4x6-ft. Arms vibrating screen with ½-in. perforations is used for this purpose. This screen is horizontal and is supported from below. It receives its feed from a Marcus reciprocating screen, which prepares the larger sizes. The pea coal which passes over this Arms screen, as well as the slack going through it, is sent by chutes to railroad cars direct.



Tandem Vibrating-Screen Unit Removes Fines

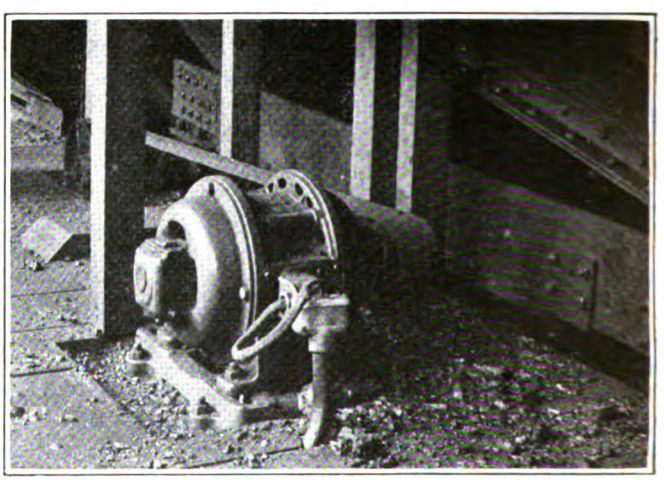
This shows the fine-coal screens in the Crozer tipple. The tandem unit, which is electrically driven, separates coal less than ½ in. in size from the slack screened out by a preliminary process. The capacity of this unit is approximately 25 tons per hour. The screen is set on a 30-deg. slope.



Tumbling Coal Breaker in Upland Tipple

Within the housing is a 9x11-ft. breaker which separates good coal from adhering but worthless bone and slate. Lumps composed of these two materials rejected from the picking table are fed to this machine. This saves the pickers from wasting time in cleaving the coal by hand from the bone.

Both of these tipples are equipped with Bradford breakers, which separate the high-quality lump coal from the bone and rock adhering to it. This machine handles the reject from the picking tables. A bone binder sometimes attaining a thickness of 3 in. occurs slightly above the middle of the coal bed. It is not the practice in these mines or throughout the adjoining fields to separate this bone from the coal at the working face. In the past it has been customary to lift lumps of combined coal and bone from the picking tables and cleave off as much good coal as time would permit. As a result of this practice much coal, as well as bone,



Vibrating Screen, Upland Coal & Coke Co's Tipple

This screen is horizontal and is installed under the main reciprocating screen. Over it ½x1-in. pea coal is prepared. It is driven by a 3-hp. motor.

was relegated to the dump. The time consumed in cleaving the bone by hand seriously lessens the ability of the pickers employed on the tables to prepare a large tonnage daily.

The practice now followed at the picking tables of these companies is to cleave off only the coal that separates readily from the bone. The residue or lumps of combined coal and bone which cannot be readily separated are fed into the Bradford breakers. These machines convert the coal into slack and reject the bone. The Crozer tipple is equipped with a 9x14-ft. breaker having a capacity of 50 tons per hour, and the Upland tipple has a breaker 9x11 ft. in dimensions.

F. FRASER MACWILLIAM'S name was incorrectly given as F. Fraser Williams on page 707 of the issue of May 20.

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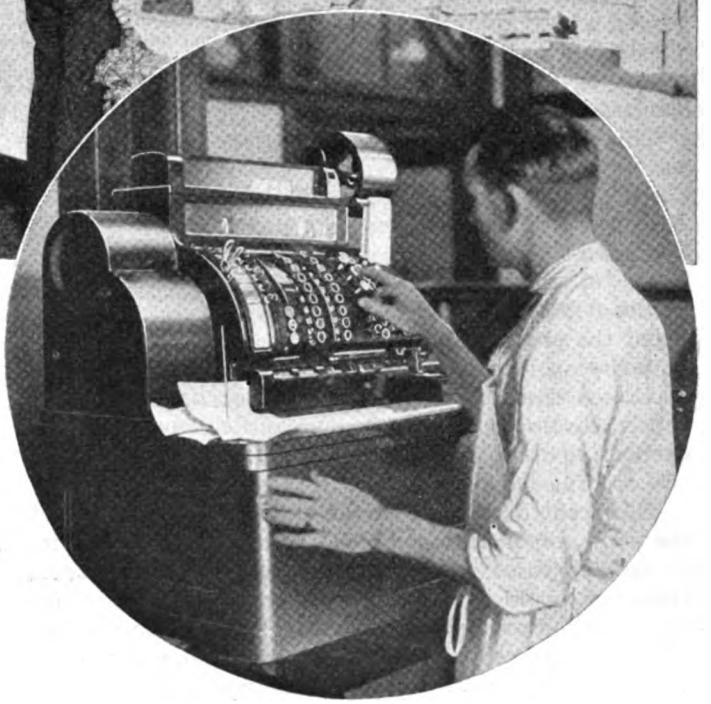

Company Store Run by Better Business Methods Lowers Costs and Gives Improved Service

Good Salaries Paid to Really Competent Men Who Know How to Turn Stocks Rapidly and Free from Spoilage

By Louis Spilman
Editor, *Industrial Retail Stores*,
New York City

BUSINESS IS business and welfare work is welfare work, but when a combination of the two results is good for both—that is a paradox. This, however, has been the result of the gradual development by coal-mining companies of retail stores to serve their employees. At the start, coal-mining companies were forced into the retail mercantile business in order to supply their employees with the necessities of life. This was due to the isolation of the mines and to the reluctance of independent capital to invest in stores located in these communities.

These early retail units, which were termed "commissaries," were not in any way progressive stores, but merely units that carried such items of food and clothing as were necessary to meet the general demand of the miners and other employees. As the managers of these commissaries were not experienced in store operation, the usual result was a tremendous overstock of inferior goods which were sold at high prices.

COMPETITION DOES NOT HINDER

The profit which accrued from the enterprise, nevertheless, was sufficient to call the attention of the mine operators to the fact that a large revenue could be secured through this division of their business. With competition developing, however, due to the rapid rise of the mail-order house, the building of a great system of hard roads, the growth of bus systems and the wider distribution of automobiles, thus giving access to larger cities, coal operators were face to face with the proposition of making one of two decisions: They must either end their mercantile operations and permit independent capital to care for the demand, or they must re-organize their stores on modern, progressive principles of merchandising, which would enable them to meet any competition offered.

The headpiece shows the butcher's shop at the Lynch store of the United Supply Co., a subsidiary of the United States Steel Corporation, Lynch, Ky.

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The decision in most instances has been to develop the stores, and it has been found, that, as the commissary has given way to the modern retail unit, managed by an experienced personnel, stocked on a scientific basis and merchandised in the most approved and modern system, not only was the service to the employee better, the prices offered much lower and the qualities presented higher, but the net profits to the company itself were as great, or in most cases, even greater. As a thorough realization of the advantages to be gained by operating retail stores on modern principles became apparent, increased opportunities for the development of the stores were given.

Perhaps the greatest single step forward has been the absolute divorce of the mercantile enterprise from coal production. In Pennsylvania, this was made necessary some forty or fifty years ago, when the state passed a law prohibiting the operation of retail stores by industrial organizations.

This law is, of course, not necessary now so far as the coal industry is concerned, for there has been no recent evidence of the existence of the evils that brought about the passing of the early law. Today we find the majority of the coal companies in every state have separated these two functions, law or no law; either separately incorporating a mercantile department or conducting it as a distinct and independent section of the existing business.

The profit derived from the store, however, was not the only consideration which prompted the operators to develop these retail merchandise establishments to their present high standard. Labor, at certain periods, such as, for example, during the World War, became extremely scarce and the actual wage alone was not the sole consideration which caused the workman to become a permanent fixture in a particular community. During such times it was necessary to create within the laborer confidence in the company for which he worked and to surround him with an environment that tended to create contentment and satisfaction.

As the miner, or members of his family, visited the store daily, the company found that its largest opportunity to create confidence and to spread contentment was to give a square deal at the store. The prices and qualities had to be such that they would bear a favorable comparison to those offered by competing stores in nearby towns.

FIGURES OF OTHER COMPANIES AS GUIDE

This development in the store field has brought many problems to executives of coal companies. What should the investment be in merchandise? What should the cost of business be? What should the net profit be, if any? How many store employees should there be? What convenient system of credit for company employees can be utilized? What percentage of the total mine payroll should a company expect to be spent at the store? These are a few of the questions that have confronted the coal-company executive, since he began to realize the importance of a store to the satisfactory operation of a mine.

The only fair way to arrive at a conclusion on any of these questions is to find out how some of the successful coal-company merchandise units are operating and what their figures are. Let us turn first to the largest operators of coal-community stores in the United States, the Union and the United Supply Co., with headquarters at Pittsburgh, Pa., which operate seventy-one stores in Pennsylvania, West Virginia and Kentucky, in communities established by the H. C. Frick Coke Co. and the United States Coal & Coke Co.

The Union Supply Co. was incorporated as a separate organization in 1882, and the United Supply Co. was incorporated in 1902. The headquarters for both these groups is the same, and J. W. Anawalt is president of both corporations. The general offices are at Pittsburgh, where in addition to Mr. Anawalt, are the other general executives of the companies, including Frank Walton, general purchasing agent.

The Union Supply Co. operates sixty stores and has its general store headquarters at Uniontown, Pa., with C. L. Steiner in charge as general store superintendent. The United Supply Co. operates eleven stores, among which is the remarkable unit at Lynch, Ky., under the store management of John C. Howard. The general store headquarters for the United Supply Co. is at Gary, W. Va., where Claude Boughner serves as general store superintendent.

For the purposes of this survey, the two companies are considered together, and, as they are really under one executive jurisdiction, this can be done satisfactorily.

When you come face to face with the fact that this organization, only one of the many merchandising organizations developed during the past few years to serve coal-mining communities, has an average of 900

IN preparing this article for *Coal Age*, Mr. Spilman surveyed 101 coal-community stores located in various sections of the country. Here are some of the outstanding results of his survey:

Number of stores surveyed	101
Average store stock carried	$21,837.21
Average annual sales	$164,797.91
Average turnover	7.5 times
Average number of store employees	11
Average per cent of company pay roll spent at store	32.62
Average business other than company employees	9.4
Average salary of manager per month	$205.95
Average cost of doing business	13.95 per cent
Of this	
The average salary cost was	9.5 per cent
The average delivery cost was	1.07 per cent
The average rental cost was	0.83 per cent
The average advertising cost was	0.23 per cent

The rest of the 13.95 per cent is distributed in lesser amounts over a varied number of items.



Company Store of Island Creek Coal Co., Holden, Logan County, W. Va.

The coal company has its offices in this building. The superintendent's house is on the hill to the left. Stores are unloaded from the railroad, the Chesapeake & Ohio, on the right. Note the paved streets. It is an easy run from Holden to Logan, but the Holden store holds its own nevertheless.

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employees, carries an average stock investment of over a million and a half dollars, and does an annual retail business of around twelve million dollars, you begin to understand why this branch of coal-mining company activities has taken on such an important aspect; anyway that's what the Union and United Supply companies are doing.

ONE THIRD DO A CASH BUSINESS

About 30 per cent of this business is for outright cash. The remainder is done on charge accounts extended to employees of the coal companies, who assign their earnings as collateral. Most of the business, of course, is done with the coal-company employees, but some of the stores, such as the one at Lynch, Ky., draw as much as 10 per cent of their business from people of the adjacent countryside, who are in no way connected with the coal company.

As to the matter of expense, the Union and United Supply companies made figures that would challenge many nation-wide chain-store organizations to equal. It costs them 15 per cent to do business and 10.37 per cent of this goes for salaries and wages. Their supplies cost them 2.5 per cent and delivery 1.2 per cent. They have discovered that to operate successful stores they must offer a fair wage to the store manager. Hence, the average salary paid Union and United Supply companies' store managers is $235 a month. In addition to the actual cash salary, the manager is, of course, given a discount on his merchandise and enjoys extremely low rent.



Grocery Department of an Illinois Mine Store

Over the counter may be seen the cash-carrier system. Order and neatness is the rule of the store. New goods, well displayed kept clean and moving. What a contrast to the older days!

Some coal-company executive will say, "Yes, all these things are very well for an organization of such size, but our company is small. We can have but one store, so there is little chance for us to compete with the nearby city stores or to expect to offer our employees any particular inducement as to price or assortment through our merchandise department."

All we have to do is to turn to the Garden Coal Co., at Tazewell, Va. This company has one store, carrying an average stock of $8,500 and doing about $100,000 business a year, which is an excellent turnover indeed. They have four store employees. Twenty per cent of their business is outright cash, and the remainder is done on credit extended to employees of the coal company. About 15 per cent of their total business is done with people other than Garden Coal Co. employees.

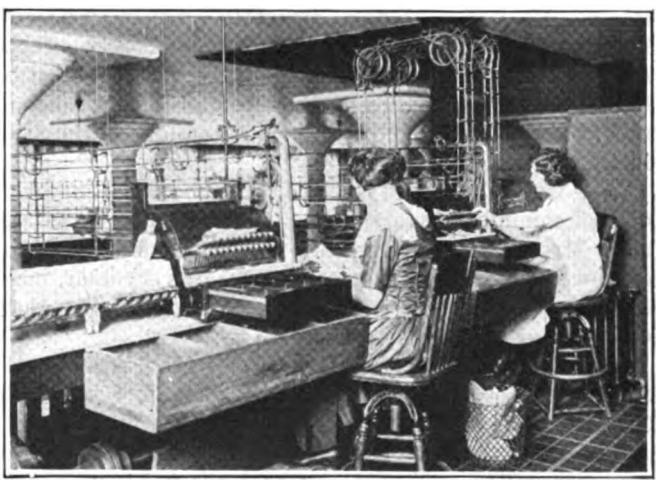


Another of Lynch's Store Departments—This for Hardware

Show cases give an opportunity to tempt trade. The spick-and-span appearance has its value not only in making sales but in forbidding the keeping of dead stock. With no place to put it, every one tries not to get stock that will not sell.

The two outstanding facts about the operation of the Garden Coal Co.'s store that disprove what may be said about the single-unit operation, are these: (1) 42 per cent of the total payroll of the Garden Coal Co. is spent through the store, so evidently, the employees are well satisfied with the type of service, quality and assortment of merchandise and the fairness of the prices. (2) It costs the Garden Coal Co. just 6.19 per cent to do business, showing that the overhead of the small store does not necessarily eat it up. In fact, R. O. Van Dyke, secretary-treasurer of the Garden Coal Co., says that the officials of the company look on their store with great favor, in reference to net profit, as well as to the service rendered company employees.

Many companies find it necessary to operate three, four or five stores for the benefit of their men. In West Virginia are two examples of coal companies of this kind; the Lillybrook Coal Co., at Lillybrook and the Kanawha & Hocking Coal Co., at Longacre. The Lillybrook Coal Co. operates three stores and carries about $100,000 worth of stock, and does a business of about a million dollars. Its cost of doing that business is 9 per cent of the gross turnover. Fifty to fifty-five per cent of the coal company's payroll is spent at the store and 20 per cent of its business is done in cash. Figures to be proud of indeed!



Cash-Carrier System at United States Coal & Coke Co. Store, Lynch, Ky.

This building is fitted up like a city department store with every facility for display and for operation. The cash-carrier system shown above saves steps and makes it possible to keep a record of every transaction as made.

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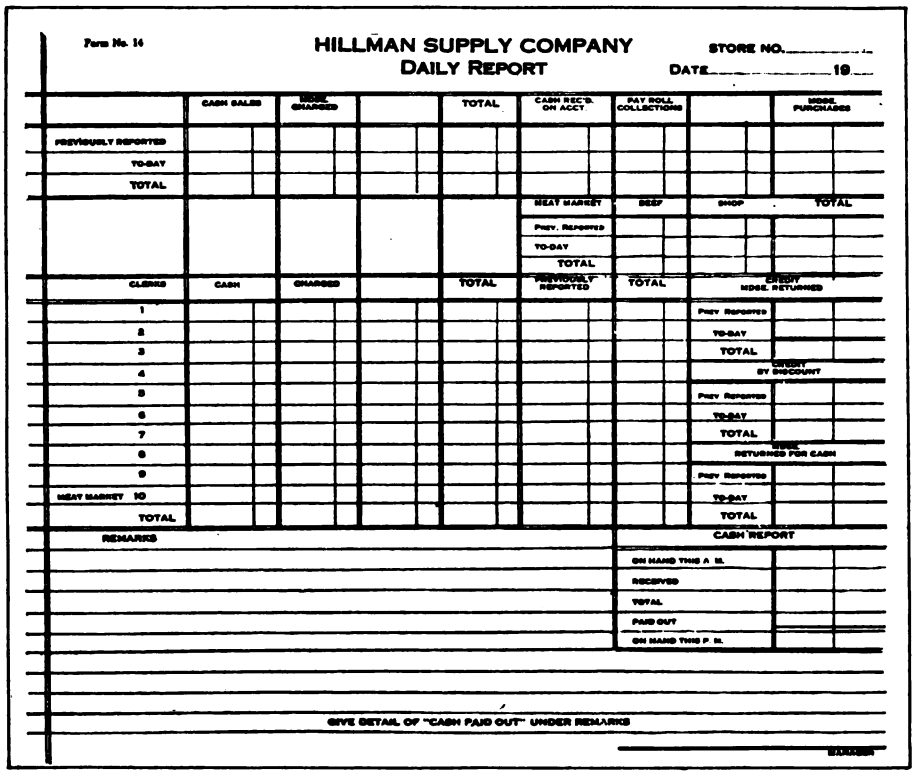

Form No. 14

HILLMAN SUPPLY COMPANY
DAILY REPORT

STORE NO._____
DATE_____ 19__

	CASH SALES	MDSE. CHARGED		TOTAL	CASH REC'D. ON ACCT.	PAY ROLL COLLECTIONS		MDSE. PURCHASES
PREVIOUSLY REPORTED								
TO-DAY								
TOTAL								

	MEAT MARKET	BEER	SHOP	TOTAL
PREV. REPORTED				
TO-DAY				
TOTAL				

CLERKS	CASH	CHARGED		TOTAL	PREVIOUSLY REPORTED	TOTAL	CREDIT MDSE. RETURNED
1							PREV. REPORTED
2							TO-DAY
3							TOTAL
4							CREDIT BY DISCOUNT
5							PREV. REPORTED
6							TO-DAY
7							TOTAL
8							MDSE. RETURNED FOR CASH
9							PREV. REPORTED
MEAT MARKET 10							TO-DAY
TOTAL							TOTAL

REMARKS

CASH REPORT

ON HAND THIS A. M.	
RECEIVED	
TOTAL	
PAID OUT	
ON HAND THIS P. M.	

GIVE DETAIL OF "CASH PAID OUT" UNDER REMARKS

How the Hilman Supply Co. Keeps Track of Day's Sales

This enables the manager to see how much every clerk has sold both for cash and on charge accounts; also to keep account of returned merchandise whether charged or sold for cash.

The Kanawha & Hocking Coal Co. has four stores. It carries about $80,000 worth of stock in these stores, and during the first nine months of last year did just a wee bit under a half million dollars' worth of business. Its cost of doing business was 9.4 per cent. This company departs from the prevailing method of compensating store managers, in that it pays an average monthly salary of $160 and gives, in addition to this, 5 per cent of the net profits made by the store. Both the Lillybrook Coal Co. and the Kanawha & Hocking Coal Co. issue metal checks to the miners for use at the store as a convenient method of supervising credit.

Leaving the eastern and central fields in order to get an even broader outlook on store activities in coal communities, let us examine the records made by the Union Pacific Coal Co., which operates six stores with headquarters at Rock Springs, Wyo. E. R. Jefferis, manager of stores for this company, says that it is his endeavor to maintain the standards for efficient operation recommended by the outstanding authorities in the merchandise field.

"We realize that the isolated location of the majority of coal community stores is no longer a business asset," says Mr. Jefferis. "Instead, the automobile and the catalog have brought competition to our very door, making it absolutely essential that we offer quality merchandise at competitive prices."

The Union Pacific Coal Co. carries from $200,000 to $225,000 stock and does a business of from $900,000 to $1,110,000 each year, employing about fifty men.

The average salary paid the store managers is $230 a month. The cost of doing business is about 15 per cent, 7 per cent of which is for salaries and wages, including delivery costs. Twenty per cent of the business done is for outright cash, and the issuance of coupon books as a medium of credit, cares for the remainder. Approximately 25 per cent of the Union Pacific Coal Co. payroll is spent through the store.

On the Pacific Coast, the Pacific Coast Coal Co., employing union labor exclusively, operates four successful stores. They carry a little less than $100,000 worth of stock and last year did $558,156 worth of business.

E. F. DeGrandpre, manager of miscellaneous operations for the Pacific Coast Coal Co., supervises the store developments and maintains an efficient and concise survey of the store activities. Its figures are exact in every instance and are given here in detail. For instance, the company knows that 13.9 per cent of its business is for cash. It knows that 3 per cent of the business is done with people not connected with the coal company in any way whatsoever, and that the rest of the business is done through the medium of credit, as represented by coupon books issued in denominations of $2, $5 and $10, charged to the customer's account. It knows that 25.24 per cent of the Pacific Coast Coal Co. payroll is spent at the store, which is a fair percentage.

The cost of doing business is 14.34 per cent, and this is less than it was ten or twenty years ago. Mr. DeGranpre attributes this decrease to four causes: Improved methods of handling, increased volume of business, greater experience, and the standardization of merchandise. Its cost of doing business is so well divided that it is given in its entirety in Table I.

Table I—Distribution of Operating Costs, Pacific Coast Coal Co.

	Expenses Chargeable to	Per Cent of Business Transacted
A.	Salaries (excluding driver)	7.82
B.	Deliveries	1.38
C.	Fuel	0.22
D.	Store supplies and expenses	1.30
E.	Coupon books	0.11
F.	Repairs and renewals of buildings	0.51
G.	Losses	0.09
H.	Other expenses	0.05
I.	Depreciation of buildings	0.44
J.	Manager of stores and clerks	0.53
K.	Insurance	0.19
L.	General office salaries and expenses	0.75
M.	Taxes	0.30
N.	Rent	0.65
	Total	14.34

The item of rent is given as 0.65 per cent. No rent is paid as the company owns its own building, this figure merely being the amount set aside as a return on the investment in the building.

The investment required in merchandise, equipment and buildings to conduct the coal-community stores merits the close attention of the coal-company executive to the problems with which the stores are confronted. Just glance at these figures on the company-store business: There are about 7,500 of them in the country, distributed through coal and metal mining, lumbering and general industrial communities; they serve a population of seventeen million; they employ 100,000 people; and in bulk of business done the stores rank high in the retail distribution field.

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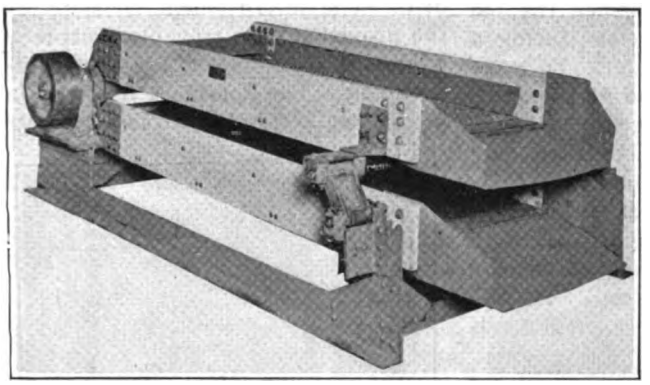
Other Exhibits at Mining Congress Exposition

Shaking-Screen Family Has Enlarged During Year Past — Car Height Being Lowered to Meet Shovel Needs—Powder Men Seek to Meet Stray-Current Menace—Gas Detector—Drills and New Bonds

By Frank H. Kneeland
Associate Editor, *Coal Age*

NEAR THE entrance to the exhibition hall the Roberts & Schaefer Co. of Chicago had on exhibition its new Arms shaking screen. This consists of two decks of screen cloth mounted on wooden frames and supported at one end by the driving eccentrics and on the other by short rocker arms. As ordinarily used this screen is inclined at an agle of from 3 to 5 deg.



Shaker Screen

Two decks of screen cloth are superimposed in the Arms screen. The eccentric driving head is fitted with ball bearings. The motion imparted facilitates screening action.

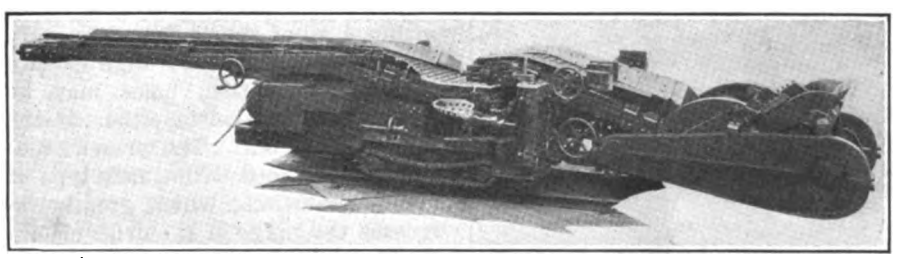
Because of the peculiar motion imparted to the screening surfaces this device is said to be highly effective and capable of breaking up a bed of material and agitating it uniformly so as to permit the undersize to pass through. The head is mounted on ball bearings and the machine operates at approximately 500 r.p.m. requiring from 3 to 5 hp. to drive it.

When installed in conjunction with air-cleaning plants, this screen provides a conveying action which helps to distribute the coal to the required points. When double decked an opportunity is afforded for providing the lower deck with the finer mesh of screen cloth, thus multiplying the screen area for the fine sizes, or those requiring the most screening surface.

Out in the "side show" tent in the rear of the building the Myers-Whaley Co. of Knoxville, Tenn., had one of its new 2-25 shovels in operation. The first machine of this type was put to work last September in a mine in Pennsylvania where it has been successfully employed in entry work ever since. The machine shown in Cincinnati was the second one of this kind ever built.

It is 39 in. high overall from the rail. This is the traveling height and for operation the machine requires 42 in. for the proper discharge of the shovel. It weighs 13,000 lb. It can be equipped for any track gage, from 20 in. upward. Its length is 23 ft. 10 in., width overall 5 ft., including the operator's platform, or 4 ft. 6 in. when this platform is removed. The shovel cleans up a space 17 ft. in width. A 15-hp. motor is employed for driving this machine and its capacity is 34 cu.ft. of loose material per minute.

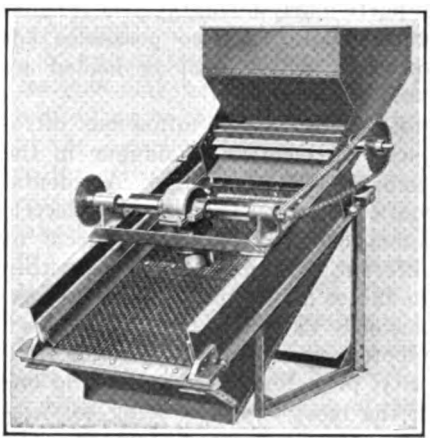
Several changes from previous designs have been embodied in this machine. Thus the motor drive is through a triple roller chain operating in a closed case. The drive to the rear conveyor is by a spline shaft with universal joints instead of by means of a long chain. Naturally other changes have been made but these are the most important.



With This Loading Machine Only Low Headroom Is Required

This shovel is the second of its model ever built. It will operate in a headroom of only 3½ ft. and may be traversed in 3 in. less space. Several refinements in design over previous types have been incorporated in its construction.

Especially for treating the smaller sizes of coal vibrating screens are being extensively employed in place of the older and better known shaker screens. The Kanawha Manufacturing Co. of Charleston, W. Va., exhibited its new Kanawha Vibrator,



Vibration Assures Effectiveness

Either a belt or direct connection to a motor may be employed for driving this Kanawha vibrator. The inclination of the screen surface and the speed of the drive may be varied to suit local requirements or to afford maximum capacity.

which it is claimed may be successfully used for screening any material that will pass through a wire cloth. It is particularly suited to the smaller sizes of coal, either wet or dry and ranging in size from 1½ in. downward.

This firm also exhibited a model of its sidehill dump intended for refuse disposal. This device is a self-contained unit capable of discharging any type of car, but particularly adapted to those having "solid ends" such as are normally discharged in a rotary dump. As may be seen in the accompanying illustration, the car in its extreme position is several feet to the side of the refuse track. It is thus unnecessary to move this dump frequently and when a move

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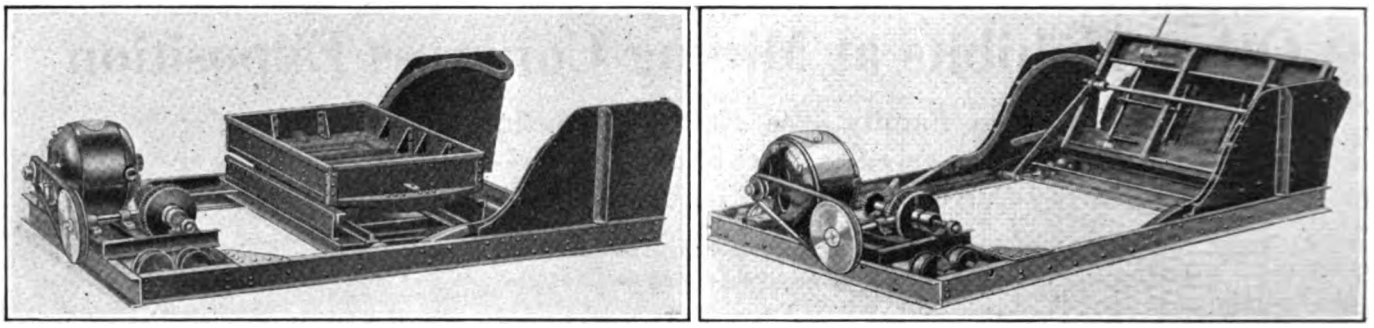


Any Kind of Car Can Be Dumped by This Mechanism Which Is Made for Sidehill Refuse Disposal

Although any kind or type of car may be handled by it, it is primarily intended for dumping those having solid bodies. The car is turned almost completely over and as it is moved several feet transversely the dump need be transfered only infrequently, making it possible to keep the track nearer the body of the rock pile where the grade is easy to maintain and where there is less likelihood that a sudden slide will take the dump and the track down the hill. The trouble with the dumping of rock is that track and dump have to be taken onto the uncertain ground at the edge of the rock pile necessitating frequent regrading, and the placing of rock by hand. This disadvantages is obviated by this mechanism which is well away from the pile's edge.

becomes imperative the frame may be skidded to its new position in a short time.

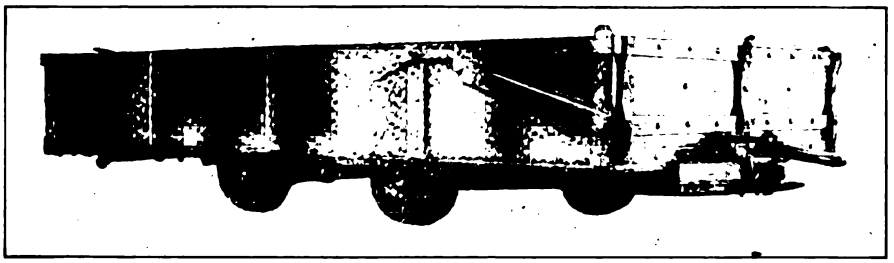
Low cars are becoming the vogue. The Watt Mining Car Wheel Co. of Barnesville, Ohio, exhibited a car of this kind that was designed primarily to secure large capacity and low height. Though this type of car is particularly advantageous for machine loading it also possesses advantages where coal is loaded by hand shovel.

Electrification of mines has introduced an element of danger in the shape of stray currents. Accidental contact between the wires of electric detonators and any two objects of different electrical potentials within the mines may cause a premature explosion. Various schemes have been adopted for overcoming this difficulty, probably the simplest and one of the most effective being to twist the ends of the wires together. The Hercules Powder Co. of Wilmington, Del., however, has introduced a spring clip spanning the ends of the wires. This makes a positive contact between these two conductors beyond the insulation. When short circuited in this way tests with a 550-volt power line have fused the wires at the point where they were connected by the clip without setting off the cap. It is claimed that this clip affords positive protection from stray currents. It may be removed with the fingers leaving the wires clean and straight ready for use.

Many operators consider the old flame safety lamp as constituting a possible source of danger. To overcome this difficulty and at the same time obtain results comparable to those afforded by it, the Concordia Electric Co., of Pittsburgh, Pa., is introducing a new gas indicator. This device depends for its operation upon the power of a platinum sponge to absorb inflammable gas. The detector is equipped with a small 2-volt dry-electrode battery.

When the current is so regulated that the wire upon which the spongy platinum is deposited will just glow perceptibly in pure air, it will be found that when placed in a mixture of air and gas this wire will be heated to redness. Its glow will increase as the relative proportion of combustible gas to air increases and when a 10-per cent admixture is attained the wire will become white hot.

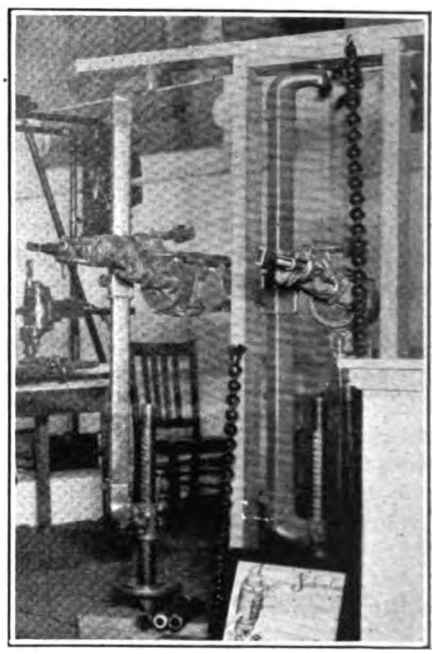
This device measures 5¾x2¾x2 in. and weighs approximately 2 lb. 2 oz. It is claimed that it constitutes a convenient, reliable and accurate means for determining the gas content of mine air without the use of a flame of any kind. Furthermore, tests may be made with it by almost anyone, the skill required being small compared with that necessary for the manipulation of a safety lamp.



Car Is Low, Wide, Strong and of Large Capacity

This car was designed primarily for machine loading, but is excellently adapted to hand-loading as well. It stands only 28 in. above the rail and is over 6 ft. wide inside, so that shoveling into it is easy and its capacity is large even though no chunking is done.

The Chicago Pneumatic Tool Co. showed an improved type of post drill. The improvement consists of the provision of a movable footpiece with both a ratchet and a screw adjustment. The footpiece or tube is of hydraulic pipe with notches fitting a pawl. Inside this pipe is a screw provided with a hand wheel—or in this case a "foot wheel." This improvement permits drilling holes within 4 in. of the roof or floor. By digging the fixed spur slightly into the top or bottom, holes may be drilled within 2 in. of either of the cap or foot rock. The present machine is provided with a new type of reversible switch, which greatly increases the range of the drill. Holes may be drilled at any angle.



Improved Post Drill

Improvements on this machine consist of the top and bottom spurs and the switch controlling the motor. The arrangement is such that holes may be drilled within 2 in. of either top or bottom.

The Penn Machine Co. showed a new type of short stranded bond intended for installation under the

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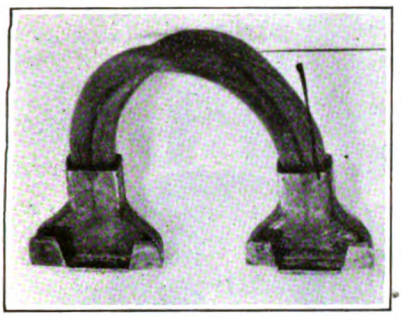
flange of the rail. An angle bar is placed on one side of the rail and a fishplate on the other. The hooks of the bond terminals are slipped over

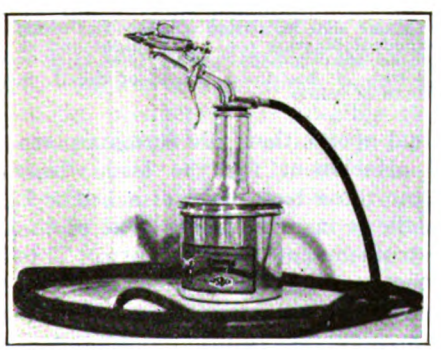


Short Rail Bond for Welding to Rail

When in place this bond is comple ely protected from injury. The terminals may be pushed over the flange of the rail and form a mold for the copper weld. Application is thus easy and rapid, and the bond is entirely below the rail out of harm's way.

the edge of the flanges on the fishplate side and pushed or driven to place. This holds the bond in position while it is being welded to the rail. As may be readily seen this bond is thoroughly protected, being entirely below the rail flange and out of harm's way.

Templeton, Kenly & Co., Ltd., of Chicago, exhibited a type of jack for pulling mine timbers. This machine was designed originally for telephone use, that is, for tilting or moving poles. Inasmuch as it may be used for pulling quite as readily as pushing, however, it makes an excellent post puller. For this purpose, it is anchored at one end and a chain from the post to be pulled is hooked

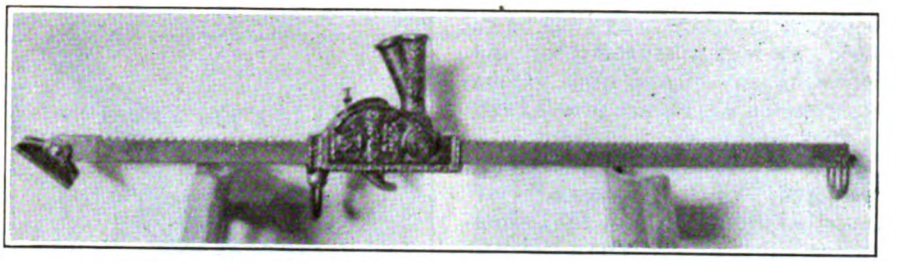


Handy Paint Spray Gun

This gun holds 1 qt. of paint but larger sizes may be obtained. With this outfit a man can cover several times as much surface as he is able to cover without its aid. Furthermore the paint is shot to place and intricate surfaces are little if any harder to paint than plain ones.

to the jack head which is then traversed along the ratchet bar.

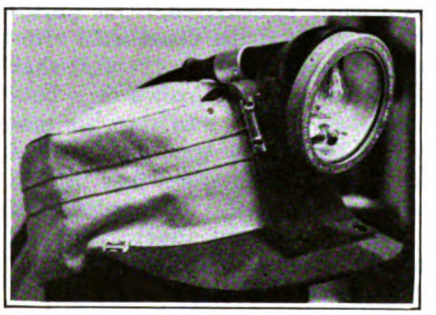
Painting at the average coal mine requires periodic attention. The Simons Paint Spray Gun Co., exhibited a small paint gun that should find favor at the larger mines at least. This new gun consists of an aluminum container of 1 qt. capacity



Puller Suited to Use in Recovery of Mine Posts Under Pressure

Designed primarily for telephone work, for the lifting or tilting of poles, this jack is finding application as a post puller within the mines. For this purpose it is amply strong yet light enough to be readily carried from place to place.

provided with a friction top to which the spray nozzle is attached. After filling, it is only necessary to give the top a few light taps with the hand to fasten the cover firmly in place. Air for this gun is supplied by a small compressor driven by a ½ hp. motor that may be attached to any light socket. The compressor and air tank or receiver may both be mounted on a hand truck that can be readily moved anywhere. It is claimed that with the aid of this machine a man will cover from 6 to 8 times as much area as he would be able to cover by hand methods.



More Comfortable Cap Lamp

Note the bracket by which it is attached to the cap. The lamp has a less leverage upon the wearer's head and is held more firmly than usual.

The Koehler Mfg. Co. showed its improved Super-Wheat lamp. This lamp like its predecessor is provided with two bulbs, but one is of higher power than the other and affords much more light than the lamp it replaces. The most recent improvement, however, consists in the bracket by which the reflector is fastened to the cap. As will be observed this bracket is shorter than the old one and is stiffened by means of ribs or corrugations that are rolled into the metal. This makes the lamp much firmer on the cap and reduces its leverage on the head of the wearer. Incidentally, the illustration shown was made from a photograph taken by the light of another lamp of the same kind as that photographed. This well demonstrates the light-giving power of the new lamp.

In one of the accompanying illustrations may be seen the new composite type of car built and exhibited by the American Car & Foundry Co., in the construction of which are incorporated several details that decrease its weight and lengthen its life. Thus the drawbar is a plate or strap that is forged in a U-shape and inverted with the opening of the U flanged outward forming a bearing for the edge of the floor planks.

Under the outer edges of these planks are the flanges of the bottom plates. These floor plates extend first outward, then upward the thickness of the planks, then outward to the sides of the car where they are again flanged upward affording connection to the side boards. In cross-section each plate is thus a Z terminating at one end in an L. With the belts and other ironing an extremely rigid construction is afforded. All iron work is riveted and the planks are bolted in place. Any



Low Car of Large Capacity Suited for Mechanical Loading

Small height above the rail, large capacity and ease of repair are the cardinal virtues claimed for this car of composite construction. To decrease the necessary headroom the wheels are let into the car floor and housings over them forged into the plates.

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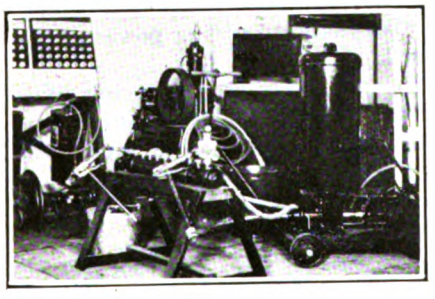
woodwork that fails may thus be replaced without disturbing or disconnecting any of the irons. Housings over the wheels are pressed into the floor plates.

Greasing cars has always been considered a kind of "necessary evil" about the mines. One of the accompanying illustrations shows the new grease gun exhibited by the Lincoln Steel & Forge Co. This machine is small in size and may be used either as a piece of portable equipment or installed permanently. The outfit consists of a motor-driven air compressor, an air receiver, a grease tank, the gun proper, the delivery hose and the nozzle. The grease reservoir on the gun holds 50 lb. of grease and the machine is arranged to discharge a predetermined weight of this lubricant each time the nozzle trigger is pulled. Ordinarily about ¼ to ½ lb. of grease is thus delivered under pressure. The nozzle may be



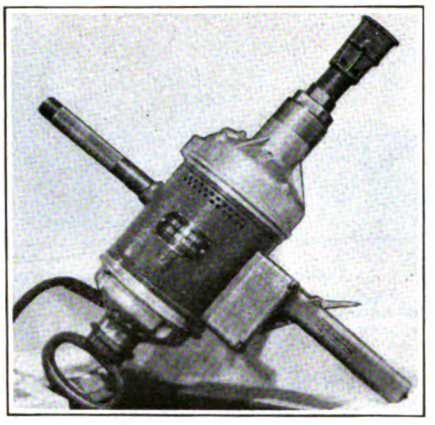
Power Car Greaser

A ½-hp. motor will drive this machine. The grease tank will hold 50 lb. of lubricant which is forced into the bearings under heavy pressure.

of several types, the latest being one that needs only to be pushed against the grease plug of the wheel and held there as the grease is discharged.

The Simplex Wire & Cable Co., of Boston, Mass., exhibited its new selenium-rubber covered cable. This is a mechanically strong rubber covering which the company claims will wear 50 per cent longer than any compounds it formerly marketed. It is called a 60 per cent selenium-rubber armor, meaning that it contains 60 per cent pure rubber. Selenium is peculiar in that it is a non-conductor of electricity in the dark, but a conductor in the light. It is sometimes called a non-metallic metal. It costs about $2 per pound as against 4c. for sulphur.

The Cincinnati Electric Tool Co.'s shothole drill exhibited at this show has been provided with a new automatic switch so arranged that release of the trigger stops the machine. This drill weighs 48 lb. and operates on direct current at 250 volts. The new switch is of the quick



Electric Drill for Shotholes

The switch on the right hand grip of this drill was completed just before the Cincinnati exposition. It is so arranged that release of the trigger stops the drill—a valuable safety measure.

make-and-break type so arranged as to be kicked out as soon as pressure of the hand is removed. One objection to power drills fitted with ordinary switches has been the fact that a switch had to be thrown or a button pushed in order to stop the machine. The result was that serious accidents sometimes occurred in case the auger struck a hard substance. In such a case the auger remained stationary and the machine itself revolved twisting up the lead cable and sometimes the operator as well before power could be shut off. The new switch obviates this difficulty and tends towards safety.

The Electric Railway Improvement Co., showed a copper terminal bond that can be laid in place and copper-welded to the rail without the aid of a form or mold. This is done by means of a special copper electrode, which is a pure copper rod covered with a coating of carbon and silicon, which greatly reduces the tendency of the metal traversing the arc to fly or splutter and makes it possible to weld the terminal to the rail without a mold or form. In practice the two terminals are laid on the two rails and held in place usually by the workman's knee instead of being clamped rigidly in position.

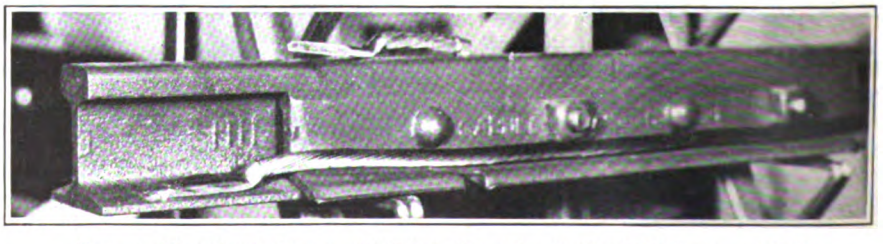
E. I. du Pont de Nemours & Co., showed a small single-shot blasting machine. The body of this device is about 1½ in. in diameter and 5½ in. long and weighs approximately 2 lb. It is fitted inside with a small spring-actuated magneto. A suitable ter-



A Single-Shot Blasting Machine

This little machine which may be hung on the belt by means of the swiveling ear at its top furnishes a ready means for firing one shot at a time which is the usual method of blasting coal. It is light and so durable that nobody knows how long it will last. It has the approval of the U. S. Bureau of Mines.

minal upon either side forms a place of attachment for the lead wires. After these have been attached a T handle is inserted in the head of the instrument and given a turn. This actuates a spring, which in turn, drives a small magneto generating enough current to discharge a single cap, igniter or electric squib. This machine has been approved for safety, reliability and durability by the Bureau of Mines.



Copper Terminal, Copper-Welded, Can Be Applied Without a Mold

The welding electrode is said to be so made that the molten metal carried by the arc does not splash and splutter in the usual manner. Hence, this bond can be welded in place while being held against the rail by the welder's knee.

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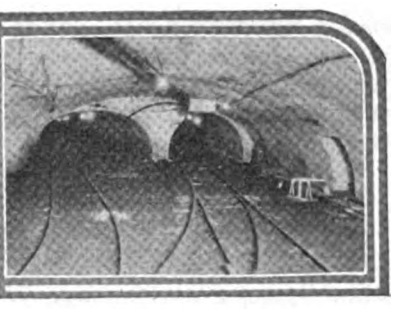
Underground Operation



Is the Finest Coal Dust as Hazardous as That Which Is Coarser?

Certain Laboratory Experiments Show That Dust of 15 to 25 Microns Diameter Gives on Ignition Greater Pressures than Coarser or Finer Dusts

Mining engineers have been disposed to regard coal dust as becoming progressively more dangerous as it becomes finer. The U. S. Bureau of Mines has quite generally supported this point of view. And, indeed, it seems almost ill-advised to question the conclusion, because, once questioned, there may be many who will fail to appreciate the fact that though the finest of the coal dust may be relatively less dangerous than that which is coarser it may nevertheless be true that the most dangerous coal dust is that which still may be regarded as exceedingly fine.

PEAK OF EXPLOSIBILITY

Apparently the most explosive coal dust has a diameter somewhere between 15 and 25 microns. Now a micron is 0.001 millimeter. Consequently the dust which is 0.015 to 0.025 millimeter, or about 0.006 to 0.01 in. in diameter is possibly the most explosive of any. Such dust might quite rightfully be termed very fine, in fact impalpable. To get an idea of the size of the particles from 102 to 169 would go side by side and yet only occupy a linear inch. To cover a square inch, imagining them exactly square, 10,332 to 28,674 would be required. As they may be of any shape the square inch would not be entirely occupied by the particles even then.

Say Craig M. Bouton and J. H. Hayner in bulletin 22 published by the Carnegie Institute of Technology, the U. S. Bureau of Mines and the Mining & Metallurgical Advisory Boards conjointly, entitled "Rate of Combustion of Coal Dust Particles: Part II—Effect of Particle Size Upon Pressure Increase Attending Flammation of Coal Dust" (price 50c.):

"It has been generally accepted that the explosibility of coal increases as the fineness of the dust is increased. Early tests conducted by the U. S. Bureau of Mines, in which the portions of a ground dust caught on 20-, 40-, 60-, 80- and 100-mesh sieves, respectively, were subjected to identical tests for explosibility in a large steel gallery, demonstrated the accuracy of this statement for the range of sizes tested.

"Clement and Scholl concluded that 'the finer the dust the greater is its flammability,' and supported their assertion by photographs of the flames produced by the ignition of suspensions of four different sizes of one dust. The same order of explosibility has been shown in tests in the Experimental Mine of the Bureau of Mines."

FINEST DUST NOT THE WORST

This bulletin describes experiments planned to obtain a quantitative relationship between the fineness of dust and its tendency to flare up when suspended as a cloud and ignited at some point. The experiments gave the unexpected result that flammability does not increase indefinitely with fineness but seems to reach a maximum, and then fall off or at least remain constant, as the fineness of the dust is still further increased.

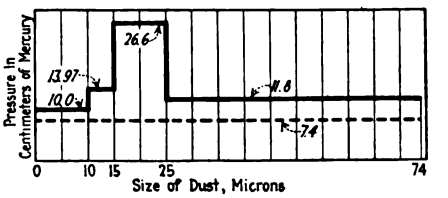
"This result, of course, cannot at this stage be held as valid except for the authors' own experimental conditions. Until further analysis of the various factors which enter into the procedure for obtaining the fine sizes of dust and into the method of testing for flammability, little more can be done than report the methods and results and indicate what seem to the authors to be the probable reasons for the apparent anomaly. In the meantime, experiments are being continued for the purpose of evaluating the various possibilities.

"It may be stated, however, that three possibilities—two chemical and one physical—are being considered in relation to this peculiar reluctance of very fine suspended dust to flame.

"First, it may be a property of coal that, when pulverized, the very fine dust is of a somewhat different chemical nature from the coarser dust, because of a greater friability of some constituents than of others.

"Second, the process of elutriation which suspends the dust in air for long periods, may result in a greater degree of oxidation of the finest particles than of the coarser sizes.

"Third, the very fine dust may tend to agglomerate or form groups of particles so that a cloud of this dust may actually be less completely dispersed in air than a coarser dust."



Shows Relation of Size of Dust to Explosive Violence

For each size in microns is plotted the average pressure in centimeters of mercury for all the tests made on the flammation of Pocahontas coal in the test recorded in Table II. The fact that the mixture of sizes from 9 to 74 microns gives a low result suggests that the mixing of sizes deadens the explosion.

"ELUTRIATION" BY AIR

Perhaps something should be said as to "elutriation." As used by the authors it is the segregation of certain sizes of coal dust by air. Of course, the finer sizes of coal dust cannot be separated by screens. It was observed that with Pittsburgh coal the fixed carbon increases as the fineness increases and the volatile content and ash decrease.

This decrease in the ash and volatile content with increased fineness was not unexpected, because the constituent of coal known variously as fusain, coal charcoal or mother of

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coal is extremely friable and of low volatile and ash content and would tend to accumulate in the finest portion of the coal. "On the other hand, the bony and slaty particles are more resistant to pulverization."

"The excess of ash in the coarsest fraction is, probably, also attributable to the presence of the hard mineral pyrite, a supposition which is strengthened by the similar distribution of sulphur." The oxygen is higher in the fractions than in the unsized coal, but emphasis should not be placed on that fact, for the oxygen determination, being by difference, is the most subject of any to errors.

Table I—Analysis of Coal-Dust Samples, Per Cent

Size (Microns)	Fixed Carbon	Volatile	Ash	H	C	N	O	S	Calories per Kg.
Pittsburgh									
Unsized	58.9	37.1	4.0	5.2	80.5	1.6	7.6	1.0	8,017
25–74	57.3	38.6	4.1	5.3	79.0	1.6	8.0	2.0	7,900
15–25	59.0	38.3	2.7	5.4	81.0	1.7	8.2	1.0	8,050
10–15	60.2	37.5	2.3	5.3	81.3	1.6	8.6	0.9	8,061
0–10	61.0	37.0	2.0	5.4	81.4	1.7	8.6	0.9	8,050
Pocahontas									
Unsized	78.3	17.9	3.8	4.4	86.7	1.2	2.9	1.0	8,394
25–74	74.6	19.9	5.5	4.4	84.3	1.2	3.4	1.2	8,130
15–25	74.3	21.7	4.0	4.5	85.1	1.3	4.2	0.9	8,256
10–15	75.6	19.7	4.7	4.4	84.9	1.3	3.8	0.9	8,206
0–10	78.2	18.4	3.4	4.5	87.3	1.3	2.6	0.9	8,394

Table II—Results of Duplicate Tests with Pocahontas Coal Dust

Diameter of Particles, Microns	Pressure Rise Upon Flammation, cm. of Mercury Test A	Test B
0–74	6.6	8.5
0–74	8.3	6.3
0–10	9.6	10.4
10–15	12.3	11.9
10–15	9.2	16.1
10–15	17.8	16.0
10–15	17.5	17.1
10–15	11.8	10.0
15–25	30.4	37.6
15–25	19.9	34.3
15–25	21.1	14.9
15–25	27.0	27.6
25–74	9.7	14.0

Reasonably Consistent

It might be well to give the last of the series of tests on Pocahontas coal, thus exhibiting the degree of consistency of the results and the nature of them. It is noticeable that the 15- to 25-micron coal gives the greater pressure on flammation. The dust from 25 to 74 microns in diameter gives a distinctly lower pressure—only half as great as that of dust of diameters ranging from 15 to 25 microns—and that is true also of the dust ranging from 0 to 10 microns in diameter. The figures given in this series of tests for Pocahontas coal have been averaged for each size and plotted so as to make the relation of the values more obvious. This the bulletin does not do, possibly because there is some slight possibility that such a graph might be misleading as not giving the values for any given size but for the range of sizes. If we knew what the values for any particular size actually were the graph might be somewhat different.

Slowly Yields Under Weight Like Wood Prop

Roof support always is a perplexing problem in mining work. Steel and concrete timbering for many years have gradually been taking the place of many of the less permanent wood posts and sets formerly employed. In either of these materials 3-piece sets may be readily constructed, but the simple steel mine prop appears to be far more difficult to fashion.

Hails from the Sarre

In the Sarre region, Charles Gascard, a well known mining engineer, has devised and put into use the prop shown in the accompanying illustration, which is taken from the *Colliery Guardian*. This shows the prop both extended and collapsed. In construction this prop is extremely simple, being composed of two similar pieces of H-beam clipped together so they can slide one upon the other by means of the clips *a* and *b*. Near the upper end of the bottom section and encircling both pieces is a yoke, *c*, which is fastened to this section of the prop by means of a bolt, *d*, that passes through a slot in the yoke. Along one side of the upper section is fastened a long tapering wood wedge faced with strap iron. A shorter and blunter wood wedge is driven between the yoke and the lower section of the prop. This binds and locks the two parts together securely. If desired, a wood cap piece will afford the needed cushioning effect in the manner shown.

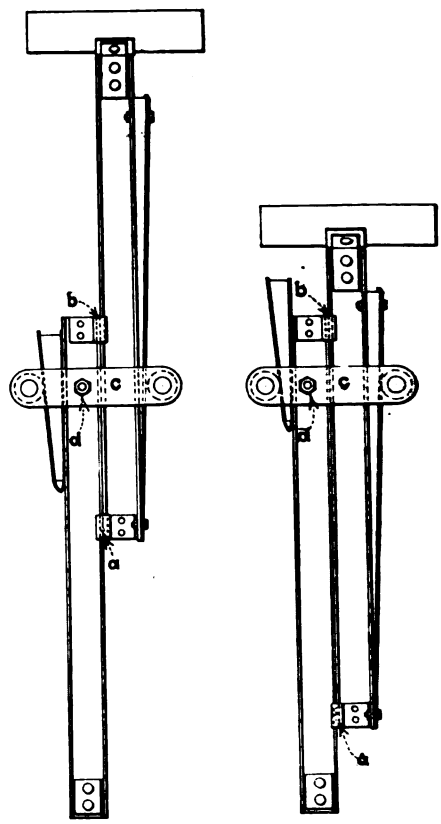
Yields Better Than Wood

When properly set in the manner just described this prop takes weight in exactly the same manner as a wood post under similar conditions. Whereas a wood prop would crush, however, the two parts of this prop slide slightly past each other. This action, however, because of the relative proportions of the two wedges, can take place only under extreme pressure. The prop will continue to support the roof until it has been telescoped in this way for almost 50 per cent of its length.

All mining men will readily appreciate the advantages of such a prop. Sudden falls are avoided, the prop itself lasts indefinitely, actual collapse of the roof is extremely rare and, in most cases, as soon as the superincumbent strata start to "work," movement of the two prop parts upon each other is accompanied by considerable noise, giving ample warning of roof conditions.

Knock Out Wedge; Use Again

This prop has been made in lengths ranging from 2½ to 13 ft. It was first put into practical use in 1918 and has now been tried in many mines and under widely varying conditions. It is asserted that no roof supports of this kind have been broken or bent in service. Nor have they fallen down when in use. As they are withdrawn by merely knocking out the blunt wedge they can be used over and over again. It is difficult to give actual comparative costs or savings, but it has been estimated that they pay for themselves in one year's use and thereafter return about 80 per cent of their cost yearly.



Takes Great Weight Without Failure

This shows the Sarre pit prop both extended and collapsed. Ready adjustment to height between wide limits, high resistance to collapse and great durability are the chief advantages of this new steel post.

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News Of the Industry



Wholesalers Want Positive Policy Instead of One of Negation Only; Statistics, Said One, May Cure All

Toledo, Ohio, June 8.—Determination of the stand to be taken on National Legislation came to the front this morning as the biggest problem confronting the American Wholesale Coal Association which opened its tenth annual convention at the Hotel Secor yesterday. Ira C. Cochran, commissioner, brought the problem home when he announced that a motion to place the Copeland bill before the Senate Monday had been defeated by only two votes.

Mr. Cochran made this statement in the course of a review of the legislative situation. There were, he said, three schools of thought on the question. One group opposed all legislation as dangerous and unwarranted. This position was supported by a line of resolutions adopted at preceding conventions. A second group found nothing objectionable in the Parker bill now before the House Committee on Interstate and Foreign Commerce. A third group agreed that the Parker bill itself was harmless but opposed it because it would establish a precedent for more drastic legislation in the future.

How Regulation Grows

The development of the present railroad regulation from a seemingly innocuous beginning and the manner in which supervision of the packing house industry had been extended, said Mr. Cochran, showed that the fears of the third group were not wholly groundless. Other amplifications of government power also made clear the danger of making a start. At the same time the speaker placed little confidence in constitutional objections pointing out that regulation had been enforced in many other cases where there was no apparent specific grant of authority to Congress.

The commissioner devoted some time to discussing the position of the Department of Commerce on the legislation now pending. He read a number of extracts from the testimony of Secretary Hoover before the House Committee, in which Mr. Hoover had favored a suspension of Congressional activity in order to give the coal industry a chance to work out its own salvation. The so-called Hoover amendments to the Parker bill made, he said, at the request of the committee, were improvements upon the original draft.

Dr. Allan H. Willetts, National Coal Association, expressed the hope that the statistical work undertaken in a modest way by the bituminous operators would make legislation unnecessary. The National Coal Association, he stated, was unalterably opposed to any Congressional action at this time.

In the general discussion that followed, many members wanted to know what appeals could be made to Congress to forestall legislation. Some of those objecting to regulation, nevertheless, held it would be improper to ask senators to vote against bringing up the Copeland bill for discussion. Mr. Cochran pointed out that a constructive attitude was needed, that the industry could not hope to defeat the organized movement in favor of regulation by a consistently negative policy. Formulation of a definite statement of the association's position will be left to the Committee on Resolutions which reports tomorrow.

Following the formal opening of the convention with an address of welcome by Fred J. Merry, mayor of the city, and a gracefully worded response by George M. Dexter, of New York, past president of the association, the delegates settled down to a consideration of the reports of the officers and committees. President Harry warned the organization th industry was facing the mos period in its history. The said, a real effort, foste minority of domestic cor northern New York and Ne to put the coal business i ernmental strait-jacket.

The coal industry, he wants the right to govern its no fear of the facts. It does to the truth being made pu coal men do fear, however terpretation of the facts. M did not believe that it was w that interpretation to son ment bureau in Washington.

Mergers Hit Wholesa

The indifference shown b wholesalers toward associa was the subject of complaint B. Starek, secretary-treasu annual report. The middl been hard hit by forced and liquidations and by mergers. portant, therefore, that actively engaged in the bu with the working members ganization and carry on the tive projects initiated by t and committees. By carefu ing the budget, he said, th position of the organization kept up to the standard of the year. The cash balance as was $10,695.

Ira C. Cochran, commiss viewed briefly the activiti Washington office in traffi legislative and trade extensio The wholesalers, he said, we through the National Indust League for a liberalization o ing rules and against an i tolerance allowances. His was doing effective work down delays in the prese undercharge claims by the r

The campaign for the adop metric system in this countr regarded seriously by indus is not, declared Mr. Cochra a real danger that Congres persuaded to enact legislat would entail tremendous los fusion to American busi association was now whether it would join in t campaign under way for a m of the Sherman anti-trust la the trade extension activ Cochran mentioned the wo organization in registering and promoting high standard Contact had been maintaine other national association industry. Mr. Cochran urg of the radio by local groups

Senate Refuses To Consider Copeland Bill

Senator Copeland of New York made an ineffectual effort June 7 to get his coal bill before the Senate on a motion to allow consideration of his bill for a period not to exceed two hours. The vote was 43 to 25. Thus the motion failed by the narrowest of margins to receive the two-thirds vote required for a special order of business. As this is written, June 8, the New York Senator is trying to bring his bill before the Senate in a way which will require only a majority vote for its consideration.

The Copeland bill provides for compulsory fact finding, authorizes the President to set up an emergency coal board and to declare operative the fuel distribution act of 1922, with an amendment providing that the Interstate Commerce Commission must comply with recommendations of the fuel distributor.

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act fuel-oil propaganda. The association, he said, was now studying proposals of finance corporations to finance deferred payments on domestic coal and would report to the Association thereon at a later date.

E. M. Platt, of Chicago, discussed the efforts of the Western members of the organization to induce the railroads to grant more liberal reconsignment and diversion rules. He cited the practices of the anthracite carriers at Chicago. These rules had been extended to Detroit. Tariffs which would again curtail the Detroit privileges, he announced, had recently been disallowed by the Interstate Commerce Commission.

The Chair appointed Leonard F. Leighton, Carbon Coal and Coke Co., Boston, Mass.; E. M. Platt, Platt & Brahm, Chicago, and George M. Kearns, Kearns Coal Co., Cincinnati, Ohio, as a committee on resolutions. Seth Morton, W. G. Morton Coal Co., Albany, New York; George M. Dexter, Dexter-Carpenter Coal Co., New York; Ira Bixler, Bixler Coal & Coke Co., Pittsburgh, Pa., and Fred Legg, Logan & Kanawha Coal Co., Cincinnati, were named as the committee on nominations.

Pulverized Coal

Joseph Harrington, consulting engineer, Grindle Fuel Equipment Co., addressed the convention this morning on "The Use of Pulverized Fuel." While all the technical problems have not been solved powdered coal is gaining ground in steam-generation. In 1920 the boiler capacity using pulverized coal was 40,000 hp. In 1924 the horsepower had increased to 210,000. Actual consumption now approximates 5,000,000 tons annually as compared with 8,000,000 in cement plants where powdered coal has been used in cement burning for many years. Before long he predicted consumption for steam generation would exceed that for cement burning.

Mr. Harrington's paper provoked lively discussion by coal men interested in selling to plants using powdered coal. The ash content, he said, was more important in running up the cost of pulverization than in affecting combustion. The highest type of underfeed stoker installation with clinker grinders but eliminating economizers and preheaters would give an overall efficiency of 82 per cent as compared with 87 per cent in a pulverized fuel installation. Control of the fine ash blown out of the stack still baffled the engineers.

Owen Meredith Fox, executive vice-president, Chicago Coal Merchants Association, was the last formal speaker of the session. His subject was retail and wholesale co-operation in the establishment of a fuel research institute.

This evening the annual banquet will be held at the Chamber of Commerce. Noah H. Swayne II, of Philadelphia, past president, will be the toastmaster. Edwin Morrow, ex-governor of Kentucky and member of the defunct railway labor board, will be the principal speaker, substituting for Senator Watson of Indiana.

Tomorrow morning the Association will consider the report of the Resolutions Committee and elect officers. G. H. Merryweather, vice-president, is talked of for president.

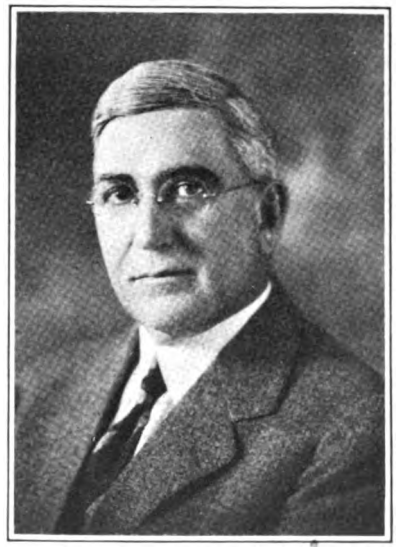
Move to End British Strike

Another move to end the British coal strike, now in its sixth week, was made a few days ago when Evan Williams, representing the mine owners, invited Herbert Smith, president of the Miners' Federation, to meet him informally at an early date. At the time the invitation was extended, Mr. Smith was in Brussels, attending a meeting of the Miners' International. Announcement was made on Saturday that the executives of the Miners' Federation would consider the invitation at a meeting on June 8.

No official announcement of the terms of discussion proposed by the mine owners has been made. Unofficial reports indicate that the operators are ready to abandon their demand for an immediate reduction in wages, but will insist on a longer working day. It is also understood that they may propose a small joint committee, with an independent chairman, to reconsider the entire mining question.

The Cannock Chase operators have offered to pay 1924 wages if the men will work eight hours.

Comment in advance of the meeting of the miners was pessimistic. On June 7, A. J. Cook, secretary of the Miners' Federation, stated that the miners' executive committee would probably agree on the day following to accept the invitation of the coal operators to a preliminary conference regarding the strike.



F. C. Hohn

Who addressed the Coal Mine Officials' Convention at Cincinnati on "Trackwork, Details and Maintenance." Mr. Hohn graduated from Purdue University in the School of Engineering and entered the service of the Baltimore & Ohio R.R. shortly afterwards. He continued in railroad maintenance and construction work until he entered railroad valuation work as chief of field parties with the Kansas City Southern Ry. Later he was with the Delaware & Hudson R.R. Co. in a similar capacity, becoming in 1917 division engineer of that company. In 1919 he had charge of mine and railroad track maintenance and construction for the Hudson Coal Co. He is now engaged in appraisal and consulting work.

Miners Overpowered in Mine of Alpha Cement Company

Within four hours after they had entered the mine of the Alpha Portland Cement Co. at Ironton, Ohio, the last of the eighty miners who had been overcome by a mysterious gas were rescued alive. The miners entered the mine at 7 a.m. and, on reaching the workings off the main shaft, 576 ft. underground, began to lose consciousness. Those nearest the shaft dragged themselves to the cage and were hoisted to safety, where they spread the alarm. Workers with rescue equipment worked continuously until everyone in the crew had been brought to the surface. From all that can be ascertained coal was not being mined at this shaft. According to reports, officials of the company denied that the strange gas which caused the miners to collapse on their way to their work was either blackdamp or methane.

Pennsylvania Coal & Coke Deficit Drops

A deficit of $56,963 for April is reported by the Pennsylvania Coal & Coke Co. and its subsidiaries. This is after charges, ordinary taxes, depreciation and depletion, but before federal taxes, and compared with a deficit for the same month last year of $62,648. For the first four months of this year the company reports a deficit of $77,170, against a deficit of $221,333 in the same period of 1925.

The final report on earnings for 1925 showed a deficit of $467,532, as against a deficit of $425,324 in the preceding year. In its preliminary report, published Jan. 27, the deficit was fixed at $461,294, as against $428,376. Net sales were $5,652,013, as compared with $5,959,582 in 1924. Other income reached $250,824, against $180,279 in 1924. Expenses, depreciation and depletion totaled $6,370,369, as against $6,565,095 in the preceding year. No provision is shown for federal taxes in either year.

Total assets for 1925 were $13,079,923 and total liabilities $12,271,296. Cash was $267,180; accounts and notes receivable, $761,068; United States Government securities, $120,950; inventories, $79,868; and coal on hand, $89,445. Of the current liabilities accounts payable were $457,800, while accrued interest and taxes reached $57,200.

Authorized to Continue Rates

The Interstate Commerce Commission on June 4 authorized nine railroads in the East to continue to charge rates on anthracite transportation from Pennsylvania to certain New England points without observing the long and short haul provisions of the Transportation Act.

The applications were not concerned with petitions for continuance of the emergency rates effective during the anthracite suspension.

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Feared That Stiff Stand of Operators May Speed Unfavorable Legislation

By Paul Wooton
Washington Correspondent of *Coal Age*

Opposition from coal operators to legislation providing for even an emergency mediation board has occasioned surprise among members of the House Committee on Interstate and Foreign Commerce. The committee is engaged in an effort to frame a bill that is satisfactory to a majority of its members. It is recognized that there is legitimate objection to arbitration, but some of the members fail to see how, in the event of a deadlock, there can be legitimate objection to mediation. The attitude of the operators has given rise to the thought that they may be planning a finish fight with the union and that they recognize a mediation board would interfere with such a program.

Some members of the committee have gained the impression that a part of the operators, at least, are much opposed to investing the President with any emergency powers for fear that it might spoil an opportunity to break the union—a purpose with which the committee is not in sympathy. As such an effort doubtless would mean a six months' suspension, at least, the non-union operators are viewing the alleged plan with satisfaction, it is suspected.

Some coal men have declared that the Department of Commerce proposed several changes in the original Parker bill, and that these changes have been embodied in the revised bill; that Secretary Hoover, though he said he was agreeable to a postponement of the consideration of legislative action until the next session of Congress so as to give the unionized section of the bituminous industry a chance to set up its machinery of mediation, nevertheless failed to make a request to the committee to let the matter rest until the next session.

What Some Have Alleged

They allege that a list of witnesses to be heard by the committee was given to the committee by the Department of Commerce and that an employee of the Department, the former secretary of the U. S. Coal Commission conferred with Representative Hamilton Fish of New York before the latter, one of the leading proponents of legislation, testified before the committee.

These reflections on Secretary Hoover are not clearly understood in view of his efforts against regulation of the industry. At the Department it is denied that anyone there advised on the drafting of the original Parker bill, which is a softening of the measure prepared by Senator Copeland. It is admitted that the bill as originally introduced was referred to the Department where alterations and additions were made to the bill to comply with the request, made while Mr. Hoover was testifying before the committee, that he put his suggestions in legislative language. Suggestions which had the effect of making the bill much less stringent were accepted by Chairman Parker and incorporated in his revised bill.

After Mr. Hoover had urged that consideration of legislation be suspended, to see if the industry itself could not set up mediation machinery and provide fundamental facts, the Association's unfriendly statement is expected to increase the determination in the committee to bring out legislation. In addition it has created the impression that the operators are bending their efforts to prevent legislation at any cost and that many of the producers are hoping for a strike. The fact that the Association does not hasten to attempt the development of a mediation plan and a system of fact-finding to cover all the production instead of the thirty per cent in the Association, also is expected to stimulate those who are demanding legislation.

What Congress Might Do

The thought also is expressed that, should there be a suspension next April of sufficient duration to demoralize business and to cause serious public inconvenience, Congress then would not be satisfied with "an emergency mediation board, an emergency authority to the Interstate Commerce Commission in coal distribution and, in failure of provision by the industry, a more effective service as to primary facts."

The least that might be expected under such circumstances would be the early enactment of the recommendations of the Harding Coal Commission, which constitute regulation with a vengence as compared with the regulation-free suggestions to be enacted only after failure of the industry to provide the safeguards for itself.

Eight Research Fellowships At Carnegie Tech

Eight research fellowships will be available in connection with the program of mining and metallurgical research at the Carnegie Institute of Technology for next year. According to the announcement, the fellowships are open to graduates of colleges, universities and technical schools who are properly qualified to undertake research investigations, and will be awarded for a ten months' period beginning Aug. 16, 1926.

Most of the research work will be conducted in the laboratories of the Pittsburgh station of the U. S. Bureau of Mines, adjacent to the campus. The subjects for investigation, as in the past, will be selected by two advisory boards composed of metallurgists, mining engineers, chemists and coal operators. At the end of the period of study, the results of the investigations, it is announced, will be published jointly by the Carnegie Institute of Technology, the Bureau of Mines, and the Advisory Boards.

Predicts "Cultural Wage" Instead of Living Pay

"Industry is approaching rapidly toward a new objective in this country," said Owen D. Young, chairman of the General Electric Co., speaking at the tenth annual meeting of the National Industrial Conference in the Hotel Astor, New York City, last week. "The 'cultural wage,' as compared to the old ideal of a 'living wage,' is what I refer to.

"By cultural wage I mean that which will enable a workman to develop his intellect, so that he will be in a position to take advantage of all opportunities offered by this country. When the time comes there will be equal opportunity for all men in the United States."

Mr. Young does not feel that industry will be less profitable because of the cultural wage. "Industry may become even more profitable, and industry should be profitable," he said.

"I have no sympathy for indictment of profits. They are the motive power of industry, and why deny it or apologize for it? I notice that when a governmental investigation of industry is being made the investigators always pick on the ones who are making profits. I think it ought to be the other way around, for when industries are making money it follows that they are also delivering a service people are willing to pay for."

Bittner Wins Rehearing of Charge of Contempt

The West Virginia Supreme Court of Appeals on June 3 granted Van A. Bittner, chief international representative of the United Mine Workers in northern West Virginia a rehearing on the charge of contempt of court. The rehearing will come up at the September term of the Supreme Court. The case was first heard in that court on a writ of error on March 9, and was dismissed on the ground that the court had no jurisdiction.

Bittner was sentenced to serve six months in jail on a charge of contempt toward an injunction granted by Judge I. Grant Lazelle of Morgantown, in the Monongalia Circuit Court. In an address in Farmington and later at a mass meeting in Fairmont, Bittner is charged with having flaunted the court's order in an attack on injunctions.

Points made by Attorney Thomas C. Townsend, attorney for Bittner were as follows: That the evidence did not show that Bittner had notice of the injunction and did not prove any contempt; that the Supreme Court in its former opinions did not recognize the distinctions between civil and criminal contempts and that "the defense, if any, was a constructive criminal contempt and under the statute entitled to have the charge reviewed."

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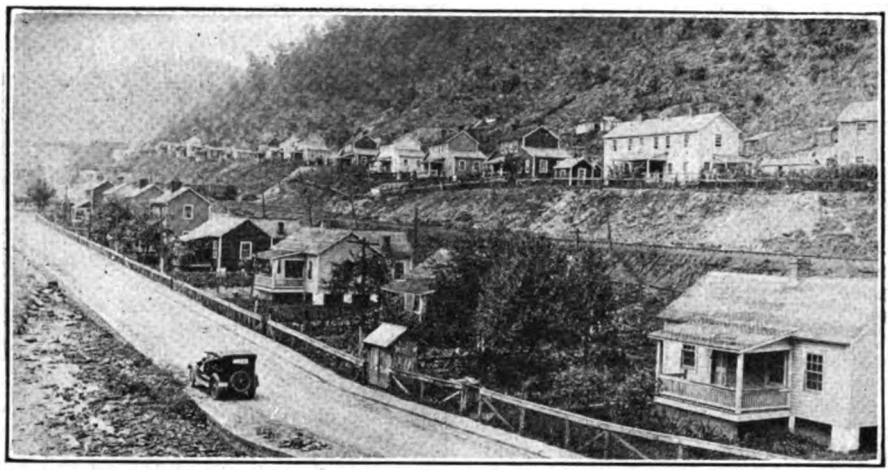

County Road in a Mountainous Mining Town of Pocahontas Region

Good roads, prosperity and the automobile go together. This shows the concrete road and sidewalk along the headwaters of Sand Lick leading into the town of Filbert in McDowell County, W. Va.

Seek Modified Metric System, Failing Real Thing

Other legislative proposals intended to bring about increased use of the metric system of weights and measures having failed, bills now have been introduced in the Senate and in the House proposing that the Department of Commerce be authorized "to establish commodity quantity units for general use in merchandising after 1935, standardizing the yard to the meter, the quart to the liter, and the pound to 500 grams, decimally divided."

The legislation, which was introduced in the Senate by Mr. Gillett, of Massachusetts, and in the House by Mr. Britten, of Illinois, carries a preamble pointing out that "the Constitution of the United States of America provides in Sec. 8, Par. 5, that Congress has the power to fix the standards of weights and measures"; that there now exists a lack of uniformity in the weights and measures of the United States," and, that "these are not standardized with the weights and measures used by the vast majority of nations of the world."

It was stated at the committee on coinage, weights and measures of the House that the committee would give no consideration to the measure at this session. In the Senate the bill was referred to the commerce committee, instead of the manufactures committee, to which such legislation has been referred before. As the commerce committee is one of the busiest of the Senate it is believed that no time could be found thus late in the session to consider the metric bill.

Development of Explosives Outlined in Lecture

Sir Frederick Nathan, K.B.E., chairman of the Explosives in Mines Research Committee of the Safety in Mines Research Board of England, spoke on "Mining Explosives" recently in the third of a series of six lectures on "Some Problems in the Mining Industry" given at the University of Sheffield, England, under the auspices of the Department of Mining.

Reviewing the history of explosives in general, the history of their adoption in mining, and finally the history of permissible explosives, Sir Frederick said the present methods of testing explosives for permissibility were only empirical and did not always reproduce the conditions met with in a mine. One of the difficulties encountered was the production of atmospheres of constant explosibility and ease of ignition. The greatest difficulty, that of obtaining an adequate supply of pure methane, was now being overcome at the Rotherham testing station by producing it from wood pulp by fermentation.

The fact that an explosive was on the permissible list, said Sir Frederick, was not a guarantee that it would not cause ignition of an inflammable atmosphere. It merely certified that the explosive was safe in comparison with other explosives. No explosive is safe. The objects of present research are to produce explosives which are less liable to produce ignitions of explosive atmospheres than existing explosives and which would bring the coal down in a manner similar to or better than blasting powder. With that object in view, fundamental research is being carried out on both the inflammable mixtures and the explosives.

Number and Annual Output of Soft-Coal Mines in the United States in 1924, by Classes[a]

Exclusive of Wagon Mines

State	Class 1, Producing Over 200,000 Net Tons: No.	Per Cent of Total Mines	Per Cent of State Output	Class 2, Producing 100,000-200,000 Net Tons: No.	Per Cent of Total Mines	Per Cent of State Output	Class 3, Producing 50,000-100,000 Net Tons: No.	Per Cent of Total Mines	Per Cent of State Output	Class 4, Producing 10,000-50,000 Net Tons: No.	Per Cent of Total Mines	Per Cent of State Output	Class 5, Producing Less Than 10,000 Net Tons: No.	Per Cent of Total Mines	Per Cent of State Output	No. of Mines	State Output (Net Tons)
Alabama	21	8.9	42.9	27	11.3	20.2	49	20.6	20.3	90	37.8	15.4	51	21.4	1.2	238	19,130,000
Alaska	...	....	....	...	....	....	1	12.5	51.6	1	12.5	35.3	6	75.0	13.1	8	100,000
Arkansas	...	....	....	1	1.2	8.4	7	8.1	31.2	28	32.6	48.2	50	58.1	12.2	86	1,452,000
Calif., Idaho, Nebr. and Oregon	...	....	....	...	....	....	...	....	....	...	....	....	9	100.0	100.0	9	17,000
Colorado	15	6.5	37.0	21	9.1	29.1	27	11.7	18.3	47	20.3	12.8	121	52.4	2.8	231	10,444,000
Georgia	...	....	....	...	....	....	1	50.0	97.3	...	....	....	1	50.0	2.7	2	75,000
Illinois	106	21.7	77.7	59	12.1	12.1	58	11.9	6.4	88	18.0	3.0	177	36.3	0.8	488	68,323,000
Indiana	37	14.9	55.8	33	13.3	22.8	39	15.7	13.1	57	23.0	6.9	82	33.1	1.4	248	21,480,000
Iowa	4	1.6	22.4	11	4.3	27.9	14	5.5	17.8	49	19.1	23.4	178	69.5	8.5	256	5,468,000
Kansas	2	0.9	10.8	7	3.1	21.2	18	7.9	29.9	48	21.0	25.4	153	67.1	12.7	228	4,248,000
Kentucky: Eastern	46	9.3	38.1	84	17.0	31.7	92	18.5	18.7	142	28.6	10.2	132	26.6	1.3	496	36,127,000
Western	8	4.9	22.8	25	15.2	37.4	23	14.0	18.4	62	37.8	19.7	46	28.1	1.7	164	9,020,000
Maryland	...	....	....	4	4.3	23.5	7	7.5	21.4	37	39.8	47.8	45	48.4	7.3	93	2,134,000
Michigan	2	22.2	57.6	1	11.1	17.5	2	22.2	17.4	3	33.3	7.1	1	11.2	0.4	9	831,000
Missouri	...	....	....	...	....	....	17	13.4	48.9	40	31.5	39.9	70	55.1	11.2	127	2,481,000
Montana	3	4.4	50.2	5	7.3	28.9	4	5.9	9.0	8	11.8	6.7	48	70.6	5.2	68	2,905,000
New Mexico	2	4.8	26.6	11	26.2	51.6	6	14.3	14.4	7	16.7	6.0	16	38.0	1.4	42	2,786,000
North Carolina	...	....	....	...	....	....	...	....	....	2	100.0	100.0	...	....	....	2	57,000
North Dakota	...	....	....	3	2.3	34.2	3	2.3	16.7	17	12.9	29.6	109	82.5	19.5	132	1,201,000
Ohio	43	5.7	43.2	56	7.5	25.6	59	7.9	13.7	172	22.9	13.2	420	56.0	4.3	750	30,473,000
Oklahoma	...	....	....	3	3.2	15.7	8	8.5	23.1	45	47.9	53.1	38	40.4	8.1	94	2,330,000
Pennsylvania	181	8.5	54.1	196	9.2	20.9	210	9.9	11.6	591	27.9	10.8	944	44.5	2.6	2,122	130,634,000
South Dakota	...	....	....	...	....	....	...	....	....	...	....	....	16	100.0	100.0	16	12,000
Tennessee	...	....	....	13	9.4	39.4	15	10.8	25.5	56	40.2	30.8	55	39.6	4.3	139	4,557,000
Texas	...	....	....	1	2.3	9.7	5	11.4	24.8	31	70.4	61.5	7	15.9	4.0	44	1,147,000
Utah	8	20.5	53.1	9	23.1	32.4	7	17.9	11.3	4	10.3	2.8	11	28.2	0.4	39	4,488,000
Virginia	22	19.2	69.3	6	5.2	8.1	20	17.4	13.6	34	29.5	7.9	33	28.7	1.1	115	10,693,000
Washington	5	8.6	48.0	5	8.7	24.5	6	10.3	15.6	12	20.7	9.5	30	51.7	2.4	58	2,654,000
West Virginia	132	10.8	41.8	216	17.7	30.5	236	19.3	16.4	369	30.3	10.3	267	21.9	1.0	1,220	101,663,000
Wyoming	9	14.5	38.5	22	35.5	47.7	9	14.5	10.5	7	11.3	2.9	15	24.2	0.4	62	6,757,000
Total	646	8.5	49.0	819	10.8	23.8	943	12.4	14.1	2,047	27.0	10.9	3,131	41.3	2.2	7,586	483,687,000

(a) Note that this table represents mines, not companies, for which the showing would be very different.
Statistics compiled by U. S. Bureau of Mines.

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Lignite Produced in North Dakota in 1924[a]

(Exclusive of product of wagon mines)

County	Net Tons: Loaded at Mines for Shipment	Net Tons: Sold to Local Trade and Used By Employees	Net Tons: Used at Mines for Steam and Heat	Net Tons: Total Quantity	Value: Total	Value: Average per Ton	Number of Employees: Underground: Miners b	Number of Employees: Underground: All Others	Number of Employees: Surface	Number of Employees: Total	Ave Nur of D Wor
Adams	36,975	6,856	1.084	44,915	$102,000	$2.27	33	13	10	56	1
Bowman	20,679	6,207	3,600	30,486	53,000	1.74	24	6	8	38	1
Burke	299,779	5,476	5,4,6	310,679	684,000	2.20	.....	.....	156	156	1
Burleigh	115,592	13,204	6,134	134,930	283,000	2.10	124	38	43	205	1
Divide	29,053	7,960	.....	37,013	80,000	2.16	31	7	9	47	1
Grant	40	5,995	.....	6,035	13,000	2.15	4	4	2	10	1
Hettinger	18,404	7,212	435	26,051	56,000	2.15	38	9	13	60	1
McLean	65,486	24,532	1,351	91,369	205,000	2.24	59	13	41	113	1
Mercer	255,532	3,599	6,787	265,918	517,000	1.94	110	35	96	241	1
Morton	21,216	24,702	2,147	48,065	87,000	1.81	29	6	13	48	2
Montrail	.....	3,286	.....	3,286	9,400	2.86	7	.....	.....	7	1
Stark	30,202	21,358	1,940	53,500	84,000	1.57	46	20	18	84	1
Ward	24,385	35,793	.....	60,178	131,000	2.18	72	14	15	101	2
Williams	21,816	41,244	492	63,552	121,000	1.90	66	16	9	91	1
Other countries c	18,828	5,622	100	24,550	47,600	1.94	28	5	8	41	1
Total	957,987	212,994	29,546	1,200,527	2,473,000	2.06	671	186	441	1,298	1

a Note that the coal statistics of the Geological Survey for a given year include only the mines that had an output in that year. Many mines tha 1923 produced no coal in 1924; moreover, many of the mines that did produce in 1924 worked for a short time only. The number of active mines c size in North Dakota was 144 in 1923 and 132 in 1924.
b Includes also loaders and shotfirers.
c Billings, Dunn, Golden Valley and Oliver.
Statistics issued by U. S. Bureau of Mines.

130 Mine Workers Die From Accidents in April; Month's Death Rate Low

Accidents at coal mines in the United States during April, 1926, according to reports received by the U. S. Bureau of Mines from state mine inspectors, caused the death of 130 men; 101 occurring in bituminous mines and 29 in anthracite mines. The death rate per million tons of coal mined during the month was 2.69, based on a production of 48,296,000 tons, as compared with 3.90 for April, 1925, based on an output of 40,994,000 tons. The rate for bituminous coal alone was 2.52, with a production of 40,079,000 tons, and that for anthracite was 3.53 and a tonnage of 8,127,000, as compared with 3.53 and 5.62, respectively, for April of last year, with a production of 33,702,000 and 7,292,000 tons.

During the first four months of 1926, 814 men lost their lives from accidents in the coal-mining industry. The production of coal in this period was 205,718,000 tons, showing a death rate of 3.96 as against 4.14 for the same four months in 1925.

Accident Rates, United States, with Causes

	Year 1925	Jan.-Apr. 1925	Jan.-Apr. 1926
All causes	3.811	4.144	3.957
Falls of roof and coal	1.842	1.946	1.774
Haulage	.615	.603	.631
Gas or dust explosions	.590	.666	1.001
Explosives	.174	.226	.127
Electricity	.144	.142	.112

No major disasters occurred in April but there were seven in the preceding months of 1926, which caused the loss of 190 lives. There were 4 major disasters causing the death of 96 men during January to April in 1925. The fatality rates based exclusively on these figures were 0.924 and 0.504 for the four-month period in 1926 and 1925.

Considering accidents by principal causes for the period January to April, a reduction is noted in the per-million-ton fatality rates in all of the principal classes of accidents except those caused by gas or dust explosions, which showed a marked increase. All of the major disasters thus far in 1926 have been caused by explosions. The comparative rates for the principal causes of accidents were as set forth in the accompanying table.

Brotherhood Mining Company Elects Officers

At the board of directors' meeting of the Coal River Collieries Co., owned and controlled by the Brotherhood of Locomotive Engineers, held in Huntington, W. Va., on June 1, J. T. Dunigan was re-elected president. Other officers elected were: First vice-president, T. C. Songer, Ashland, Ky.; second vice-president, N. J. Burns, Wilkes-Barre, Pa.; secretary-treasurer, G. G. Huffman, Cleveland, Ohio; and assistant secretary-treasurer, J. Rex Cooper. E. C. Glass of Huntington, W. Va., was named as chairman of the board of directors and the executive committeemen chosen included Messrs. Dunigan, Glass and Huffman. E. C. Sandberg of Charleston, W. Va., was chosen superintendent of the company's Boone County holdings.

World Conference at Pittsburgh to Stud Better Uses f

An international conference will be held at the Carnegie of Technology in Pittsburgh of November, 1926, accordi announcement of plans now vised by Dr. Thomas S. Baker, of the Institution.

Several prominent scientists many, France and England h or will be invited to participa discussions, according to Baker's plans, and in additio will be presented by a numbe ing American engineers and representing the latest disco connection with the distillatio its byproducts, new methods ducing energy from coal, etc.

Some of the topics that receiving the consideration dent Baker and his associates cussion during the conference low temperature carbonization generation of power at th domestic use of coke, and wat vs. coal energy.



Dwellings and Garages in West Virginia Mining Town

Mining today is one of the best paid callings known and the miner dema receives better housing than most other people. Note the dwellings in the ba and the garages—row on row—in the foreground. This is part of the village of McDowell County, West Virginia, the No. 4 property of the United States Coal &

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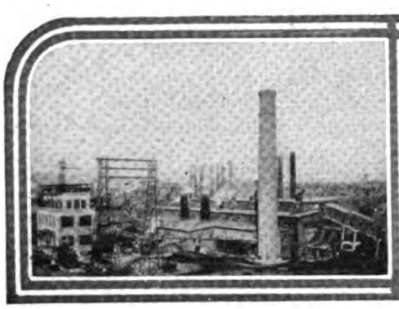

News Items From Field and Trade



ALABAMA

Install Big Conveyor Belt.—The Brookside-Pratt Mining Co. is installing a conveyor belt at its new Warrior River opening for conveying the coal from inside the mine to the tipple. Deister concentrating tables are also being installed. Other improvements are being made with a view to largely increasing production and improvement in the quality of the product.

COLORADO

Frank L. Bishop has resigned as receiver for the Routt-Pinnacle Coal Co. and L. B. Bromfield has been appointed by Judge Dunklee of the District Court to succeed him.

ILLINOIS

Groveland Takes New Quarters.—The Groveland Coal Mining Co. has removed its office from the Straus Building in Chicago to Suite 708 Bell Building. The company also has opened an office in the new Stark Building, Louisville, Ky., in charge of R. W. Hunter, vice-president, directing Kentucky operations.

The Bush Mining Co., a subsidiary of the Missouri Pacific R.R., is about to start sinking a new mine between Bush and Elkville. The mine, it is said, will be of large capacity and will be located almost exactly on the Jackson-Williamson county line.

Extensive Stripping Planned.—Representatives of the Union Electrical Coal Co., of Danville, have been exercising options on coal lands in the vicinity of Duquoin for the past month and have already paid out about $100,000 to farmers in the vicinity on what will ultimately be a million-dollar deal if all options are exercised, as it is presumed they will be. The options and plans which have been completed foreshadow the opening of one of the largest strip mines in the world within the next 18 months. The company will remove approximately 40,000,000 tons from the acreage now under lease and employ from 275 to 300 men.

Dullness Shrouds Herrin.—After operating almost steadily for fifteen years, Mine A, of the Chicago, Wilmington & Franklin Coal Co., at Herrin, closed down indefinitely on May 29. One mine in the Herrin district, owned by the Jeffrey Coal & Mining Co., is working now. Mine A, which employs in the neighborhood of 740 men, probably will reopen later in the summer.

Examiners' Itinerary.—A. D. Lewis, of Springfield, Director of the Department of Mines and Minerals of Illinois, announces the following June itinerary of the Illinois Miners' Examining Board: West Frankfort, 10th; Duquoin, 11th; Centralia, 12th; Litchfield, 14th; Springfield, 15th; Taylorville, 16th; Danville, 17th; La Salle, 18th, and Peoria, 19th.

Coal Roads Merge.—The Illinois Commerce Commission on June 2 authorized the Missouri Pacific RR. to purchase all of the outstanding capital stock of the Marion & Eastern RR. Co. for $190,000. It is believed that the taking over by the Missouri Pacific of this coal road will result in the re-opening of several coal mines along the Marion & Eastern. The direct connection through the Missouri Pacific System to the markets of the Central West should prove beneficial to the mines.

The New National mine at Belleville, Ill., reopened on June 3. It employs 150 workers. The reopening is in anticipation of a late Summer demand for coal.

More Stripping Forecast.—Approximately 10,000 acres of farm land west and southwest of Duquoin, Ill., have been purchased by the United Electric Company of Danville, Ill. and New York. The company is said to have paid more than $150,000 for 1,400 acres of the land and it is expected that the entire acreage will cost $1,000,000 or more. The company will strip the coal. The acreage embraces 40,000,000 tons.

The Binzel mine at Farmington, was sold May 20 at bankrupt sale and brought only $12,922. It is said to be questionable whether the United States court would approve the sale.

The closing down of Wasson coal mine No. 1 east of Harrisburg, Ill., has been followed by the opening of Wasson mine No. 2 just west of Carrier Mills. This mine has been closed for about two years.

The main offices of the Brewerton Coal Company was removed June 1 from Lincoln, Ill., to Chicago. This company operates mines at Lincoln, Springfield and in southern Illinois, with branch offices at Kansas City and Chicago. The Central Illinois mines have become the smallest part of the Brewerton enterprises and the main offices will in the future be maintained in Chicago. Most of the staff in the Lincoln office is removing to Chicago, as is also W. A. Brewerton.

The Peabody No. 6 mine, at Springfield, hoisted 4,727 tons of coal, May 26, breaking the record in the Springfield sub-district.

IOWA

The Rock Island Railroad is erecting a new coaling station at Washington, at a cost of $50,000.

KANSAS

Blame Blast on Sparks from Pump.—Inspectors attribute the explosion which killed four men in the Cigaret mine near Cherokee, on May 14, to the ignition of gas by sparks from the brushes of an electric pump in operation at the bottom of the pit. The mine was partly wrecked March 13 by a gas explosion. The four men killed May 14 were pumping out the mine preparatory to making repairs to permit the resumption of digging. The mine was being opened by D. W. Bash, of Joplin, Mo., operating as the Lightning Creek Coal Co.

Shovel Mine to Open Soon.—Operation of the new steam-shovel mine of the Kelly-Carter Coal Co. on what is known as the No. 9 lease of the Sheridan Coal Co., a mile north of Mulberry, is scheduled to begin July 15. The company has bought a large shovel, which was installed a year ago at the mine of the Superior Coal Co., a mile east of Weir. The 35-B type loader is on the ground and a loading tipple is being erected. The tipple will be electrically operated. The plant is near the Kansas City Southern R.R. and has a tract of 135 acres of 3-ft. coal with a 20 to 25-ft. overburden. When in full operation it will have a daily production of 600 tons.

The Kansas state Commission of Forestry, Fish and Game has given approval for a 400-acre fish and game preserve five miles north of Pittsburg on land cut up by coal stripping operations. This is part of the state program for reforestation and fish and game protection adopted by the last legislature at the instance of the Izaak Walton League. Pittsburg business men and other citizens are buying the land from the Pittsburg & Cherokee Coal & Mining Co. to present it to the state. It is thought this may be the beginning of a system of preserves in which the ponds formed in old strip pits can be linked together and stocked with fish, while the land can be beautified with trees and shrubbery.

KENTUCKY

The Beaver Coal Mining Co. has been organized to take over the operation of the Blackburn Coal Co., Alphoretta. The company has 200 acres under development at present, and more available land. The daily output of the company is 250 tons.

The Asher Coal Mining Co. will issue $850,000 bonds to retire $285,500 of

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5 per cent first mortgage bonds of the company and approximately $800,000 *floating* debt and to complete the purchase of 16,000 acres of land located in Clay and Leslie counties.

Incendiary fire is believed to have been responsible for the loss of stables, *mules*, powder house and about fifty kegs of powder at the Rhea Coal Co. plant, seven miles from Madisonville, on May 24, at an early hour in the morning.

Begin Work on River Control.—Work is well under way on a new combination power dam and river-stage control at Louisville, which it is said will insure boating stages between Louisville and Cincinnati, to bring coal down as far as Louisville. The dam is being built jointly by the government and the Louisville Hydro Electric Co.

Twenty-eight cases in equity involving titles to coal, oil and timber lands in eastern Kentucky are before the session of the Federal District Court at Catlettsburg, which started work on May 24, under Federal Judge Cochran.

Long Litigation Ended. — Litigation which has been in progress for over a year to determine the control of the Carr's Fork Coal Co., of Perry County, came to an end May 26, when Judge Hurley approved an entry dismissing an injunction suit brought by Harry E. Bullock, of Lexington, and L. H. Stone, of Cincinnati, to prevent B. Kemp Littlepage from selling certain stock of the Wallin's Creek Coal Co., of which Littlepage was the liquidating agent. There is a long story connected with the manner in which this became a balance of power between the opposing factions in the Carr's Fork Coal Co., and while Littlepage was dickering with members of the factions they composed their differences and found means by which the company could proceed. The Carr's Fork company is a $1,000,000 concern.

Two residences belonging to the Lee Land Coal Co., Island, were destroyed in a $50,000 fire about the middle of May.

Takes Over Blackburn Mines.—The Beaver Coal Mining Co., Ashland, of which E. W. Smith is secretary and treasurer, has taken over the operation of the mines of the Blackburn Coal Co., Alphoretta, and has 200 acres under development at present, with daily output of 250 tons.

Plans Big Bond Issue.—The Asher Coal Mining Co., Lexington, of which T. J. Asher is president, is reported to be about to issue bonds for $850,000, with which to retire outstanding bonds, clean up floating debt and purchase 16,500 acres of coal land in Clay and Leslie counties.

Three thousand acres of mineral land in Hopkins County has been leased by the Hopkins County Mineral & Mining Co. and will be developed in the near future, according to announcements from company officials. Mineral specimens are being analyzed and reports on the quantitative values of the mineral deposits are expected in the near future. Lessors of the property are J. D. Mitchell and J. F. Montgomery, both of Providence, Ky.; and Louis Corberger, Colorado mining man.

In the Federal Court at Louisville Judge Charles I. Dawson has taken under submission testimony in the Federal Government tax case against J. W. Lam, Greenville, Ky., last surviving stockholder of the Hillside Coal Co., for $20,017.54 in income taxes alleged to be due for the years 1916, 1917 and 1918. The company was liquidated in 1919, but assets alleged to have been recovered by Lam from the company are the basis of the suit.

Strike Declared.—The first labor trouble in western Kentucky for some time is that of 350 miners and workmen of the Norton Mining Co., Nortonville, Ky., who declared a strike on June 2, because of a controversy regarding working conditions. The company is controlled by the Monroe-Warrior Coal & Coke Co. interests of Alabama.

The Louisville & Nashville R.R. Co., has announced the letting of additional equipment contracts totaling $2,400,784, making $11,100,784 contracted on new equipment since December. Included in the contracts are thirty-two locomotives, of which twenty-four are big Mikado freight types, for heavy hauling.

MARYLAND

Strike Preparations?—The Jones & Laughlin Steel Corporation, it is understood, will establish a large coal reserve on Neville Island. The last time the company established a coal reserve was during the strike of 1922. The move may represent only a desire to have a sufficient supply of coal on hand, especially as the company consumes more coal now in additional ovens at its by-product plants, but in various circles there are references now and then to the possibility of a strike of the union mines next year. According to local coal men, a glimpse of the coal pile of the United States Steel Corporation at Wilson, near Clairton works would almost lend the belief that there is enough coal stored there to sup country. Incidentally, the ste pany mines of the district are al

The Chesapeake & Ohio ca Maryland, will remain idle for t year, according to the Canal Co., which operates the canal. no coal business—that's the caus

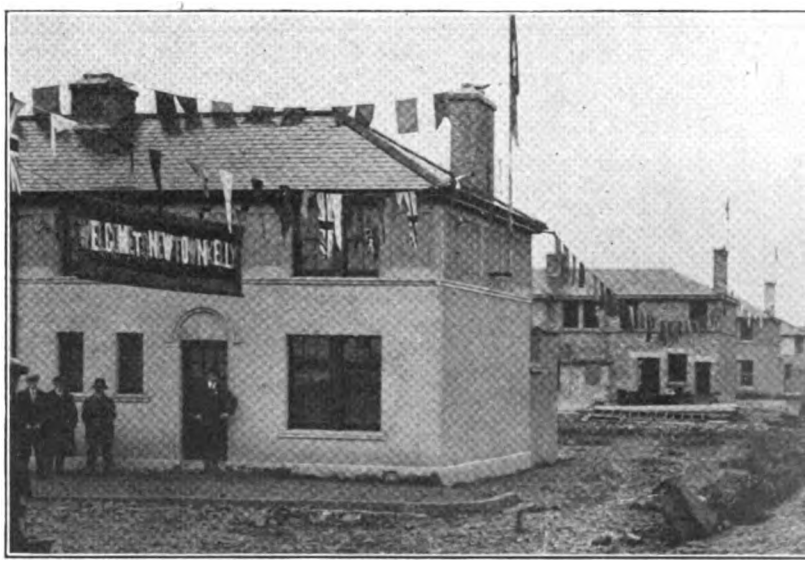
The Board of Awards of Ba has announced the placing of c for 60,000 tons of semi-bitumin 4,400 tons of anthracite to ta of municipal department needs year. The price of this coal gated $347,000. The head of reau of Standards stated that the new contract anthracite w the city 40c. per ton more th paid under old contracts. The no advance in the price of th bituminous coal delivered in lots from the mines.

MINNESOTA

Exchange Has Tenth Birthda Twin City Coal Exchange, comp independent dealers, celebrated it anniversary May 25 with a di the St. Paul Athletic Club. Th ing was in the nature of a cele over the outcome of a laws cently tried before the U. S. Court of Appeals requiring railr pay full price for coal lost in J. R. Hartzell was the p speaker.

Concrete Replaces Wood Pie Clarkson Coal & Dock Co. has a a contract for the building of of concrete piers and sheet pilin dock at Duluth to replace wood struction. The work will be co within a month and is estima cost $25,000.

Ford Control Complete.—Th interests are now sole owners dock property of the bankrupt S Coal Dock Co. at Duluth. Th Motor Co. acquired the mortgag of the defunct company and by $80,000 to the receivers to co



A Street Corner in Newtownkelly, Coalisland, Tyrone County

Decorated for a festival. Newtownkelly is a "captive mine" like most of the this country, for Sir Samuel Kelly, the owner, is interested in a large coasti serving ports in the British Isles. Each house has a parlor, kitchenette, sculler bedrooms, bath and washboiler.

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terest, and $130,000 to the Brownhoist Co. of Cleveland who built the bridges at the time the dock was remodelel three years ago, it now has complete control. There was no opposition to the sale. It is understood that the Ford interests plan many improvements in the dock during this season.

Incorporates Dock Company.—The St. Louis Dock Co., a United States Steel Corporation subsidiary, has been incorporated to operate the coal dock of the Duluth, Missabe & Northern R.R. That dock will continue to be used to store and handle bituminous coal for the use of the Minnesota Steel Co. and the Universal Portland Cement Co. at Duluth and the Oliver Iron Mining Co. and the Duluth, Missabe & Northern R.R., Steel Corporation subsidiaries.

Receivers Appointed.—Receivers were named last week in Minneapolis, in the federal court for the Flour City Fuel & Transfer Co., one of the large independent retail concerns of the city. The receivers were P. F. Herrly, of the Pittsburgh & Ashland Coal Co. and J. D. Eckstrum, of the Flour City company. The action was brought by the Pittsburgh & Ashland Co. which declares the property to be worth $1,000,000 and the accounts due to be $750,000. The application was made at the request of a creditors' committee. The action was not contested by the coal company.

MISSOURI

The name of the Midland Coke & Iron Co., of St. Louis, has been changed to the St. Louis Coke & Iron Co. The name was changed in order to avoid conflicting with a company of a similar name.

NEW JERSEY

The Halden-Kelley Coal Co., Inc., of Clearfield, Pa., has moved its Eastern office to the new Military Park Building, Newark, N. J. This office is in charge of Mr. Halden, president of the company, who will supervise the purchasing for the three retail yards of the company and also for wholesale distribution.

NEW YORK

The str. "Harvey J. Kendall," of the George Hall fleet, Ogdensburg, which sank in 20 ft. of water in the St. Lawrence last fall, has just been raised and will be refitted for re-entering the coal and general trade. She has a wood hull of 500 tons capacity and was built in 1892.

OHIO

Will Ask for Coal Bids.—The City Council of Hamilton, Ohio, has authorized Service Director G. C. Mitchell to advertise for bids for 20,000 tons of West Virginia or Kentucky mine-run or screenings for the municipal light plant and the water works departments. The Board of Education of Hamilton will open bids June 17 for 2,000 tons of bituminous lump, egg or mine-run and 2,000 tons of smokeless lump, egg or mine-run for the Hamilton schools, to be delivered at the various buildings. Charles F. Holdefer is clerk of the board.

The Wheeler Coal & Coke Co., Columbus, recently chartered with a capital of $50,000, has been organized by the election of W. E. Wheeler, president and manager; C. E. Wheeler, vice-president, and E. A. Wheeler, secretary and treasurer. The company formerly operated as a partnership and does a general jobbing business. Negotiations are in progress to take over a mine in the Blue Creek district of the Kanawha field in West Virginia. The company has the sale of the output of several other Kanawha district mines.

The annual report of the Cincinnati Operating Committee of the American Railway Association credits this city with being one of the largest soft-coal centers in the United States. Last year the railroads delivered a total of 638,701 car loads of coal at Cincinnati. Of this amount, 104,147 was consigned for further shipment to the Great Lakes. The C. & O. delivered 313,314 loads of coal, the L. & N. 292,519, the Norfolk & Western 27,164 and the Southern 5,704 car loads. Over 900,000 empty freight cars were received in 1925.

The Cincinnati Coal Exchange is negotiating with Station WSAI, operated by the U. S. Playing Card Co. in that city, for the broadcasting of ten weekly messages to householders emphasizing the urgency of stocking coal during the summer. The geological story of coal also will be told. Those on the committee of arrangements for this feature are Calvin Holmes, Armour A. Sizer, W. J. Magee, Burke H. Keeney, Jim Reilley, George Kearns and the president, Nolan L. Mahan.

Included in the last pay of the miners of the Lorain Coal & Dock Co. in eastern Ohio, was a statement from R. L. Wildermuth which contained the following: "Every ton of lake coal sold in 1925 resulted in a loss to this company. We cannot afford to continue this policy and as a result we feel it our duty to notify our employees that our contracts for lake tonnage have been lost and the business has gone to West Virginia." The company has three mines down, and two others that are still working, are expected to go down soon.

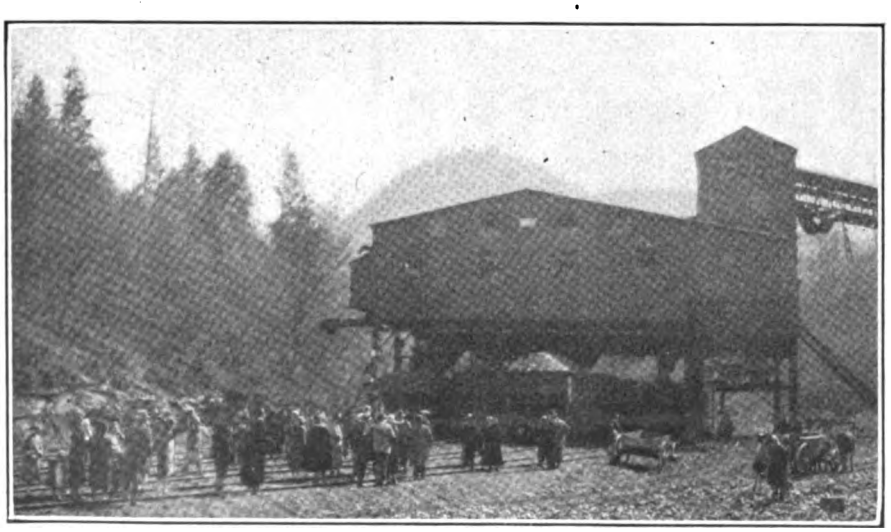
Ohio Men Refuse Cut.—It is reported that the West Wheeling Coal Co., of which Henry Johnson is general manage, offered its miners in the Bridgeport district a proposition entailing a 20-per cent cut in wages to reopen the mines, but the proposal was turned down. Many of the men are said to have gone to southern West Virginia, where the wage rate is even lower than the 20-per cent cut would have meant from the Jacksonville scale.

Retailers Plan Open Meeting.—The Columbus Retail Coal Merchants' Credit Association, composed of the leading dealers of the city, has arranged for an open meeting June 7, and operators and jobbers of Columbus have been invited to attend. The association has now established permanent headquarters in the Chamber of Commerce Building with Ernest E. Althoff in charge as secretary and manager of the credit bureau. Steps are being taken to work in co-operation with the credit bureau of the Columbus Retail Merchants' Association.

Columbus Awards School Contracts.—The Columbus Board of Education has awarded contracts for 15,000 tons of Hocking lump, delivered at the various school buildings at $3.94 per ton. At the same time the Colonial Coal Co. was given a contract for 2,000 tons of West Virginia nut, pea and slack at $3.58 per ton. The total amount involved in the two contracts is $66,260.

PENNSYLVANIA

Fined for Mining Law Violation.—Charged with carrying cigarettes into the Edenborn mine, William Jackson, a negro, was arrested and committed to the Fayette County jail on oath of State Mine Inspector Edward E. Good. He was later released under a $200 bail.



Watching a Run for Their Money

Some of the stockholders of the Coal River Collieries Co. watching coal being loaded at the four-track tipple of No. 4 mine near Seth, W. Va. The coal is carried down the mountainside on an apron conveyor. On the annual inspection trip certain of the stockholder saw that "coal" was used to surface the roads. Later they learned that this "coal" was refuse.

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Mine Exams in July.—In co-operation with the Carnegie Institute of Technology a special examination for firebosses, assistant mine foremen and mine foremen will be held by the Pennsylvania Department of Mines on July 12, 13 and 14, at the Pittsburgh educational institution. The dates will be of special convenience to the students in the Carnegie Tech summer course in coal mining, which ends on July 10. but any coal miner who feels qualified may take the tests.

Second Terminal Mine Closes.—The Pittsburgh Terminal Coal Corporation has closed down No. 2 mine, near Charleroi, indefinitely, 400 workers having been notified to remove their tools. The company, which received considerable recognition due to its ability to operate seven mines full for nearly two years on the Jacksonville scale while the other mines of the district, including those of the Pittsburgh Coal Co., were being shut down or had already been closed, has felt a slackening in business this spring. The company also has another mine down at Avella. The shutdown of No. 2 mine will enable the other five mines of the company to operate at a better rate.

Harris Retires Quietly. — Harry K. Harris, associate engineer in the Scranton bureau of mine caves and surface support, is reported to have resigned May 1 to manage a coal company in Tamaqua. Mr. Harris' retirement came to light about a week ago. William H. Rolles, of North Scranton, has been named successor to Mr. Harris. Mr. Harris was for many years a colliery superintendent for the Glen Alden Coal Co.

WEST VIRGINIA

New coal companies organized in West Virginia in April, including one non-resident coal corporation, had an aggregate capital stock of $3,600,000, the non-resident company being the largest of the group. In the list of new concerns were the **Allen Coal Mining Co.**, of Williamson, capitalized at $25,000; **Silver Creek Mining Co.**, of Welch, $300,000; **Kanawha Block Coal Co.**, 200 shares of no par value; **Grant Coal Co.**, of Fairmont, $450,000; **Stramer Fuel Co.**, of Charleston, $25,000; **Gulf Run Smokeless Coal Co.**, of Clarksburg, $300,000, and the **Superior Fuels Co.**, of Steubenville, Ohio, capitalized at $2,500,000.

It is reported that negotiations are again under way for a consolidation of a score or more of bituminous producers in non-union fields of West Virginia and Kentucky. Interests identified with Island Creek, Hardy Coal and Pond Creek have been approached in regard to a proposed consolidation. Strong efforts are being made to persuade Island Creek to enter such a merger.

The Melsh Coal Co., organized under the laws of Maryland, and with principal office at Hagerstown, Md., has been authorized to transact business in West Virginia.

Chafin Seeks Parole.—Don Chafin, former sheriff of Logan County, who figured in the labor troubles of that coal field, and who is now in the federal penitentiary in Atlanta, Ga., for violation of the prohibition laws, has paid his fine in full. Chafin had refused to pay the fine and appealed the case, but lost it. Settlement with the government was necessary because of his application to the federal parole board. Judge George W. McClintic sentenced him to serve two years in the penitentiary and fined him $10,000, which with costs in the trial brought the total up to $11,400. He was taken to prison eight months ago.

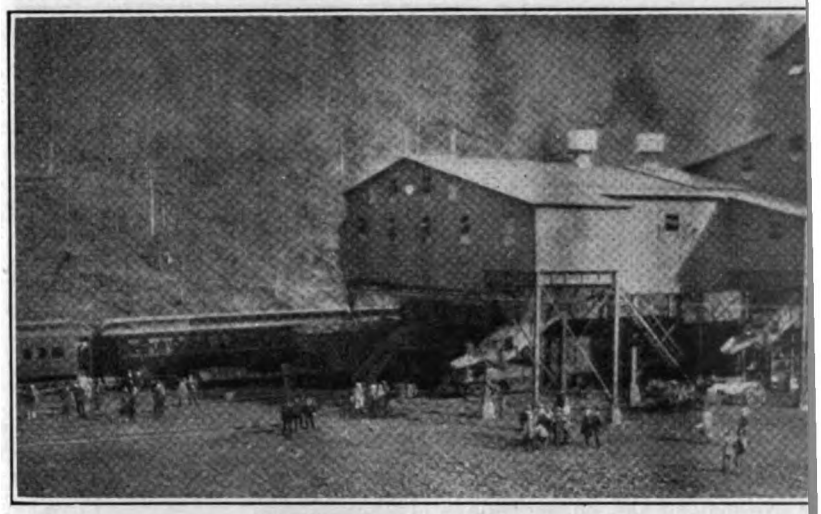
C. M. Moderwell & Co., of Chicago, has filed a certificate of withdrawal with the Secretary of State of West Virginia.

Mines along the Monongah Division of the Baltimore & Ohio R.R. in the Fairmont region loaded 294,100 tons of coal during the third week of May, an average of 980 cars a day, the highest record made since February.

The Clarksburg District Mining Institute held a meeting in Traction Hall, Clarksburg, May 22, after which it adjourned for the summer. The next meeting will be held the fourth Saturday night in September.

Property of Victor S. Veazey, of Fayetteville, formerly engaged in the coal mining business in Fayette County, recently was sold at public auction for $29,000. The residence at Fayetteville, acquired about six years ago, went to the New River & Pocahontas Consolidated Coal Co. for $21,000. The equipment at Veazey mine, near Glen Jean, was sold for $150 to a Mr. Turner, who is operating the mine.

The Gulf Run Smokeless Coal Co., Centralia, has 10,000 acres of land which it will develop.



Boarding the Special at No. 4 Mine

Stockholders of the Coal River Collieries Co. were taken on a special tra Huntington to inspect their three West Virginia mines. These mines are locate Kanawha field on the Big Coal River branch of the Chesapeake & Ohio Ry. Ea is equipped with a modern steel tipple. The company's production during 19 J. T. Dunigan as president and general manager was 632,189 tons, which is 303,(more than the total output during the past five years.

CANADA

Coke Output Declines.—Production of byproduct and gashouse coke in Canada during April amounted to 149,357 tons, a decrease of 2 per cent from the March total, but an increase of 14 per cent or 17,873 tons over April, 1925. Cumulative production for the first four months of 1926 was 623,549 tons, as against 474,085 tons last year. I of coke in April were 51,146 t against 102,485 tons in March. I were 3,673 tons, compared wit tons in the preceding month. A consumption of coke in Cana April was 196,830 tons, compar 249,633 tons in March and 162,5 in April of last year.

Dunsmuir Development Spr Canadian Collieries (Dunsmuir has announced that a 5-ft. s high-grade coal has been discov Timberland, and work has been on a seven-mile line from Lad Vancouver Island, to develo property. Geological conditio said to be similar to those wh best coal on the island has been Where the seam first was uncov was 12 ft. thick, but 5 ft. is giv conservative average. The p will be thoroughly explored diamond drill. Topographical tions are said to be well suited development of a colliery. T covery was made by George Sm employee of the Timberland co which owns extensive logging li the north of Ladysmith.

Telkwa Opens New Seam.— Collieries has opened a new s coal 9½ ft. thick, one mile fart Goat Creek than its existing slo present the coal is delivered by road to Telkwa, on the Grand Pacific Ry., now part of the Ca National system, but, later, th pany purposes to construct a sp necting the mine with the r Most of the coal is shipped to Rupert.

An Alberta syndicate has sta develop the Sir Sanford Flemi William Merritt leases, at Ant near Banff, on the Canadian Ry.'s main line, which have be for about a quarter of a century syndicate has secured 300 acres land from the Canadian Cement C coal is said to verge on an ant and some of it found on the old is said to be still in excellent co

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Among the Coal Men

P. C. Thomas succeeds H. M. Bertolet as divisional superintendent of the New River & Pocahontas Consolidated Coal Co. Mr. Thomas was associated with the New River Co. for many years but more recently has been identified with Winding Gulf operations. For the time being Mr. Thomas will have his headquarters at Charleston, but it is possible that later his office will be moved to Fayetteville where the company has purchased the Veazey property.

In taking over the duties of divisional superintendent Mr. Thomas relieves Mr. Newhall of the Philadelphia office of the company who has been in charge temporarily since the retirement of Mr. Bertolet.

John Stafford has been appointed Chief Inspector of Coal Mines by the Government of Queensland, Australia. The son of one of the pioneers of the coal-mining industry in Ipswich, the principal coal district of that state, Mr. Stafford has been continuously connected with coal mines since his youth, working his way from mine worker to the position of manager, and subsequently to that of government inspector. For some years he was superintendent of state coal mines, and was appointed Chief Inspector on the passing of a revised Act of Parliament dealing with the coal branch of the mining industry of Queensland.

Dr. T. D. Scales, of Boonville, Ind., who formerly operated the large John Bull and Erie Canal coal mines, in Warrick County, has been appointed on a committee by the Boonville Business Men's Association to help bring new manufacturing enterprises to Boonville.

W. J. Rainey, Inc., has announced the appointment of **D. D. Dodge**, of Lonaconing, Md., in the Georges Creek field, as general superintendent of its eight large coal and coke operations in the Connellsville coke region, to succeed John Sincock, who resigned a couple of months ago. Mr. Dodge has taken up his new duties. Robert Woods, Jr., of Uniontown, assistant general superintendent, will continue in that position.

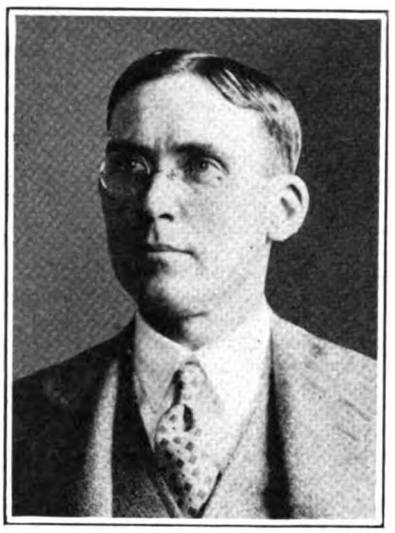
Otto Herres, assistant manager of the United States Fuel Co., Salt Lake City, has been elected chairman of the Utah section of the American Institute of Mining and Metallurgical Engineers. Mr. Herres is a mining engineer by profession and has served in Carbon County as a coal mine superintendent.

T. J. Thomas has been elected president of the Valier Coal Co., operating at Valier, Ill. This company is a subsidiary of the Burlington railway.

P. C. Thomas was appointed general superintendent of the New River division of the New River & Pocahontas Consolidated Coal Co. on June 1.

Edmund Ewing has been appointed superintendent of the Yolande and Connellsville mines of the Yolande Coal & Coke Co., succeeding E. L. Elliott, who died recently. Mr. Ewing served as superintendent of the Bessie mine division of the Sloss-Sheffield Steel & Iron Co. for about four years; later going with the Alabama Co., where he was asistant to J. E. Strong, operating vice-president of that company, at the time of its merger with the Sloss-Sheffield Company.

Erle Ormsby, president of the Donk Brothers Coal Co., has been elected president of the Downtown Lions' Club of St. Louis, Mo.



John D. A. Morrow

The new vice-president in charge of sales of the Pittsburgh Coal Co. assumed the duties of his new post on May 1. He has had a long and picturesque career in the coal industry, having been successively executive secretary of the National Coal Association, founder and president of the Morrow-Callahan Coal Co. and vice-president of the Joy Machine Co.

Andrew K. McKee, one of the best known anthracite men in Philadelphia, has resigned as vice-president in charge of retail sales, of the George B. Newton Coal Co. Mr. McKee's first connection in the trade was in a partnership known as McKee & Cox. Later Mr. McKee became the sole owner of the business developing an extensive retail trade under the name of McKee & Co. at 22nd St. & Allegheny Ave., which became one of the leading units of the Newton combination when it was formed in 1912. Mr. McKee has announced no definite plans for the future.

Vincent G. Thomas, of Johns Brothers, has been elected president of the Hampton Roads Coal Association, to succeed Oscar B. Ferebee, of Nottingham & Wrenn, who served two years. Herbert L. Wright, of Wright Coal & Wood Co., was elected vice-president and S. Harold Ferebee, of Norfolk Coal & Ice Co., was elected secretary and treasurer.

M. L. Hutchins, of the Byproducts Sales Co., and **Mr. Mayo**, of the Ford Motor Co., recently spent several days going over the Ford coal properties in Kentucky and West Virginia. So far, they said, no successor had been chosen to fill the position of general director held by the late Abner Lunsford.

Obituary

Lawrence Huntington Starkweather, of the O'Gara Coal Co., Chicago died in the Johns Hopkins Hospital at Baltimore, Md. on Sunday, May 30. Mr. Starkweather was born in Chicago in 1891. He was educated in private schools and at the University of Chicago. At the outbreak of the World War he repeatedly tried to enlist in both the Army and Navy, but was unable to, so finally went into government service in the U. S. Department of Justice, Bureau of Investigation, where he served with a distinguished record.

In 1919 C. M. Moderwell, receiver for the O'Gara Coal Co. appointed Mr. Starkweather to represent the O'Gara Coal Co. in the northern Illinois and Wisconsin territory. Last Fall Mr. Starkweather's health began to fail, and he was operated on at St. Luke's Hospital in Chicago. This Spring it was decided that another operation was necessary, so Mr. Starkweather went on to Johns Hopkins Hospital at Baltimore, but died before the operation took place.

Edgar Lee Elliott, age 56, for the past eight years superintendent for the Yolande Coal & Coke Co., at Yolande, Tuscaloosa County, died May 28 of pneumonina after a short illness. Mr. Elliott was connected with the Hills Creek Coal Co. and a number of other mining operations before going with the Yolande company, where he had been employed for the past ten years. Mr. Elliott also had charge of the Connellsville mine of Yolande company, which was rehabilitated and placed in operation the early part of this year.

Traffic News

Increased Schedule Approved

The Public Service Commission of New York has approved a new schedule of the New York Central & Hudson R.R. (east) on coke breeze and coke dust in carloads of a minimum weight in open cars of 50,000 lb. (except that when car is loaded to full visible or cubical capacity the actual weight will apply but not less than 35,000 lb.) and when in box or stock cars 40,000 lb. This schedule applies from Buffalo, East Buffalo and Harriet to stations between Mertensia and Pittsford inclusive and sets a rate of $1.51 per net ton (a reduction on prior rates.) The schedule also provides that the rate to stations between East Williamson and Hannibal, inclusive, Metcalf Furniss, Oswego to Liverpool inclusive, Central Square, Brewerton and Clay shall be $2.27 (an increase of 1c.) per net ton, effective June 30, 1926.

The New York Public Service Commission has approved new rates of the New York, Ontario & Western R.R. on coke, coke breeze and coke dust from Utica to Clinton and New Hartford, $1.13; reduction 13c. per net ton—effective June 22, 1926.

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Production And the Market



Bituminous Index Sags Somewhat but Conditio In Kentucky and Ohio are Favorable

Indications for a firmer market are not so readily visible as they were last week. Certain sections of the country have not responded to the improved condition, notably the Pennsylvania bituminous regions, Alabama and the Head of the Lakes. In the latter a severe price-cutting is bringing as a penalty, slow business, for the buyer is waiting to see whether he cannot get a still lower price. In Cincinnati and points served by eastern Kentucky coals the recent gains have been maintained. Ohio markets have been helped by the removal of the lake embargoes but are still unstable.

Production during the week ended May 29 improved considerably over that of the previous week and is not far below the average for the year, though that average has been unusually high. The calendar year to date has shown a production per day of 1,771,000 tons, whereas the average daily production for the week ending May 29 was no less than 1,611,000 tons. A year ago the daily tonnage for the week was only 1,508,000. The lake dumpings continue large though not nearly so great as those of the previous week. The lake movement is stimulating production in the fields which are able to take advantage of it. For the week ending June 6 the cargo dumpings on Lake Erie aggregated 1,089,342 tons, and bunker fuel totalled 52,445 tons.

Price Lower Than Last Week's

Coal Age Index of spot bituminous prices on June 7 was 157, the corresponding price being $1.90. Thus the index has declined 3 points and the price 4c. from the figures of May 31. These, however, are better values than were obtained in the week ending May 26.

An unsettling condition in Indiana and Illinois is the ability of the strip-pit mine to cut prices 50c. to $1 below the shaft mines and so to take the business from them. These strip pits can work full tim have no difficulty in moving all their sizes.

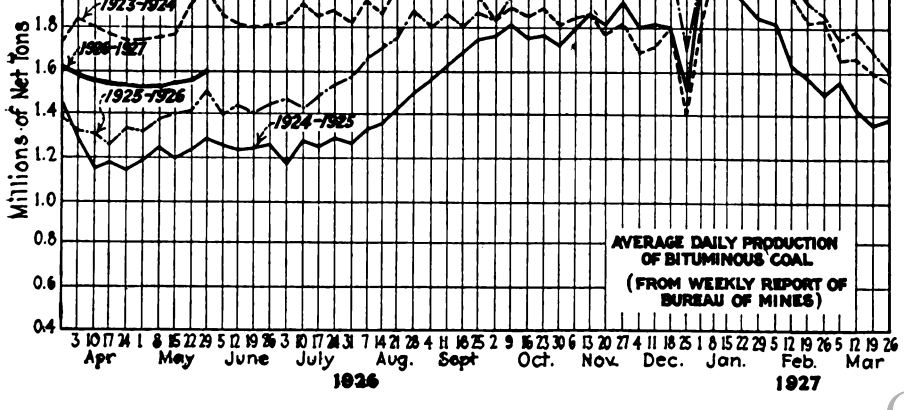
The demand for slack is more nearly equal t output than before, but both strip and shaft min crushing larger coal to take care of their scree contracts, the sale for lump not sufficing to provi needed slack.

In Illinois, co-operative mining is again cutting the business of those operators who must pay the and cannot ask their mine workers to make good losses. Utah is working more steadily. In co distinction to the Head of the Lakes, the Utah fields are finding that price cutting has stimulated ness and are now working 70 per cent of normal time capacity.

Complaints are heard about the hard-coal marke in fact it cannot be expected to maintain itself thr out the coal year. However, in the week of May 2 estimated production was 2,088,000 tons as ag 1,681,000 in the same week of the previous year a against 1,750,000 tons in the previous week. sizes are only in fair demand and all the other size somewhat except barley.

The dullness in the Connellsville coke market is definitely to be recorded in a decline in price. The for spot shipment has sagged 10c. a ton, and thi cline will probably have its effect on third-quart second-half contracts.

Production in the Connellsville and Lower Con ville region the fourth week in May showed a dec of 5,340 tons from furnace ovens and 70 tons merchant ovens. The total production for the week 150,040 tons.



Estimates of Production

(Net Tons)

	1925	19
BITUMINOUS		
May 15	8,350,000	9,29
May 22 (a)	8,451,000	9,28
May 29 (b)	8,141,000	9,66
Daily average	1,508,000	1,61
Cal. yr. to date (c)	195,595,000	224,72
Daily av. to date	1,550,000	1,77
ANTHRACITE		
May 15	1,950,000	1,90
May 22	1,708,000	1,75
May 29	1,681,000	2,08
Cal. yr. to date (c)	36,247,000	27,30
BEEHIVE COKE		
May 22	145,000	21
May 29	132,000	19
Cal. yr. to date (c)	4,664,000	5,78

(a) Revised since last report. (b) Subject vision. (c) Adjusted to equalize number of in the two years.

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Mid West Still Stagnant

Reports from the Middle West are not cheerful, though strip-pit mines in southern Illinois seem to be working practically full time, and like some of the shaft mines are crushing coal to take care of their screening contracts. At the shaft mines lump, egg and No. 1 nut are hard to move, but at the strip plants everything seems to go well because of the price.

This time of the year is always an off-season with the retailers in the Middle West, because neither will the public stock coal for house-heating nor the farmer buy it for threshing purposes. When the Franklin County operators decided not to raise their quotations as of June 1 they made an exceedingly wise move, because a raise could not be maintained in the face of the existing conditions. The West Virginia and eastern Kentucky operators, who raised their prices, would not be able to maintain them were it not for the fact that they have a dumping ground for their coal at the lake loading ports.

In the Jackson County and Duquoin field, two mines that are working are getting about three days a week. In the Mount Olive field railroad tonnage continues good, and the mines find it difficult to take care of steam sizes without crushing.

In the Standard field the co-operative mines are getting the business. Some of the mines without railroad contracts run from one to five days a week. Steam coal is in fairly good demand but at low prices.

St. Louis Buys Sparingly

At St. Louis a little cheap coal for tenement storage as well as other storage of the cheapest kind is going in but it is so small that it doesn't count. Dealers report anthracite tonnage as falling off perhaps one-half and smokeless is dropping off while coke is not as active as it might be. Indiana strip-pit mines are making prices anywhere from 50c. to $1 a ton below those quoted for coal from shaft operations in the Duquoin and Carterville fields.

No Arkansas coal is coming in. West Kentucky also is just at present selling some steam coal in this market.

Kentucky Maintains Position

The Kentucky fields are maintaining their recent gains. Running time has improved slightly in the eastern part of the state, where the lake and Southeastern markets are broadening. The movement of western Kentucky coal west and northwest is substantial for this time of the year. That section also enjoys some scattered business in the South.

The price situation is firm. Except for an inconsequential break on a small tonnage of eastern Kentucky slack, which sold down to $1.05, the general range of quotations is unchanged. It is becoming increasingly difficult, however, to pick up mine-run at the minimum price.

Eastern Kentucky 4-in. block is $1.75 @$2.25; lump, egg and nut, $1.75@$2;

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	June 8 1925	May 24 1926	May 31 1926	June 7 1926†
Smokeless lump	Columbus	$2.85	$3.10	$3.10	$3.00@$3.25
Smokeless mine run	Columbus	1.85	2.05	2.05	2.00@ 2.15
Smokeless screenings	Columbus	1.30	1.25	1.25	1.20@ 1.35
Smokeless lump	Chicago	3.10	3.10	3.10	*2.75@ 3.25*
Smokeless mine run	Chicago	1.95	2.00	2.00	*1.85@ 2.00*
Smokeless lump	Cincinnati	3.00	3.10	3.00	**3.00@ 3.25**
Smokeless mine run	Cincinnati	2.00	1.85	1.85	**2.00**
Smokeless screenings	Cincinnati	1.25	1.30	1.35	1.25@ 1.50
*Smokeless mine run	Boston	4.25	4.40	4.65	*4.40@ 4.60*
Clearfield mine run	Boston	1.75	1.80	1.80	1.65@ 1.95
Cambria mine run	Boston	2.10	2.05	2.10	1.90@ 2.25
Somerset mine run	Boston	1.95	1.90	2.00	*1.75@ 2.10*
Pool 1 (Navy Standard)	New York	2.55	2.60	2.60	2.50@ 2.75
Pool 1 (Navy Standard)	Philadelphia	2.60	2.65	2.65	2.50@ 2.80
Pool 1 (Navy Standard)	Baltimore	1.85	1.95	2.00	1.95@ 2.05
Pool 9 (Super. Low Vol.)	New York	2.00	2.10	2.05	1.90@ 2.25
Pool 9 (Super. Low Vol.)	Philadelphia	2.00	2.10	2.10	2.00@ 2.25
Pool 9 (Super. Low Vol.)	Baltimore	1.75	1.75	1.80	1.75@ 1.85
Pool 10 (H.Gr.Low Vol.)	New York	1.85	1.85	1.85	1.75@ 2.00
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.70	1.85	1.85	1.75@ 2.00
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.60	1.60	1.65	1.60@ 1.70
Pool 11 (Low Vol.)	New York	1.55	1.60	1.65	1.55@ 1.75
Pool 11 (Low Vol.)	Philadelphia	1.55	1.55	1.55	1.45@ 1.70
Pool 11 (Low Vol.)	Baltimore	1.40	1.45	1.60	1.55@ 1.65
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.50	1.40	1.40	1.30@ 1.55
Pool 54-64 (Gas and St.)	Philadelphia	1.50	1.45	1.45	1.35@ 1.55
Pool 54-64 (Gas and St.)	Baltimore	1.45	1.25	1.40	1.40@ 1.45
Pittsburgh sc'd gas	Pittsburgh	2.40	2.25	2.25	2.20@ 2.30
Pittsburgh gas mine run	Pittsburgh	2.15	2.00	2.00	1.90@ 2.10
Pittsburgh mine run (St.)	Pittsburgh	1.95	1.80	1.80	1.75@ 1.90
Pittsburgh slack (Gas)	Pittsburgh	1.55	1.35	1.35	1.35@ 1.40
Kanawha lump	Columbus	2.10	2.05	2.05	1.85@ 2.25
Kanawha mine run	Columbus	1.40	1.55	1.55	1.40@ 1.75
Kanawha screenings	Columbus	1.10	.90	.95	**.95@ 1.15**
W. Va. lump	Cincinnati	2.25	1.85	2.10	**2.00@ 2.50**
W. Va. gas mine run	Cincinnati	1.50	1.45	1.50	1.40@ 1.65
W. Va. steam mine run	Cincinnati	1.35	1.30	1.35	1.25@ 1.50
W. Va. screenings	Cincinnati	1.05	1.05	1.05	**1.10@ 1.25**
Hocking lump	Columbus	2.15	2.35	2.35	2.25@ 2.50
Hocking mine run	Columbus	1.50	1.55	1.55	1.40@ 1.70
Hocking screenings	Columbus	1.30	1.05	1.10	1.00@ 1.20
Pitts. No. 8 lump	Cleveland	2.25	2.10	2.15	1.80@ 2.50
Pitts. No. 8 mine run	Cleveland	1.85	1.70	1.70	1.70@ 1.75
Pitts. No. 8 screenings	Cleveland	1.35	1.20	1.30	*1.25@ 1.50*

Midwest	Market Quoted	June 8 1925	May 24 1926	May 31 1926	June 7 1926†
Franklin, Ill. lump	Chicago	$2.60	$2.60	$2.60	$2.60
Franklin, Ill. mine run	Chicago	2.35	2.40	2.40	*2.25*
Franklin, Ill. screenings	Chicago	2.10	1.90	1.90	*1.60@ 1.75*
Central, Ill. lump	Chicago	2.35	2.30	2.30	2.25@ 2.40
Central, Ill. mine run	Chicago	2.10	2.05	2.05	2.00@ 2.15
Central, Ill. screenings	Chicago	1.75	1.75	1.75	1.60@ 1.90
Ind. 4th Vein lump	Chicago	2.60	2.40	2.40	2.25@ 2.60
Ind. 4th Vein mine run	Chicago	2.35	2.15	2.15	2.10@ 2.25
Ind. 4th Vein screenings	Chicago	1.90	1.80	1.80	1.75@ 1.90
Ind. 5th Vein lump	Cnicago	2.25	2.15	2.15	2.00@ 2.35
Ind. 5th Vein mine run	Chicago	1.95	1.95	1.95	1.85@ 2.10
Ind. 5th Vein screenings	Chicago	1.50	1.35	1.35	**1.35@ 1.80**
Mt. Olive lump	St. Louis	2.50	2.35	2.35	2.25@ 2.50
Mt. Olive mine run	St. Louis	2.25	2.15	2.15	2.15
Mt. Olive screenings	St. Louis	1.75	1.55	1.55	1.50@ 1.60
Standard lump	St. Louis	2.25	2.25	2.25	2.25
Standard mine run	St. Louis	1.80	1.80	1.80	1.75@ 1.85
Standard screenings	St. Louis	1.70	1.30	1.30	1.25@ 1.40
West Ky. block	Louisville	1.60	1.75	1.75	1.65@ 1.85
West Ky. mine run	Louisville	1.30	1.20	1.20	1.00@ 1.40
West Ky. screenings	Louisville	1.15	1.10	1.10	1.00@ 1.25
West Ky. block	Chicago	2.00	1.75	1.75	1.65@ 1.85
West Ky. mine run	Chicago	1.30	1.15	1.15	.95@ 1.35
South and Southwest					
Big Seam lump	Birmingham	2.40	2.15	2.30	2.05@ 2.55
Big Seam mine run	Birmingham	1.75	2.00	2.00	*1.75@ 2.00*
Big Seam (washed)	Birmingham	1.85	2.00	2.00	*1.75@ 2.00*
S. E. Ky. block	Chicago	2.25	2.40	2.40	2.10@ 2.75
S. E. Ky. mine run	Chicago	1.70	1.65	1.65	1.50@ 1.85
S. E. Ky. screenings	Louisville	2.20	2.05	2.00	1.75@ 2.25
S. E. Ky. block	Louisville	1.30	1.50	1.35	1.25@ 1.50
S. E. Ky. mine run	Louisville	1.05	1.10	1.15	1.10@ 1.25
S. E. Ky. block	Cincinnati	2.35	2.10	2.15	2.00@ 2.30
S. E. Ky. mine run	Cincinnati	1.45	1.50	1.50	1.25@ 1.75
S. E. Ky. screenings	Cincinnati	1.05	1.00	1.05	**1.00@ 1.25**
Kansas lump	Kansas City	4.00	4.00	4.00	4.00
Kansas mine run	Kansas City	3.00	3.00	3.00	3.00
Kansas screenings	Kansas City	2.60	2.50	2.50	2.50

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**; declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	June 8, 1925 Independent	June 8, 1925 Company	May 31, 1926 Independent	May 31, 1926 Company	June 7, 1926† Independent	June 7, 1926† Company
Broken	New York	$2.34	.....	$8.10@$8.70	.....	$8.25@$9.25	.....	$8.25@$9.25
Broken	Philadelphia	2.39	.....	8.60	$9.25	9.00@ 9.25	$9.25	*8.50@ 9.15*
Egg	New York	2.34	$8.50@$8.85	8.45@ 8.70	8.75@ 9.25	8.75@ 9.25	8.75@ 9.25	8.75@ 9.25
Egg	Philadelphia	2.39	8.70@ 9.30	8.50@ 8.70	9.25@ 9.75	9.15@ 9.25	9.15@ 9.85	*9.00@ 9.15*
Egg	Chicago*	5.06	7.86@ 8.50	7.44@ 8.18	8.48	8.13	.....	.....
Stove	New York	2.34	8.90@ 9.25	8.85@ 9.20	9.25@ 9.75	9.25@ 9.50	9.25@ 9.75	9.25@ 9.50
Stove	Philadelphia	2.39	9.30@ 9.65	8.95@ 9.10	9.60@10.00	9.35@ 9.50	**9.40@10.30**	9.35@ 9.50
Stove	Chicago*	5.06	8.22@ 8.70	7.92@ 8.10	8.84	8.33@ 8.58	.....	.....
Chestnut	New York	2.34	8.25@ 8.50	8.45@ 8.70	8.75@ 9.25	8.75@ 9.15	8.75@ 9.25	8.75@ 9.15
Chestnut	Philadelphia	2.39	8.70@ 9.55	8.60@ 8.70	9.25@ 9.50	9.00@ 9.15	**9.00@10.05**	9.00@ 9.15
Chestnut	Chicago*	5.06	8.14@ 8.35	7.69@ 8.00	8.71	8.38@ 8.50	.....	.....
Pea	New York	2.22	5.00@ 5.50	5.00@ 5.70	6.25@ 7.00	6.00@ 6.25	6.25@ 7.00	6.00@ 6.25
Pea	Philadelphia	2.14	5.50@ 5.75	5.00@ 5.40	6.50@ 7.00	6.00@ 6.50	*6.25@ 6.75*	*6.00@ 6.25*
Pea	Chicago*	4.79	4.91@ 5.36	4.69@ 5.00	6.03	5.65@ 5.80	.....	.....
Buckwheat No. 1	New York	2.22	2.00@ 2.50	2.50	1.70@ 2.35	3.00@ 3.50	*1.75@ 2.25*	3.00@ 3.50
Buckwheat No. 1	Philadelphia	2.14	2.15@ 2.75	2.50	2.00@ 2.50	2.50@ 2.75	**2.15@ 2.50**	2.50@ 2.75
Rice	New York	2.22	1.75@ 2.00	2.00	1.50@ 1.85	2.00@ 2.25	1.50@ 1.85	2.00@ 2.25
Rice	Philadelphia	2.14	1.85@ 2.00	2.00	1.75@ 2.25	2.00@ 2.25	*1.75@ 2.00*	2.00@ 2.25
Barley	New York	2.22	1.35@ 1.50	1.50	1.20@ 1.50	1.50@ 1.75	1.20@ 1.50	1.50@ 1.75
Barley	Philadelphia	2.14	1.40@ 1.50	1.50	1.50@ 1.60	1.75	**1.50@ 1.75**	*1.50@ 1.75*
Birdseye	New York	2.22	1.60@ 1.75	1.60	1.30@ 1.60	2.00	1.30@ 1.60	2.00

* Net tons, f.o.b. mines. † Advances over previous week shown in **heavy type**; declines in *italics*.

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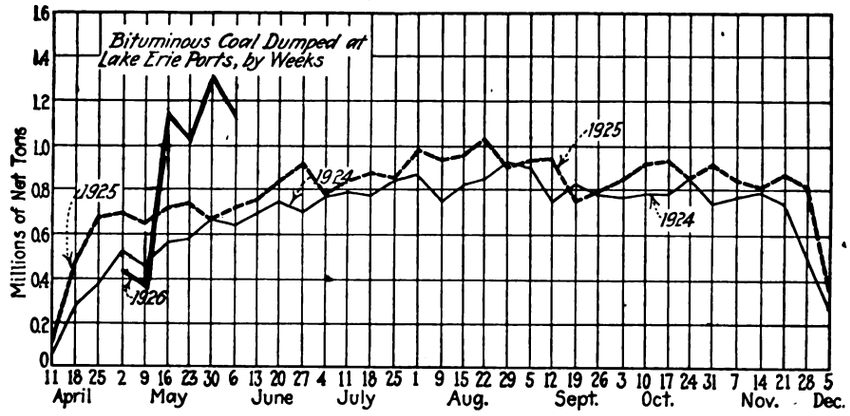


slack, $1.10@$1.25; mine-run, $1.25@$1.50. Some mine-run still is quoted at $1.65, but little business is done on that basis. Western Kentucky 6-in. block is $1.65@$1.85; lump and egg, $1.40@$1.65; nut, $1.35@$1.50; mine-run, $1@$1.40; screenings, $1@$1.25.

Dock Prices Demoralized

The price war at the Head of the Lakes grows more bitter. At the outset only three companies were involved, but the other docks have been forced to cut prices in self defense. Pocahontas lump, held at $7 a fortnight ago, has sold at $4.50. Youghiogheny screenings are offered as low as $3.75.

Industrial consumers are indifferent to contract renewals while this price war lasts. Buying for current needs, however, holds up. Retail purchases are light, and consumers again are showing apathy on the question of summer storage of anthracite. Receipts from the lower ports have declined, but the movement is fairly heavy. The most recent weekly report shows 50 cargoes, including 4 of anthracite, unloaded, and 21 cargoes en route.

Waiting to Reach Bottom

Buyers at St. Paul and Minneapolis are delaying their orders, some in the hope that the freight rate from southern Illinois and Indiana to the Northwest will be revised by the courts if the case is reopened as is hoped. However, conditions seem better this Spring than in a number of years. Southern Illinois lump is $2.60 per ton at the mine, Central Illinois $2.25 and western Kentucky $1.75.

Receipts of bituminous coal at Milwaukee from Lake Erie shipping ports are heavy—702,220 tons up to June 3, as against 493,260 tons received up to the same date last year. Anthracite is away behind last year's record, but is coming in more freely now. The receipts up to June 3 total 101,000 tons. Last year during the same time 239,055 tons were received.

Stove-size Pocahontas has been cut $1 a ton, and egg and lump 75c. The prices now are $9.75 for stove, $10 for egg and $10.25 for lump, spouted, and an extra charge of 75c. when carried to the bins.

Arkansas More Active

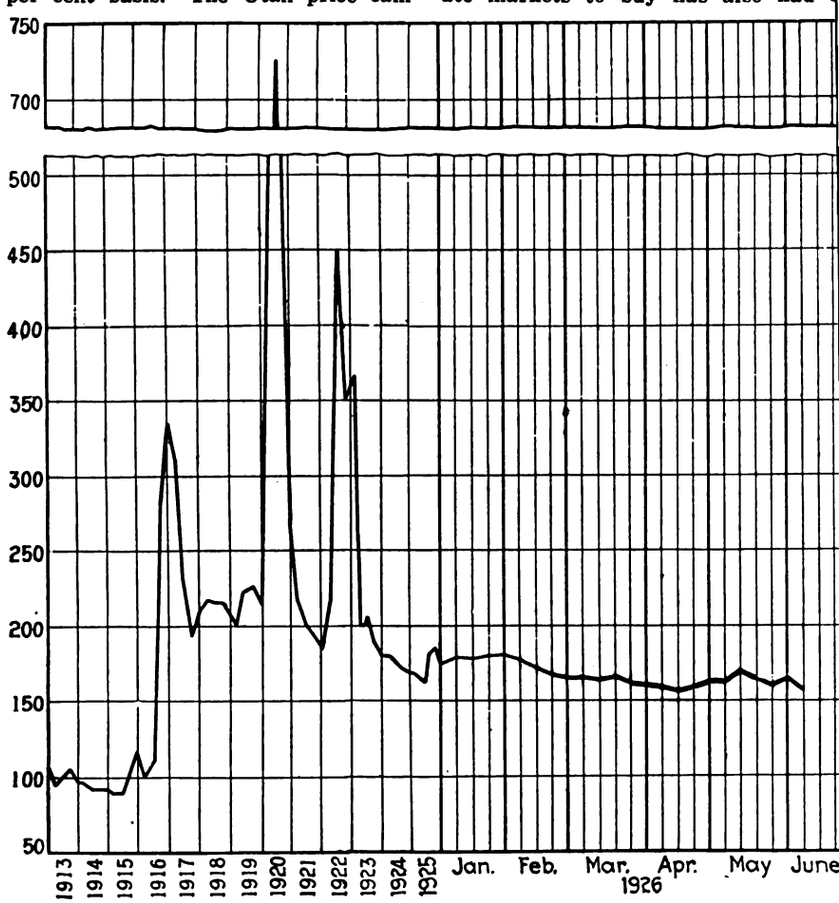
Storage orders for Arkansas semi-anthracite increased sharply during the last week of May and there was an overflow into the first few days of June. Householders were anxious to get coal booked before retail prices advanced. Threshing orders for Kansas coal also are heavier. Storage buying, however, has not yet reached substantial proportions, but an early gain in that direction is expected.

The Colorado market is sluggish with no assurance of any early improvement. Producers and distributers have been scouring the territory for business, but the results of their efforts have been disappointing. Prices are unchanged. The Colorado field is operating on a 50-per cent basis. The Utah price campaign for domestic business has boost buying above last year's figures, h not to the extent desired. Wyomi prepared grades are holding at $3.5 slack is $1.50.

Working time at the Utah mines as result of the big reduction in prices larger sizes, has jumped to around fo days a week, and about 70 per cent normal full-time capacity, taking t state as a whole. Some of the min are working full time, but others a operating about three days a week. R tailers are stocking up to the limit their ability, financial and storage. price of $7 and $6.50 c.o.d. for lump seems to warrant buying activity se ing that the price has been $9 for long.

Prices Hold at Cincinnati

Prices have moved up a step on th market and from the advances ma there has been little or no waverin Tidewater inquiries and even sales ha been stronger than for months pa this being true of both high and lo volatile. Lake buying has been liber and, with the lifting of the emba goes against Sandusky, which for time disconcerted things, this fact has been of supreme importance. T disposition of Chicago and intermed ate markets to buy has also had



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1916				1925	192
	June 7	May 31	May 24	May 17	June 2	June
Index	157	160	157	159	161	17
Weighted average price	$1.90	$1.94	$1.89	$1.93	$1.95	$2.

This diagram shows the relative, not the actual, prices on fourteen coals, represent tive of nearly 90 per cent of the bituminous output of the United States, weighted fir with respect to the proportions each of slack, prepared and run-of-mine normally shipp and second, with respect to the tonnage of each normally produced. The average th obtained was compared with the average for the twelve months ended June, 1914, as 1 after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," pu lished by the Geological Survey and the War Industries Board.

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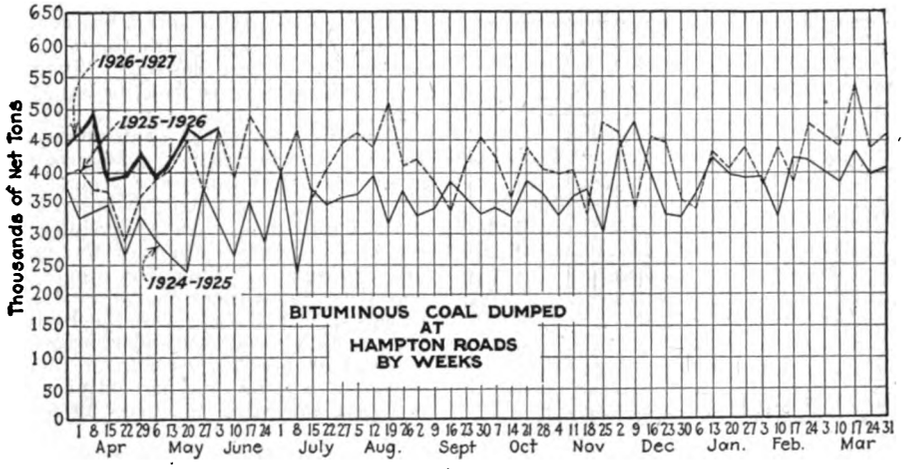


influence as has the booking of orders for later delivery to Iowa and the northwest.

The spot market on low-volatile lump has been especially bright, the circulars, it seems, have undershot the mark on this, some spot coal selling up to $3.25 with several of the standard producers of Pocahontas and premium New River asking that price. The egg failed to move above the $3 mark but mine run stiffened to $2 and is firm at that figure.

Smokeless screenings are still weak. Some have been sold up to $1.50 but the general range of the market is $1.25-$1.35.

Greater betterment, however, has been shown in the high-volatile market. With one large Logan County producer leading the way, the West Virginians have moved up all their prices. Thacker lump is selling at $2.25 and so is some of the Kanawhas. Run of mine is in much better demand and the general price on the steam is $1.35 and up. Some poor coal can still be picked up around $1.25 but it takes a bargain hunter to find it. No move has yet been made by the retailers here to advance prices.

Ohio Markets Unstable

Spot prices at Columbus are less erratic, following the lifting of the lake embargoes, but the market still lacks stability. General industrial buying is confined to immediate requirements, and some consumers are going into their storage piles. Utility and railroad consumption is on a satisfactory scale. Many railroad contracts, however, still hang fire. Domestic trade is possibly a little above the average as school buying helps to swell the total volume.

The lake movement is benefitting the Ohio fields in an indirect manner by making the competition with West Virginia and Kentucky for all-rail orders less keen. Nevertheless, output in the southern Ohio districts is only about 18 per cent of normal, and much of this tonnage is going to the railroads.

Eastern Ohio Ships More

Eastern Ohio is shipping a little Lake coal and this is reflected in a slight increase in output. During the week ended May 29 the No. 8 district produced 205,000 tons or a little less than 30 per cent of capacity, which was 17,000 tons over the preceding week but 1,000 tons more than a year ago. Pocahontas lump is quoted at $3 a ton, f.o.b. mines and some dealers are said to be buying and storing it.

Pittsburgh Outlook Darker

Notwithstanding the increase in the commercial production of non-union coal in the Pittsburgh district, the market situation is less attractive than it was earlier in the season. Prices are not quotably changed, but the undertone is weaker. The difficulties surrounding the sale of coal in this market multiply with the passing weeks.

Central Pennsylvania also complains. May shipments from that district were approximately 2,000 cars less than the total for the preceding month. Only one-third of the 1,256 mines in this field are working and only 55 of this number are running six days a week. The bulk of the railroad buying is on the open market. Prices are weaker. Pool 1 is $2.35@$2.50; pools 9 and 71, $2.25@$2.40; pool 10, $1.90@$2.15; pool 11, $1.65@$1.90; pool 18, $1.60@$1.80.

Nominal quotations in the Buffalo market are unchanged, but there is a stronger tone to slack. Business generally, however, is dull. Some of the wholesalers have dipped into anthracite to keep their organizations busy. With independent prices down to or below company schedules, there is little chance for a big turnover in this trade.

New England Unstimulated

The steam-coal market in New England drags along without material change. Not even the tonnage requisitioned in place of British output is sufficient to provide any real stimulus, and spot prices on Hampton Roads coals are actually lower than a week ago. There is no buying of any moment in the coastwise trade and among the industries there is only mild interest in current prices. There is perhaps a better business undertone than a month ago, but not yet is this translated into any noticeable increase in manufacturing.

Pocahontas and New River of Navy standard grade could be purchased a day or two ago at $4.40, with occasional sales at $4.50 and $4.55. Accumulations are less than has heretofore seemed habitual, but from this it is never safe to predict that any organized curtailment is in effect.

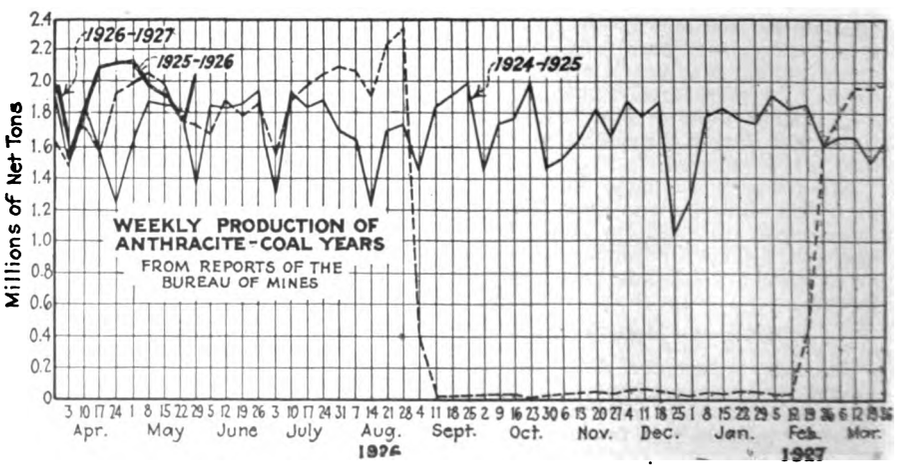
For inland delivery the course of prices the past week has been much the same. Quotations have wavered with fresh arrivals, and in nearly every case where factors have their own facilities the wharves are piled high with storage coal.

New York Market Quiet

The New York bituminous market is quiet. Industrial consumption, however, is heavy, but buyers show no interest in accumulating new reserves. On the favorable side of the situation are the increase in the number of inquiries from foreign buyers and the disappearance of distress tonnage at the tidewater piers.

Philadelphia, too, is marking time. The optimists, however, think they see evidence of a slowly awakening interest on the part of consumers and here and there a customer has ordered a little more than his current requirements. Demand for slack, particularly from the cement mills, is strong. Prices, nevertheless, are stationary. Some in the trade believe that the quietness among local industrial users is due to the slowing down of the building trades, which this year are not as active as last.

With production keeping ahead of demand, Baltimore factors find nothing in the current domestic situation to invoke enthusiasm. Export possibilities flowing out of the British strike offer more comfort. Bunker business has increased, and more cargoes have been loaded for foreign consignment. This demand, however, has not been strong enough to bolster up prices on coal for home consumption. Prices are, therefore, approximately the same despite this foreign demand, which, although perceptible is not brisk.



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Car Loadings and Supply

	Cars Loaded — All Cars	Coal Cars
Week ended May 24, 1926.....	1,039,385	165,212
Preceding week.....	1,030,162	167,673
Week ended May 23, 1925.....	986,201	151,548

	Surplus Cars — All Cars	Coal Cars	Car Shortages — All Cars	Coal Cars
May 23, 1926.	259,788	82,304	.....	.....
May 15, 1926.	259,699	90,295	.....	.....
May 22, 1925.	327,216	134,669	.....	.....

Birmingham Market Featureless

The Birmingham market has settled down to a quiet, featureless position. Spot orders and inquiries are less than at any time previous this year. It becomes harder to move the medium and lower-grade coals. In a few cases, the railroads have reduced their weekly quotas, but the contract market as a whole holds up well and there are even a few straggling renewals on industrial business reported. The metallurgical coke market is fairly active. Domestic coke is quiet. Movement of domestic coal also is slowing down.

Anthracite Begins to Lag

Chestnut is the most backward of the larger anthracite sizes on the New York market at the present time. Egg also shows a tendency to drag. Stove, on the other hand, seems to be in fairly good demand. Movement from retail yards to the consumers' bins also keeps up. Circular prices were not changed on June 1. Buckwheat is a drug, rice is almost as bad; barley is the most active of the steam sizes.

The Philadelphia anthracite trade is less favorably situated. Company schedules are maintained, but independents no longer make any pretense that they can maintain their premiums. Some of the individual shippers are now soliciting business at company circulars and the others are glad if they can get 10@30c. over those figures. Retail buying reflects the disinclination of the householder to store coal before July or August. The steam trade is sluggish. There has been no change at Baltimore.

Shipments Have Declined

Lake shipments of anthracite from Buffalo during the week ended June 3 totaled 66,600 net tons. Of this quantity, 24,500 tons were cleared for Milwaukee; 16,000 tons for Duluth and Superior; 13,500 tons for Chicago; 6,600 tons for Green Bay and 6,000 tons for Sheboygan. The total loadings up to June 1 were 256,600 tons, as compared with 684,434 tons for the corresponding period a year ago.

Spot Coke Drops a Dime

Spot prices on Connellsville furnace coke broke 10c. last week, when the minimum dropped to $2.75 and small lots could be bought at $2.90. Spot foundry coke holds to the $4@$4.50 level, but there is practically no business to be had. The break in spot furnace prices probably will affect third quarter and second half contracts and force them below the $3 basis. Production in the Connellsville and Lower Connellsville fields during the week ended May 29 totaled 150,040 tons, according to the Connellsville *Courier*. Furnace-oven output dropped 5,340 tons and merchant-oven production declined 70 tons.

Average Daily Coke Output Declines Further in April

Production of byproduct coke in April showed a falling off of 175,000 net tons compared with that in March, according to the U. S. Bureau of Mines. This was not solely due to the shorter month, for there was a general slowing down of operations to about 88 per cent of capacity, causing a decrease in the daily rate of output. The total tonnage for April was 3,602,000, with an average daily production of 120,000 net tons; comparable figures for March were 3,777,000 tons and 122,000 tons, respectively. During April the plants operated at 91 per cent of capacity. Eighty-one plants are now in existence, 75 of them active in April. One new plant began production during the month.

Beehive coke continues its downward trend, with an estimated production of 981,000 net tons in April. This was 177,000 tons, or 15 per cent, lower than in March, which, in turn, had an outp that was 17 per cent less than that February.

Output from all the coke plants w 4,583,000 tons, 79 per cent from the b product ovens and 21 per cent fro beehive ovens.

Output of Byproduct and Beehive Col in the United States by Months*

(In Thousands of Net Tons)

	By-product Coke	Bee-hive Coke	To
1923 monthly average...	3,133	1,615	4,7
1924 monthly average...	2,833	806	3,6
1925 monthly average...	3,332	893	4,2
January, 1926.....	3,804	1,381	5,1
February, 1926.....	3,500	1,402	4,9
March, 1926.....	3,777	1,158	4,9
April, 1926.....	3,602	981	4,5

* Excludes screenings and breeze.

Coal consumed in beehive and by product coke plants in April totale 6,723,000 tons; 5,176,000 tons at by product plants and 1,547,000 tons a beehive plants. This was 529,000 ton less than was used for this purpose i March.

Estimated Monthly Consumption of Coal in Manufacture of Coke

(In Thousands of Net Tons)

	By-product Ovens	Beehive Ovens	Tota Coa
1923 monthly average...	4,523	2,507	7,03
1924 monthly average...	4,060	1,272	5,33
1925 monthly average...	4,787	1,371	6,15
January, 1926.....	5,466	2,178	7,64
February, 1926.....	5,029	2,212	7,24
March, 1926.....	5,426	1,826	7,25
April, 1926.....	5,176	1,547	6,72

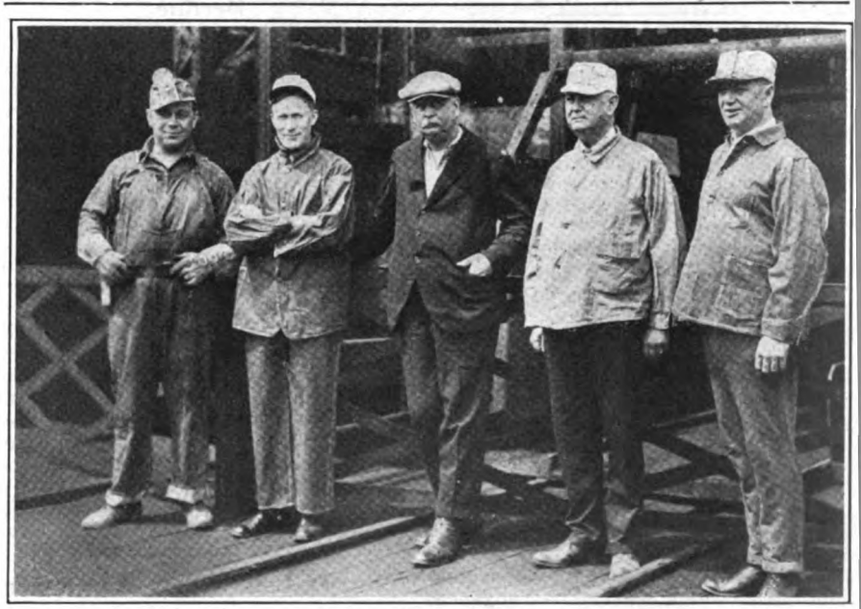
Of the total output of byproduct coke during April, 2,982,000 tons, or 82.8 per cent, was made in plants associated with iron furnaces, and 620,000 tons, or 17.2 per cent, was made at merchant or other plants.

New York Anthracite Prices For June, 1926

(Per Gross Ton, f.o.b. Mine)

	Broken	Egg	Stove	Nut	Pea
Hudson Coal Co..	$9.00	$9.00	$9.35	$9.00	$6.00
Phila. & Reading Coal & Iron Co...	9.15	9.15	9.40	9.15	6.25
D.,L.&W. Coal Co.	8.25	8.75	9.25	8.75	6.00
Lehigh & Wilkes-Barre Coal Co...	8.25	8.75	9.25	8.75	6.00
Lehigh Valley Coal Sales Co.....	8.50	9.00	9.35	9.00	6.00
Lehigh Coal & Navigation Co...	9.25	9.25	9.50	9.10	6.25
M. A. Hanna.....	9.00	9.25	9.60	9.25	6.50

Steam sizes: Buckwheat No. 1, $3 to $3.50; rice, $2 to $2.25; barley, $1.50 to $1.75; birdseye, $2.



British Operators Visit New Orient

Apparently the suspension of coal mining in Great Britain afforded F. B. Richards, of the Woodall Duckham Co., and John Bingley, of the Bolsover Collieries Co., an opportunity to study coal mining in America. The above snapshot was taken May 19 as the party was about to step on the cage of the auxiliary shaft to be lowered into Orient No. 2 mine of the Chicago, Wilmington & Franklin Coal Co., West Frankfort, Ill. From left to right are Albert Mitchell, St. Louis; F. B. Richards; John Bingley; Jos. Louis general superintendent of the Chicago, Wilmington & Franklin Coal Co., Benton, Ill., and M. C. Mitchell, manager of the St. Louis branch of the Sullivan Machinery Co.

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Foreign Market And Export News

French Production Heavy

Paris, France.—The British strike is causing maximum production of coal in France. May output is estimated to be less than that of April, however, because of several holidays.

Imports from Great Britain are negligible, while those from Belgium and Germany, particularly the Ruhr district, have increased sharply and it is believed that the receipts from that district will probably increase further as import restriction freeing German fuels have been temporarily waived, although not officially lifted. Consumers of both domestic and industrial fuels continue to pyramid orders for stocks, fearing a shortage and further depreciation of the franc, but deliveries are impossible on these supplementary orders.

Prices for French coals are up by ten to twelve per cent since May 1, but are still below the level which the French consider necessary for profitable purchase of American coals. If the strike continues, sharper price increases are expected in France. Sales of Ruhr coal on the west coast and at Rouen are heavy, quotations at Rouen on mine run being 135 fr. per ton, which price has not been changed since May 1. Washed pea coal is 160 fr. per ton, an increase of 23 fr. since May 1. No English quotations are being offered for these ports. French mine-run is priced around 150 fr. at Rouen. French coal is now used for bunkering, including the English Channel ports.

Belgian Prices Rising

Coal prices are increasing rapidly and mine owners are unable to accept all orders, says a cable from Brussels, to the Department of Commerce. The low franc exchange eliminates foreign competition and partly explains the good demand from France, Switzerland and the Netherlands.

April production of coal in Belgium totaled 1,984,000 metric tons as compared with 2,132,890 in March and 1,894,470 tons in February. Stocks at mineheads amount to 1,290,000 metric tons.

A five per cent wage increase, effective June 1, has occurred in the metallurgical and coal industries.

Dutch Market Active

England is now out of the Dutch market as an exporter and is purchasing in limited quantities, says a cable report from The Hague to Washington. The Dutch market has advanced as a result of the English strike. Westphalian gas flame was quoted at 12 guilders ($4.824); foundry coke, 16 guilders ($6.432) and bunkers, 13.50 guilders ($5.427) c.i.f. Rotterdam.

Dutch coal production in March was 760,000 metric tons, a new high record. Exports in April were 452,000 tons compared with 423,321 in February. Of the amount exported in April Belgium took 135,000 tons.

Imports in April were 680,000 metric tons, compared with 428,176 in March and 754,605 in February. Of the April imports, Germany furnished 548,000 tons and England, 111,000 tons. In February Germany supplied 630,496 tons and England, 104,727 tons.

German Output Larger

Berlin, Germany—Coal production in May will show an increase, without overtime, to meet increased demands resulting from the British coal strike, April production was 10,000,000 metric tons, compared with 11,400,000 in March and 10,500,000 tons in February. Lignite production in April was 10,000,000 tons, compared with 11,800,000 tons in March and 11,115,385 tons in February, while coke production was 2,000,000 tons in April compared with 2,485,291 in March and 1,984,765 tons in February.

Ruhr stocks decreased from 8,500,000 tons at the close of April to 8,200,000 tons at the end of May. The Ruhr stocks are mostly fine coal and coke while the export demand is for gas and bunkers or the decrease would have been greater. Prices are unchanged and movements normal.

Spanish Output Shows Slight Decline

Spanish coal production in 1925 amounted to 6,252,000 metric tons. Bituminous output was 5,559,000 tons, of that total, while the remainder was divided between anthracite and lignite. The quantity of anthracite and lignite mined slightly exceeds that brought to the surface in 1924. The increase, however, is outweighed by the decline in bituminous production.

The royal decree recently enacted by the Spanish government in an effort to improve conditions in the Spanish coal mining industry has resulted in considerable optimism. The Spanish fleet and a few of the industries controlled by the Spanish government which heretofore have been using British coal have commenced, it is said, to use the Spanish product, thus permitting the Asturian mine operators to dispose of the stocks that they had on hand for some time.

Soviet Coal Fields Improving

Coal production in the Soviet Union for the first half of the current Soviet fiscal year, Oct. 1 to April 1, showed an increase of 44.4 per cent over the same period of last year, according to a bulletin received by the Russian Information Bureau at Washington, D. C. The output was 12,410,000 metric tons, as compared with 8,596,000 tons. The advance in production was carried out as planned in accordance with domestic requirements and the growing exports to Italy and other countries. Production was at 91 per cent of the rate for 1913.

Much new equipment, purchased in the United States, Germany and England, is being installed in the Soviet coal fields. During the current year upwards of $40,000,000 will be expended on re-equipment and extensions. Of 180 cutting machines being installed in the Don Basin, 140 were purchased in the United States. During the summer thirteen large new shafts will be opened in the Don Basin.

Export Clearances, Week Ended June 3

FROM HAMPTON ROADS

	Tons
For Dutch East Indies:	
Du. Str. Veendyk	3,052
For United Kingdom:	
Dan. Str. Nordkap	5,030
Br. Str. Monkton, for Land's End	1,483
For Brazil:	
Br. Str. Trevean, for Rio de Janeiro	6,319
Br. Str. Swinbourne, for Para	97
Br. Str. Llangorse, for Rio de Janeiro	6,296
Br. Str. Portcurno, for Rio de Janeiro	6,249
For Africa:	
Ital. Str. Monviso, for Dakar	6,822
Fr. Str. Mont Viso, for Algiers	4,146
Ital. Str. Grazia Forzo, for Dakar	3,443
For Spain:	
Br. Str. Holtby, for Malta	5,353
For Canada:	
Ital. Str. Operosita, for Three Rivers	7,092
For Cuba:	
Nor. Str. Ada, for Havana	3,815
For Martinique:	
Br. Str. Kelsomoor, for Fort de France	4,957

FROM BALTIMORE

For England:	
Nor. Str. Hesperos, for Plymouth	7,734
Br. Str. Blythmoore, for Dover	9,374
For Irish Free State:	
Br. Str. Sheaf Spear, for Queenstown	4,078
For Italy:	
Ital. Str. Emanuels Accame, for Savona	11,504
Ital. Str. Ardito, for Leghorn	7,770

FROM PHILADELPHIA

For Cuba:	
Dan. Str. Nordan, for Habana	—
Nor. Str. Lisbeth, for Habana	—

Hampton Roads Coal Dumpings*

(In Gross Tons)

	May 27	June 3
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week	163,595	149,842
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	93,754	85,260
C. & O. Piers, Newport News:		
Tons dumped for week	150,259	182,954

*Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS

	May 29	June 5†
Pool 1, New York	$5.50@$5.75	$5.45@$5.70
Pool 9, New York	4.90@ 5.20	4.90@ 5.15
Pool 10, New York	4.70@ 4.85	4.65@ 4.85
Pool 11, New York	4.40@ 4.65	4.35@ 4.55
Pool 9, Philadelphia	4.95@ 5.30	4.95@ 5.30
Pool 10, Philadelphia	4.70@ 5.00	4.70@ 5.00
Pool 11, Philadelphia	4.35@ 4.65	4.35@ 4.65
Pool 1, Hamp. Roads	4.45@ 4.50	4.45@ 4.50
Pool 2, Hamp. Roads	4.10@ 4.15	4.20@ 4.30
Pool 3, Hamp. Roads	4.00@ 4.10	4.00@ 4.10
Pools 5-6-7, Hamp. Rds.	4.00@ 4.10	3.90@ 4.00

BUNKERS

Pool 1, New York	$5.75@ $6.00	$5.70@$5.95
Pool 9, New York	5.15@ 5.45	5.15@ 5.45
Pool 10, New York	4.95@ 5.10	4.90@ 5.10
Pool 11, New York	4.65@ 4.90	4.60@ 4.85
Pool 9, Philadelphia	5.20@ 5.55	5.20@ 5.55
Pool 10, Philadelphia	4.95@ 5.25	4.95@ 5.25
Pool 11, Philadelphia	4.60@ 4.90	4.60@ 4.90
Pool 1, Hamp. Roads	4.50	4.50
Pool 2, Hamp. Roads	4.15	4.30
Pools 5-6-7, Hamp. Rds.	4.00@ 4.10	4.10

†Advances over previous week shown in heavy type; declines in *italics*.

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Coming Meetings

American Society for Testing Materials. Convention at Haddon Hall, Atlantic City, N. J., June 21-25. Secretary, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

American Institute of Electrical Engineers. Annual convention, White Sulphur Springs, W. Va., June 21-25. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

Illinois Mining Institute. Annual summer meeting on steamer "Cape Girardeau," leaving St. Louis, Mo., June 24 and returning June 26. Secretary, Frank F. Tirre, Central National Bank Bldg., St. Louis, Mo.

American Society of Mechanical Engineers. Spring convention at San Francisco, Calif., June 28-30. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

Illinois and Wisconsin Retail Coal Dealers' Association. Thirty-first annual convention, Highland Hotel, Lake Delavan, Wis., June 28-30. Managing Director, N. H. Kendall, Great Northern Hotel, Chicago, Ill.

Fifth International First-Aid and Mine-Rescue Contest, San Francisco, Calif., during the first week of September, 1926, under the auspices of the Bureau of Mines, Department of Commerce.

Coal Mining Institute of America. Annual meeting, Chamber of Commerce, Pittsburgh, Pa., Dec. 8, 9 and 10. Secretary, H. D. Mason, Jr., Box 604, Ebensburg, Pa.

New Companies

A new coal company has been organized in Wheeling, W. Va., to be known as the Kanawha Block Coal Co., with the following incorporators: John D. Thomas, of Charleston, W. Va.; Cecil H. Riggs, W. C. Gardner and Joseph Styche, of Wheeling, and H. O. Walls, of Martins Ferry, Ohio. The company has 200 shares of stock of no par value. The company's offices are in the Wheeling Steel Corporation Building, at Wheeling. The officers of the firm have not as yet been selected. The company owns coal lands in the Kanawha district about twenty miles from Charleston.

The Federal Fuel Corp. has been chartered in Louisville, Ky., by F. N. Meadows, H. K. Lawrence and others.

The Cliff Nelson Coal Co., Toledo, Ohio, has been chartered with a capital of $10,000 to mine and sell coal. Operations will be started in the southern Ohio field. The incorporators are Clifford F. Bechtel, Nels I. Gustafson, William H. Murphy, T. R. Jones and George S. Moss.

The Marcum Horse Creek Coal Co. was incorporated in Hima, Ky., recently by W. W. Marcum, Ray Price and others.

The Home Coal Co., Hillsville, Ill., was incorporated April 1 to operate a mine at that town.

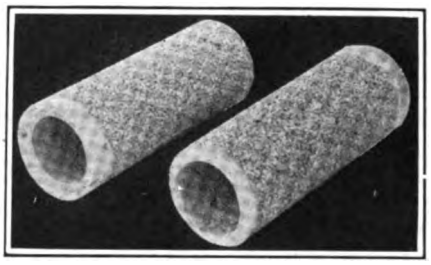
New Equipment

Water Enters Pipe Freely From All Sides

In the accompanying illustration may be seen the Rapid Drainage Pipe manufactured by the Walker Cement Products Co., of Little Ferry, N. J. This pipe, or tile, which originated in Europe, is made of crushed rock and cement. These materials are so mixed and forced together as to afford great strength yet afford a porous wall through which water may enter from all sides.

One of the big problems in drains that must resist the action of frost is to provide for the admission of the water that is to be carried away. Unglazed drain tile permits the entrance of water, but freezing shatters it. Glazed sewer pipe is unaffected by frost but its walls are impervious to water. This new product is said to combine the good qualities of both these drains, permitting the ready passage of water through its walls and yet being unaffected by freezing.

This new product has been applied extensively in difficult municipal and railroad drainage problems and excellent results are said to have been obtained. It will be particularly advantageous for draining sites where a high rate of permeation or influx as well as immunity from the effects of freezing are requisites. It is at present manufactured with internal diameters of 3½, 5½ and 8 in. and in 18-in. lengths. The ends are made male and female cones so that tight joints are assured. Tree roots are said to penetrate this tile only with great difficulty.



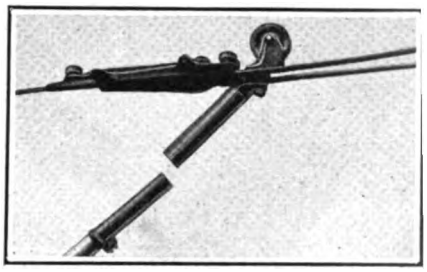
Water Enters Pores of Pipe; Frost Does Not Harm It

These tile are made of crushed rock and cement. The interstices between the aggregates are thus sufficiently open to admit water freely from all sides. Because of the indestructible character of the materials used, however, frost is said to have little or no effect upon them.

Pull Releases Wheel Without Breaking Pole

Broken trolley poles are a source of danger and delay. When a wheel comes off the wire, it may not only catch in a frog and tear down the wire, but break the trolley pole also. A safety pole-head designed to prevent the breaking of the trolley pole in case it comes off of the wire and catches in a frog or the like is now available.

This pole-head, sold by the C. & S. Pole-Head Co., Keystone, W. Va., is shown in the accompanying illustration. It consists of a socket to which the harp is attached, and a tapered pole end to which the cable is connected. The socket slips over the pole end and is held firmly but not tightly by a spring clip. A sharp blow or a heavy pull will cause the socket and its wheel to fall free of the rest of the pole.



Pole Pulled Apart Shows Details

A spring catch of the friction rather than positive type holds the socket on to the pole end. A heavy pull frees the trolley wheel, instead of breaking the pole.

In case the wheel leaves the trolley wire and catches in something before the motorman can pull the pole down, the socket and wheel are jerked off the end of the pole and fall to the ground. After the trip is brought to a stop, the socket and wheel are retrieved and slipped back into position on the end of the pole. The long delay caused by the insertion of a new pole is entirely avoided.

The poles have been used on the 30-ton locomotive of the Keystone Coal & Coke Co. and the safety feature has operated several times most satisfactorily. Delays to the locomotive due to a broken pole or torn-down wires have ceased to hinder operation.

Transmits Power with Shafts Out of Line or Offset

In the accompanying illustration may be seen a partial cross-section of the new Sykes universal flexible coupling, manufactured in sizes from ¾ to 8 in. by the Farrel Foundry & Machine Co., Inc., of Buffalo, N. Y. This device is practically a ball-bearing, universal joint capable of transmitting motion between shafts as much as 5 deg. out of line or offset as much as 4 per cent of the shaft diameter. In either case the movement of the balls upon their races is slight, never exceeding 1/32 in. per revolution.

Simplicity of construction is a distinguishing characteristic of this new coupling. It is composed of three main members—two hubs keyable to the ends of the driving and driven shafts respectively, and a two-piece sleeve inclosing and covering the whole device. Each hub carries ball races arranged around its periphery which match similar races on the inner surface of the sleeve sections. The balls, which are of standard sizes such as are used in bearings and journals, are placed be-

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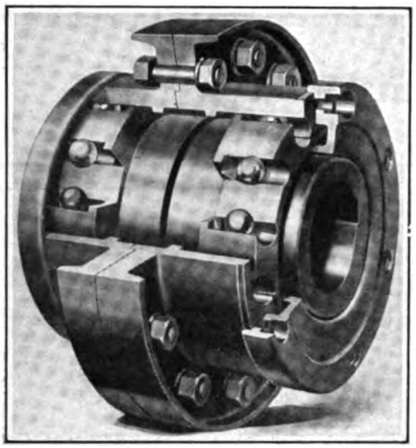


Partial Cross-Section Showing Internal Construction

In this picture a portion of the two-piece sleeve has been cut away, showing the balls and the races within which they operate. Although this coupling ought to be lubricated it can run "dry" for a long time without perceptible damage.

tween or within the races thus formed.

Analysis of the action of this coupling shows that irrespective of the amount of misalignment of one shaft with respect to the other the balls always maintain line contact with the races. Lubrication of this coupling is of minor importance. Because of the large area of ball contact and the small and comparatively slow movement of the balls a thin film of grease on each is all that is necessary. In fact that coupling may be run for long periods entirely "dry" without appreciable damage.

Tube Applies Grease to Ball Bearings of Motor

Proper lubrication of motors always has been a vexatious problem. It was greatly simplified, however, through the advent of the ball-bearing motor with its inherent low bearing friction. Fairbanks, Morse & Co., of Chicago, believes that by use of a suitable grease the lubrication of such machines can be reduced to a 20-minute job once a year.

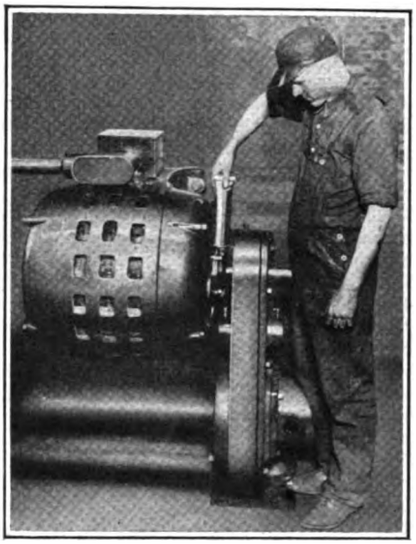
This firm recently introduced an improvement that further simplifies motor lubrication. This consists in furnishing the proper greases in collapsible tubes, each containing just enough lubricant for a motor's annual requirements.

After flushing out the old grease with kerosene the new grease is squeezed from the tube directly into the bearing. Directions show exactly how much to put into each bearing for the best results. Four sizes of tubes are available for corresponding sizes of bearings.

Many advantages inhere in this tube method of greasing. The kind of lubricant best adapted for ball-bearings is used. This is of the proper adhesiveness to cling to the balls; it maintains its consistency through all normal temperatures without being too stiff when starting in cold weather, and without melting and flowing out of the bearing when the motor is carrying full load.

The manufacturer guarantees it free from gritty or corrosive constituents and when the grease tube is used no outside dirt or other deleterious matter is likely to be introduced into the bearing. The probability that a stick or other handy object of questionable cleanliness will be used for transferring grease from an open can to the bearing is entirely eliminated. The cap of the housing is not removed; only the plug. No lubricant is wasted or smeared outside the housing, and no wiping is needed. Just the right quantity of grease for the most perfect lubrication is used in each bearing.

The makers state that it must not be assumed, because the grease is furnished in tubes, that this is an expensive method of lubrication. It is found, in practice, that the slight cost of the tubes usually is offset by the elimination of waste in the use of the lubricants. This method of greasing therefore affords both economy and convenience and maintains the efficiency of the bearing at its highest point.



Greasing by Tube

Method of using the new grease tube in lubricating ball-bearing motors. All waste is eliminated and use of a lubricant of proper consistency is assured.

Trade Literature

Power Factor and Means for Its Improvement. General Electric Co., Schenectady, N. Y. Bulletin No. 232. Pp. 33; 8x10½ in.; illustrated. Contains information, arranged in a simple and systematic manner, on means for power factor improvement in industrial plants.

B. F. Sturtevant Co., Hyde Park, Boston, Mass., has issued a 3½x6-in. four-page folder illustrating and describing its **Big Midget Portable Blower**, for blowing dust out of motors, generators and all kinds of machinery.

C-E Unit System for Burning Pulverized Fuel. Combustion Engineering Corp., New York City. Catalog U-1. Pp. 15; 8½x11 in., illustrated. Describes the burning by this system of pulverized fuel by the direct-fired method.

Condulets for Gounding Service Wire and Conduit System. Crouse-Hinds Co., Syracuse, N. Y. Bulletin No. 2085.

Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., has issued a 24-page publication describing **static condensers for power-factor correction.** This circular, 1670-A, includes a number of tables, charts and halftones.

Electric Night by Radio. General Electric Co., Schenectady, N. Y. GEA-324. Pp. 55; 8 x 10½ in.; illustrated. Contains addresses broadcast on "Electric Night," relating to history, progress, public relations, etc.

The Davenport Locomotive Works, Davenport, Iowa, has issued a leaflet illustrating and describing its new 4-ton gasoline locomotive, known as the **Davenport-Fordson Locomotive.** Full specifications and a table of haulage capacities are included.

EC&M Separator Magnets. The Electric Controller & Mfg. Co., Cleveland, Ohio. Four-page folder illustrating and describing the work of the magnet.

Universal Vibrating Screens. Universal Vibrating Screen Co., Racine, Wis. Catalog No. 50. Pp. 24; 6x9 in.; illustrated. The simplicity of construction and inexpensiveness in operation of these screens are stressed in this booklet.

Green Forced Draft Stokers. Combustion Engineering Corp., 43 Broad St., New York City. Catalog GFD-1. Pp. 14; 8½x11 in.; illustrated. Describes a number of special features embodied in these stokers.

Some Developments in the Electrical Industry During 1925, by John Liston, has been issued as a 62-p. publication by the General Electric Co., Schenectady, N. Y. The publication is known as GEA-355 and covers each phase of electrical application and its outstanding developments during the past year. The book is indexed and illustrated.

Eotvos Torsion Balance. L. Oertling, Ltd., Turnmill Street, London, E. C. 1, England. Pp. 20; 6x9 in.; illustrated. Describes an instrument that works on the gravitational method and is not dependent on the personal factor for its operation. It should prove of value to the geologist.

Detroit Stoker Co., Detroit, Mich., has issued a 24-p. bulletin, No. 103, describing and illustrating its **Multiple Retort Underfeed Stokers.** The level fuel bed and the method for controlling movement of the fuel throughout the entire process of combustion are some of the illustrated features.

Climax Engineering Co., Clinton, Iowa, has issued three bulletins describing its "Trustworthy" Engines in relation to various types of driven units. Bulletin E describes its **Power Units**; bulletin F its **Engines Direct Connected to Generators**; and bulletin G the Climax **Engine Direct Connected to Centrifugal Pumps.** Tables and illustrations are included.

Homestead Valves. Homestead Valve Mfg. Co., Homestead, Pa. Catalog No. 33. Pp. 51; 6x9 in.; illustrated. This catalog should interest industries using water, air steam, acids, oils, heavy liquids, oil residue, etc.

Sangamo Meters. Sangamo Electric Co., Springfield, Ill. Bulletin No. 71. Pp. 19; 8x10½ in.; illustrated. Contains instructions for Sangamo type D-5 watthour meters.

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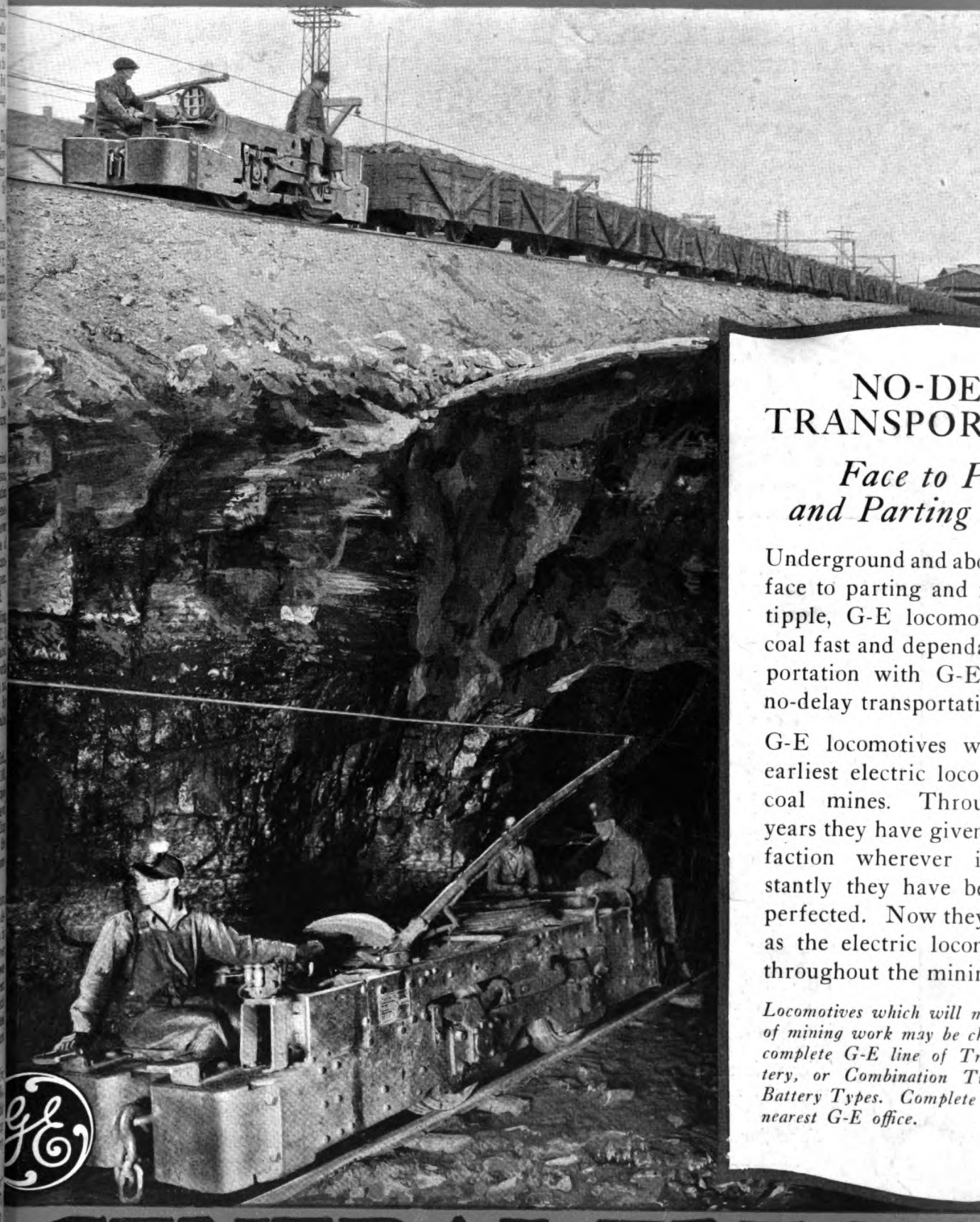

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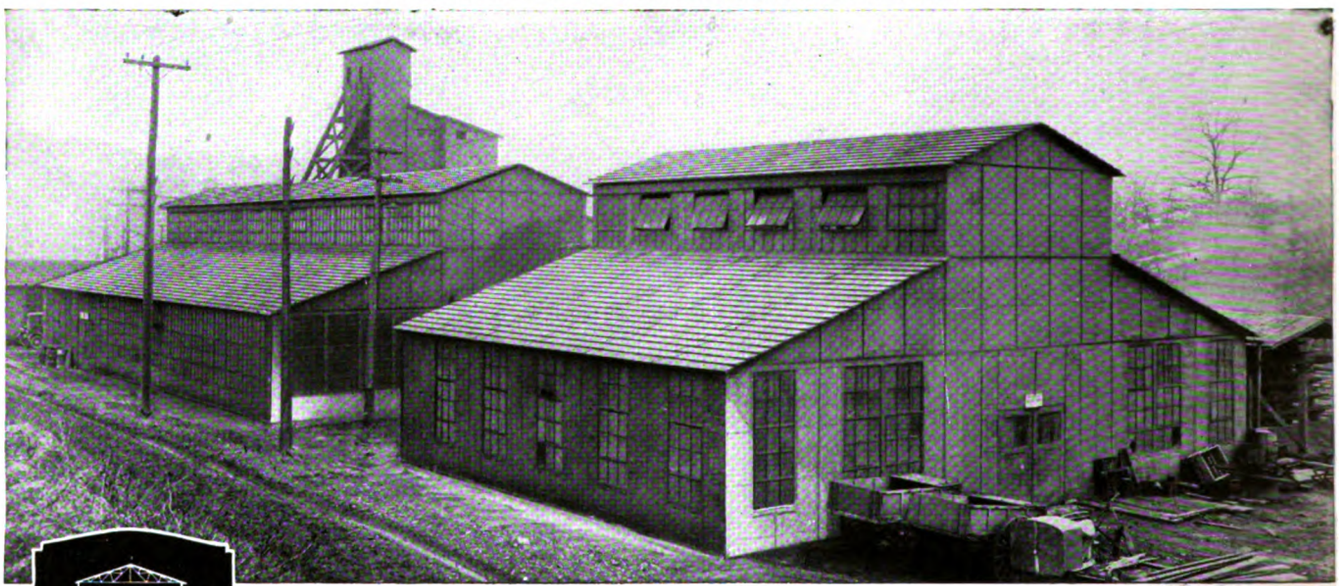

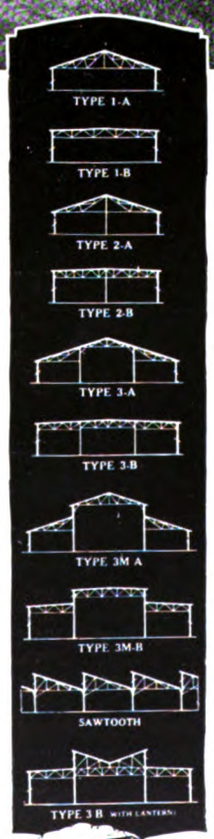

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 29 — New York, June 17, 1926 — *Number* 24

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What Can the National Coal Association Do? 857
National Coal Association Spends Three Days Formulating Plans for Coming Year 858
Association Shows Active Interest in Safety 863
By Pooling Purchases of Mine and Store Supplies Operators Hope to Reduce Expenditures 865
A Selling Organization Should Concentrate on Merchandising a Single Kind of Coal 867
Coal-Mine Commissaries Lessen Costs of Co-operative Buying 869
BY WALTER MUIR.
Railroads Give Good Service but Some Ask Increase 870
BY IRA CLEMENS.
How Madeira-Hill Co. Has Reduced Accidents 40 per Cent Since 1924 871
BY J. W. WETTER.
More Timber Is Cut for Fuel Than for Any Other Single Purpose 873
Have Statistics Any Value to the Coal Industry? 874
BY C. E. BOCKUS.
Pool Buying No New Idea But One Well Attested 875
With Competition as Incentive Employees Will Back Safety Movement 876
BY R. E. HOWE.
Coal Salesmen Should Know How Coal Is Prepared and Mined 877
BY RALPH KNODE.
Foreign Trade Increase Is Only Temporary 878
BY H. N. TAYLOR.
Centralized Service-and-Accident Reports: Their Advantages to the Coal Operator 879
BY W. A. ELLISON.
Research the Life Blood of Commercial Progress 880

Court Refuses Injunction Sought to Enforce Union Wage Agreement with Mines in Scott's Run Field 881
Merger of 41 Midwest Mines Reported Under Way 882
Meetings of British Miners and Operators Acrimonious 883
Inflexible Attitude of Operators and Lewis Feared as Wage Pact Nears End 885

News Items from Field and Trade 887
Weekly Review and the Market 891
Foreign Market and Export News 896
New Equipment 897

National Coal Association Issue

Coal Age this week has pleasure in presenting most of the papers read at the Convention of the National Coal Association last week. They will be found of vital interest to all coal men, especially executives. They give definite, clean-cut counsel. They afford specific help. Thus they advise coal men:

How to equip salesmen for their work.
How to eliminate false compensation claims.
How to avoid bad credits in the store.
How to reduce malingering.
How to buy goods for the store at minimum prices.
How to decrease accidents.
How to increase haulage efficiency.
How to discover faults in the cutting schedule.
Why we need statistics in our industry.

Take your *Coal Age* home with you and read it through from end to end. You should know what the National Coal Association is doing for the industry and what it could do if it had more members. We need management at the mines but still more do we need co-operation in the management of the industry to solve our problems corporately.

Coal Age "reads easily." It is edited with that end in view. The information is made brief enough not to take too much of your valuable time, yet simple enough to make you grasp the meaning at a glance.

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Devoted to the Operating, Technical and Business
Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 29 NEW YORK, JUNE 17, 1926 Number 24

What Can the National Coal Association Do?

MANY WONDER whether anything is gained by an association among coal men, yet men in nearly every industry bind themselves together and find the practice helpful. Some of our forefathers questioned whether they desired any United States. They said let the various commonwealths come together to meet an emergency, just as the coal men met in the war when dangers assailed the industry. They proposed to be separate in the interim. The question was settled. The states of America have become the United States. One cannot conceive conditions otherwise. Secession would now be regarded as criminal and suicidal. Some day coal men will wonder how anyone could seriously question the necessity for unity in their counsels if not unanimity in opinion and union in action.

The statistical work of the National Coal Association if conducted in a careful manner should do much to prevent undue development in the industry. When the coal men and the public learn the facts regarding production costs and market prices they will be able to see what the profit in the industry really is, and we shall not find so many anxious to enter the overcrowded ranks of producers. The public has only a small conception of the many items entering into the production of coal and believes that all the men in the mines are "miners" and that what is paid them is and should be the whole cost of producing coal.

* * *

During the past week the National Coal Association met in its ninth annual convention and the present issue is largely devoted to its proceedings. Never has the Association produced more striking contributions to the progress of the industry. Early meetings were marked by severe repression. The papers presented were feeble indeed compared with those of the recent meeting, many of which appear almost in full in the pages that follow. Any one reading them, even if possessed by a complex against the industry, will realize that the operators met with the intention of solving the problems that confront them and the nation, with a constructive program, not perhaps definitely formulated but in process of formulation.

Few organizations have a complete program covering all phases of development. This nation itself, as a whole, has no definite plans. A few general principles govern us in the direction of our domestic and foreign relations; but about many matters we are still greatly at variance. Yet we, as a nation, have had not nine anniversaries but over a hundred. No one has up to the present written in plain unmistaken language a statement of the principles to which nationally we adhere, and if they should be written they would lack much of meeting the many complex situations which we as a nation face. As the American people are divided and irresolute about certain matters, so we cannot anticipate perfect unanimity among coal operators.

* * *

But the National Coal Association apart from the formulation of policies has a definite reason for being. When operators learn just how much coal is going into a certain market and what the price in that market actually is, at any moment, we will have fewer no-bill cars and less distress coal. When mine workers who malinger, who will not work, who do not pay their bills or who do not protect their lives and limbs have their records writ plain we shall soon eradicate them from industry. A like exodus of wholesalers and retailers who will not pay their bills will occur when their records also are known and tabulated.

Though what follows may not represent the purpose of the Association, the coal operators, when they meet together, will absorb a sense of mutuality. It may pay better at times to produce coal at a loss rather than to leave houses empty and mines deteriorating, but a sense of solidarity will induce operators to regard this practice as one harmful to the coal industry as a whole and to themselves also in particular. They will also learn that large immediate gains bring misfortune on the industry, adverse criticism and legislation, excessive development and demoralization, and a disposition eventually will be established to correct these evils. This attitude of mind will not establish itself immediately nor uniformly, but the sense of solidarity will come in time, and the men of the industry will at length come to have courtesy rules that condemn alike excessive profit and unbridled competition as being entirely contrary to the spirit of the times.

* * *

The National Coal Association is determined, while living strictly within the law, to develop, and will eventually create, the right spirit. All operators who wish for the industry a day when it will serve itself and the nation better than in the past should be found in its ranks.

Think a minute. Our interest in the success of the United States exceeds our personal interests in our own industry. If we did not have good government, order and a proper public sentiment in this country we would not have the basis for even endurable existence. So with the coal business—it is profitable, progressive, healthful only if we have taken time, not only for the proper handling of our affairs, but the proper direction of the corporate business of the whole industry.

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National Coal Association Spends Three Days Formulating Plans for Coming Year

Staff Correspondence

EXPANDING SERVICE to meet the growing needs of the bituminous industry was demanded by the operators at the ninth annual convention of the National Coal Association, held at the Drake Hotel, Chicago, June 9-11. More statistical information, more marketing data, more scientific research, greater co-operation within the industry, intensive study of accident prevention work were set forth as services in which the organized bituminous trade should take the lead in furnishing its members.

While attendance was exceeded by that at some of the earlier meetings when war-time control made membership almost obligatory, the convention last week set a new record in genuine interest and enthusiasm and in the broad sweep of the program presented for the consideration of the delegates present. The innovation of group meetings to discuss pooled purchases and sales methods proved specially successful, and the attention given to the safety movement made it certain that the National Coal Association as an organization will play a larger part in accident prevention work in the future.

The convention, in a resolution adopted on the closing day, again went on record as unalterably opposed "to any federal legislation which singles out the coal industry for regulation." At the same time, it was made clear in committee reports and floor discussion that the industry proposed to so enlarge its statistical activities that there would be no excuse for compulsory fact-finding. Continuation of the statistical program undertaken by the association was specifically authorized in another resolution.



Walter Barnum

Walter Barnum, president of the Pacific Coast Co., with headquarters in New York City, was elected president of the association for the ensuing year. Ira Clemens, president, Clemens Coal Co., Pittsburg, Kan.; Michael Gallagher, general manager, M. A. Hanna Co., Cleveland, Ohio, and George B. Harrington, president, Chicago, Wilmington & Franklin Coal Co., were re-elected vice-presidents. E. C. Mahan, president, Southern Coal & Coke Co., Knoxville, Tenn., was elected vice-president to succeed Mr. Barnum. C. E. Bockus, president, Clinchfield Coal Corporation, New York, was again the choice for treasurer. Harry L. Gandy again was named as executive secretary.

At the opening of the convention on June 9, the following committees were appointed:

Nominations and Elections: Otis Mouser, Virginia, chairman; R. N. Sherwood, Indiana; George Bausewine, Jr., West Virginia; George J. L. Wulff, Missouri, and T. W. Guthrie, Pennsylvania.

Credentials: D. H. Morton, West Virginia, chairman; J. C. Nelms, Ohio; Irvin Johnson, Kentucky, and W. L. A. Johnson, Missouri.

Resolutions: Louis C. Madeira, III, Pennsylvania, chairman; John J. Lincoln, West Virginia; Warren Blauvelt, Indiana; C. F. Richardson, Kentucky; P. J. Quealy, Wyoming; George C. Eastwood, Michigan; E. C. Mahan, Tennessee; Lee Long, Virginia, and D. F. Hurd, Ohio.

President M. L. Gould, who had yielded the chair to Mr. Madeira, made his address to the convention a strong plea for increased membership. Those now in the association, he said, constitute "a splendid, loyal nucleus of forward-looking operators, who are contributing their support ungrudgingly to hold the lines firm against the know evils of disintegration and to make steady advances of practical value.

"In our Washington offices we have a most competent staff. It is needless for me to deliver any eulogy of Mr. Gandy. You know him, as I know him, for a most efficient executive, who, in the face of obstacles with which we are all too familiar, has not only held this organization together dur- the past three years, but has considerably strengthened it."

The association, asserted Mr. Gould, had a construction program which was bound to further the interests of the industry. But more operators must share the financial burdens of carrying out that program. As a private in the ranks, Mr. Gould pledged his support in a membership campaign. "When competitors in this business decide to get together and to direct their efforts toward increased efficiency, such as will come through learning from each other and through widespread co-operative effort, this industry will begin to realize its vast possibilities."

At the conclusion of his address, Mr. Gould was given a unanimous vote of thanks by the delegates for his labors in their behalf during his term of office.

The report of Harry L. Gandy, executive secretary, was a brief review of some of the major activities of the past year. Discussing the threats of regulation, he expressed the belief that time would make it clear that the economic problems of the industry could not be solved by legislation such as now proposed at Washington. Fact-finding, he pointed out, had not averted coal crises in Great Britain. Government intervention in wage disputes had not brought industrial peace. "The record here and in England justifies the statement that the advance recognition of an industrial emergency will bring the emergency. The setting up of a body political to which either side may appeal will make practically certain that employers and employees cannot agree."

Mr. Gandy acquitted the national administration of

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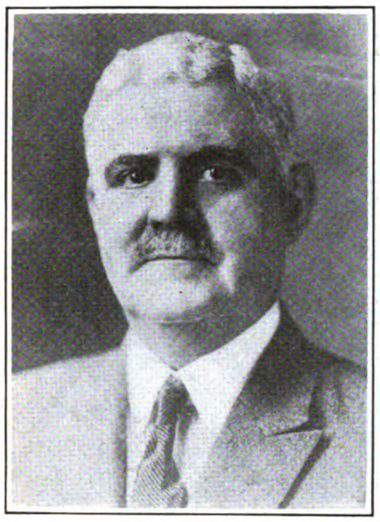


M. A. Gallagher



G. B. Harrington



E. C. Mahan

any desire to injure the industry. "The statement of the Secretary of Commerce before the House committee and his reply to questions indicated a friendly attitude. We may disagree on just what should or should not be done, but at the same time I grant a sincerity of purpose to those with whom we disagree."

The coal trade is making slow, but certain, progress toward better merchandising, reported Mr. Gandy. Statistical activities of local associations are expanding. "That voluntary effort on the part of the industry, and the progress thus far gives promise that it will be successful, will eliminate the reason given by those who advocate statistical activity on a compulsory basis by the federal government."

C. E. Bockus, treasurer, reported that receipts for the year ended March 31, 1926, had totaled $158,516 and expenses, $160,309, leaving a deficit of $1,793, as compared with a deficit exceeding $23,000 a year ago. Outstanding accounts receivable far exceeded the liabilities. "If we can realize 10c. on the dollar, our association is solvent. I think we can realize at least 50c."

Although 138 association and individual members had been added to the rolls the past year, the losses numerically had outrun these gains, according to the report of S. Pemberton Hutchinson, chairman of the membership committee. The increase in tonnage represented, however, was over 16,000,000 tons.

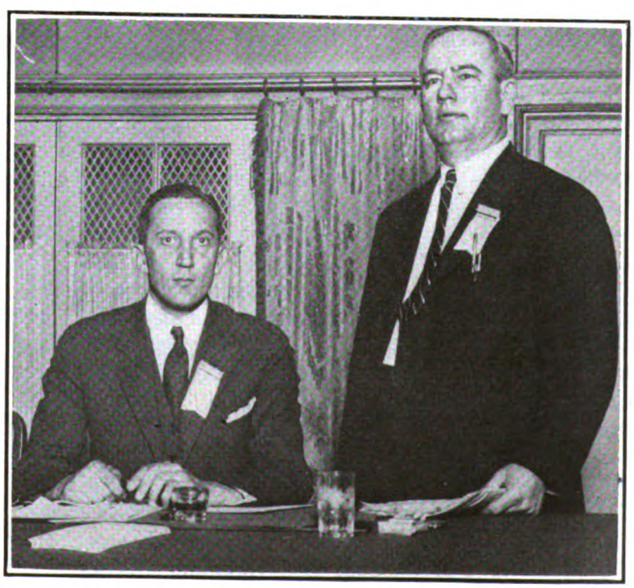
Local and Group Advertising

Local and group advertising was urged by George B. Harrington, chairman of the committee on publicity, who also reported a more favorable attitude toward the industry on the part of the daily press. There has been little gain in overseas business, said the report of H. N. Taylor, chairman of the committee on foreign trade. American shipping is handicapped by arbitrary laws which inflate costs and work against the export trade. Ira Clemens, chairman of the transportation committee, stated that no major problems had come before his group the past year.

"The price of progress is research," declared Walter Barnum, chairman of the research committee. Those who will not pay the price will fall by the wayside. Until membership in the National Coal Association has been increased, however, the research activities of that organization must be limited largely to missionary work and co-operation with engineering societies and others engaged in research investigations.

The committee is co-operating with the American Institute of Mining and Metallurgical Engineers and the American Society of Mechanical Engineers in a consolidation of research activities in the mechanization of mines. Contact has been established with the Massachusetts Institute of Technology through membership of the committee of the Institute which gives counsel regarding the graduate course in fuel and gas engineering. The association also is financing a graduate research fellowship in the Carnegie Institute of Technology.

"We are proceeding in a purposeful way as far as our funds will permit. The old saying, 'knowledge is power,' is true. We must equip the rank and file of producing and selling organizations so that they won't be hopelessly handicapped by a lack of knowledge of their own goods and service. How can we meet oil competition, for example, without the rank and file of our industry, not just the occasional expert, being thor-



Louis C. Madeira III and Harry L. Gandy

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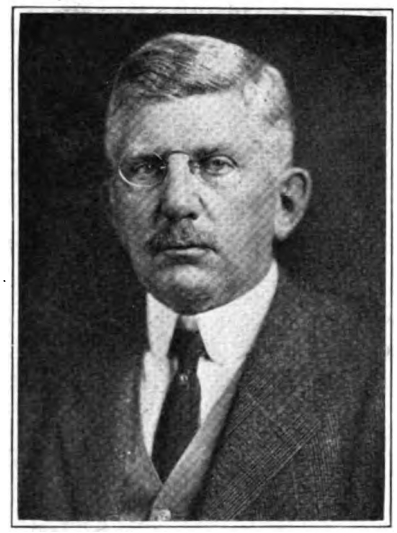

S. P. Hutchins n



M. L. Gould



Ezra Van Horn

oughly at home and familiar with combustion differences and steam costs?"

The oil industry considers a $500,000 fund for research only a drop in the bucket. "To an industry in greater need of research than is the oil industry," concluded Mr. Barnum, "even half such a drop would be extremely helpful. It would be a humble, but a real, beginning."

SEEK FOR MOTOR FUEL

Coal as the future source of motor fuel was the picture held up in a paper on "Hunting for the Elements Produced by Low-Temperature Distillation." This paper, the work of R. L. Brown and R. B. Cooper, was presented by Mr. Cooper, who is the National Coal Association graduate research fellow at Carnegie. The basis of all motor fuels, said the authors, is carbon. With petroleum reserves diminishing, the commercial conversion of coal into motor fuel cannot be long delayed.

The first general session ended with a review of mine water pollution of streams by Richard D. Leitch, associate chemical engineer, U. S. Bureau of Mines, Pittsburgh, and the report of the credentials committee.

The greater part of the Thursday morning session, presided over by Ezra Van Horn, general manager, Clarkson Coal Mining Co., was given over to a discussion of accident-prevention work. This new departure in the activities of the convention, covered in detail elsewhere in this issue of *Coal Age*, aroused such interest that prosecution of further work along the same lines was authorized in a resolution adopted the next day.

The report of the committee on nominations and elections, approved by the convention, named the following district directors: Walter Barnum, Pacific Coast Co., Washington; C. E. Bockus, Clinchfield Coal Corporation, Virginia; Ira Clemens, Clemens Coal Co., Kansas; T. F. Farrell, Pocahontas Fuel Co., West Virginia; David Ingle, Ayrshire Coal Co., Indiana; T. W. Guthrie, Hillman Coal & Coke Co., and L. C. Madeira, III, Madeira, Hill & Co., Pennsylvania; George B. Harrington, Chicago, Wilmington & Franklin Coal Co., Illinois; H. Denman, Paris Purity Coal Co., Oklahoma, Arkansas and Texas; C. W. Taylor, W. G. Duncan Coal Co., Kentucky; S. L. Yerkes, Grider Coal Sales Agency, Alabama; H. N. Taylor, U. S. Distributing Corporation, Wyoming and Montana; George C. Eastwood, Consolidated Coal Co., Michigan. With the exception of Messrs. Ingle, Denman, C. W. Taylor and Eastwood, the directors named had been chosen to succeed themselves.

For directors at large, the following were elected: P. H. Penna, Indiana Bituminous Coal Operators' Association, Indiana; W. H. Cunningham, Burgess Branch Coal Co., West Virginia; P. J. Quealy, Gunn-Quealy Coal Co., Wyoming; Thomas DeVenny, Williamson Coal Operators' Association, Kentucky. Messrs. Penna, Cunningham and Quealy were elected to succeed themselves.

Voluntary statistical activities upon the part of the industry received the unqualified indorsement of the committee on trade information. Compulsory reporting was as unqualifiedly condemned. "As an industry," said C. E. Bockus, chairman, "we are opposed to any system of compulsory reporting to a federal agency, not because we desire to have the facts concealed, but because we believe that such a move may well prove the first step in the direction of federal regulation of the industry."

In the opinion of the committee there were many lines of desirable statistical activity which the industry should undertake. The association, however, has been concentrating on the promotion of past sales reports, with the idea that, as soon as those reports become general, the organization will then seek to foster other fact compilations.

TAX AND COST ACCOUNTING

The major problems to which the tax and cost-accounting committee had devoted itself during the past year, said R. C. Tway, chairman, in addressing the convention at the closing session on Friday morning, June 11, were the interpretation of Article 224 of the income-tax regulations and changes in the income-tax law of 1926. In this the committee had received the assistance of W. B. Reed, former secretary of the National Coal Association, and now its tax adviser. Routine work included the handling of taxation questions referred to the committee by individual members and the preparation, by Mr. Reed, of short digests of decisions and rulings affecting federal taxation.

Article 224 is the regulation in which distribution

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is made between capital charges and expense items. The association has taken the position that expenditures to maintain production should be treated as expense items and expenditures to increase production should be capitalized. Efforts to maintain that position, however, have not been very successful. Each ruling promulgated has appeared more drastic than its predecessor. The most recent decisions, for example, have taken rails and lesser items out of the expense account and put them in the capital account.

The association still is fighting to secure acceptance of its position. The question of interpretation is now before the federal courts in *Beech Creek Coal Co. vs. Collector of Internal Revenue.* The association also is laboring to have the article liberalized in the redrafting of the regulations made necessary by the new income-tax law "to eliminate all reference to major and minor items of expense or to the probable duration of the life of the article for which the expense was incurred. It would base the distinction absolutely and solely upon the question of the effect of the expenditure upon output or upon cost of production."

Capital-Stock Tax Is Property Levy

During the consideration of the new tax law by Congress the association filed a brief opposing the capital-stock tax, the stamp tax on original issues of stock and the retroactive features of section 204 of the act of 1924. The capital-stock tax, the committee emphasized, had to be paid regardless of earnings and was virtually a property tax. "Though definite figures are not available as to capital investment in the bituminous industry on which the tax was based, yet a conservative estimate would be that the repeal of the capital-stock tax law saved the bituminous operators something between $2,000,000 and $3,000,000 annually."

Trade information, stream pollution, a threatened transfer of safety work to the Bureau of Labor Statistics, proposed modifications of the Sherman anti-trust law and the campaign for regulation of the coal industry were the subjects discussed in the report of the government-relations committee presented by W. H. Cunningham, chairman. The committee commended the revival of statistical activity and indorsed the recommendations of the trade information committee for an expansion of that work. While stream pollution was a local, not a federal, matter, so many mines are affected that the organization should keep in touch with developments to prevent injustice being done.

The committee reported success in its representations to Congress that the proposal to establish a division of labor safety in the Department of Labor should exempt the mining industry and leave the safety work under the control of the Bureau of Mines.

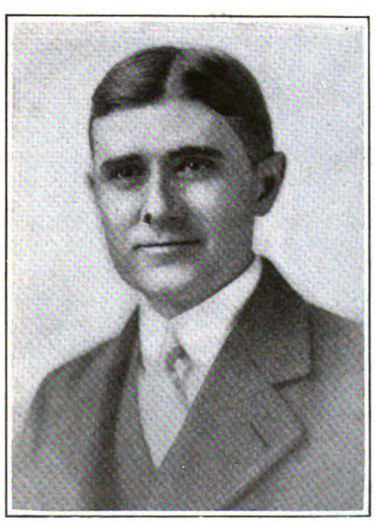
Facing All Issues Squarely

Reviewing the drive for federal legislation on coal, Mr. Cunningham declared that "the association conducted no lobby, it made no pussyfooting efforts. It faced the issue squarely. It believed the industry had nothing to hide. The effort against legislation was made without apology; the record of the industry was cited with pride.

"The present Congressional session is nearing its end, and it is the belief of many who are in touch with the situation that there will be no further activity for coal legislation before adjournment. The bills mentioned (the Copeland and Parker measures) will go over to the December session, where efforts may again have to be made on behalf of the industry.

"In fact, gentlemen, this is a continuing effort for the protection of the industry. There is a part of our citizenry constantly striving for increased governmental activities. Bituminous operators must always be on the alert. They should strengthen their position by strengthening their local associations and in turn strengthening their national association. Further, they should make it their business at all times to fully acquaint their fellow citizens—and that includes members of Congress—with the fact that the bituminous industry is fueling this great nation at a lower cost than that enjoyed by any other coal-consuming public in the world."

In the discussion which followed the reading of the report, C. F. Richardson, West Kentucky Coal Co., urged members to keep in touch with the national lawmakers. J. G. Bradley, Elk River Coal & Lumber Co., declared that the coal industry did not want the



R. C. Tway



Melvin Traylor



H. B. Lindsay

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government to deprive it of its initiative and to take away the responsibility the operators had towards their stockholders and their employees. E. C. Mahan, Southern Coal & Coke Co., said that the efforts of the National Coal Association at Washington had prevented legislation and had placed the industry in a more favorable light with the public.

WHAT THE COAL INDUSTRY NEEDS

The essentials required for the successful and independent conduct of the bituminous industry, as seen by Melvin A. Traylor, president of the First National Bank, Chicago, and first vice-president of the American Bankers' Association, who addressed the convention on "The Layman's Viewpoint," are:

(1) Peace within the industry, meaning thereby freedom from labor troubles, and continuous operation with an adequate supply of coal.

(2) Constant striving for more efficient salesmanship and such better marketing conditions as will bring fair prices at all times—fair prices to the operators, the miners and the public.

(3) Provision for continuous fact-finding and publication of statistics by the industry itself.

The wisdom displayed in the coal industry, said the banker, "seemingly has not kept pace with its importance and its extent. The history of coal mining is an account of a long series of quarrels between operators and employees, and the blame has apparently lain with both parties to the quarrel." In support of this contention, Mr. Traylor traced the union movement in Great Britain and the growth of the socialistic conception among the mine workers there. On this side of the water, he admitted, socialism has been less rampant, but labor disturbances have been too frequent.

"The public," he maintained, "should not be expected to tolerate periodic dislocation of our economic structure simply because the various parties in an industry seem unable to compose their differences without a complete cessation of work for some months." Eleven per cent of the strikes in this country have been in the coal industry. This record is exceeded only by the building trades, with 19½ per cent, but these latter strikes were less important and involved far fewer men. Strikes are followed by investigations, but little or no improvement in the situation. "Are we going to admit the failure of individual enterprise and end with nationalization?"

Unless the industry can demonstrate its ability to settle its own affairs, warned Mr. Traylor, government control will be inevitable. Federal supervision was not the curse commonly painted, but it can cure no ills. It can merely watch the symptoms and give the alarm if danger approaches. The ills of coal have been diagnosed with care and precision. Overdevelopment, accentuated by the war, is generally recognized as the fundamental cause of bituminous instability.

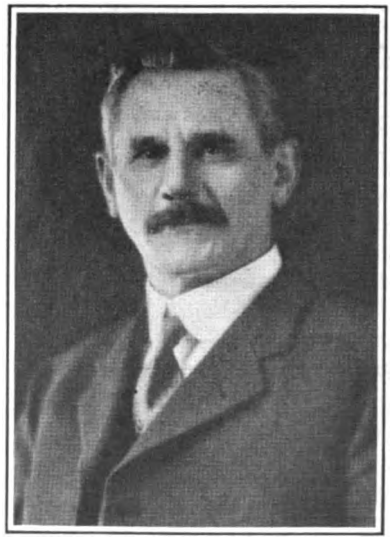
"Inseparably bound up with the factor of overdevelopment is the factor of labor relations. That strikes tend to cause overdevelopment has been well understood, but it is quite as important to understand that overdevelopment causes strikes. Competition between fields with a fixed labor cost and other fields with a flexible labor cost makes the industry fundamentally unstable and tends to increase overdevelopment. Hence, a permanent cure for overdevelopment must provide something like uniformity of labor standards.

"In a broad sense it is economically unsound that one-half of the industry should be governed by a fixed and the other half by a flexible labor cost. A rigid wage rate spread uniformly over a wide territory where working conditions and living costs vary materially is also illogical. The ideal wage contract, flexible to the point of adjusting earnings to various working conditions and to the changes in living costs and profits in the industry, is not in sight for the immediate future, but we may expect a gradual improvement in the mutual understanding by employers and employees of each other's problems and needs, from which improved relations between them, contractual and otherwise, will naturally ensue."

This development of better labor relations, continued Mr. Traylor, must be left to the industry itself. "The government can do no more than enforce the law and protect both sides in the exercise of their rights as citizens so that the issues can be settled by peaceful means and not by force. This calls for the suppression of lawlessness, both in union communities like Herrin and in the non-union mountains of West Virginia and Kentucky. The public should insist that the



J. G. Bradley



John H. Jones



D. H. Pape

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collective bargaining question should be decided in each district on its merits by the employers and the men who work in the mines, and should condemn any resort to violence by either party."

Elimination of high-cost operations is the obvious remedy for the present unstable conditions. It had been hoped to accomplish this by the long-term Jacksonville agreement, but this hope was blasted by the competition of non-union mines. The law of supply and demand has been working against the union fields. "The penalty has, in many cases, fallen upon operations not basically uneconomical, but placed in that category by a situation which imposed on them a higher cost of production than prevailed in competitive fields in non-union territory."

Larger units of production were recommended as one of the steps in the ultimate solution of the problem. "Gradually we are beginning to realize that under modern conditions large corporations offer the only means of handling certain of our industries effectively and economically. Under unified control of financial and physical operations it would be possible to accomplish more effectively the economies inherent in co-operative marketing associations. The elimination of unnecessary costs in distribution, improvements in methods and standards of quality, building up wider markets, adjustments of production to fluctuations in demand, and the disappearance of surplus mines and workers are possibilities which can most effectively be realized under consolidations of ownership. The first practical step in promoting the plan is to impress the idea upon operators, financial interests and the public."

Stumble Along After Great Britain

In the closing minutes of the session, Retiring President Gould conducted his successor to the chair amid applause. Mr. Barnum declared that he saw three major problems confronting the association—government relations, research and membership. "Unless we are careful," he said, "we may find to our dismay that Great Britain has written the history of our coal industry in advance."

Turning to research he stated that if the gas companies could market their product at 50c. per 1,000 cu.ft., fuel-oil competition would be eliminated. The disparity between summer and winter loads at this time prevents this and holds back the campaign for domestic heating business. The gas interests, however, are trying to find new summer markets or methods of storing gas in summer for winter use. The accomplishment of either of these ends means a broader market for coal.

Another possibility is the development of an automatic stoker for domestic furnaces. Experiments are being made with equipment to carry a hopper charge of 500 to 1,000 lb. of coal and to be electrically controlled. One test with high-ash, low B.t.u. coal had given 7 lb. of steam per pound of coal. The perfecting of such equipment also would put fuel oil at a disadvantage. With these possibilities in mind, President Barnum felt that the day when increased coal consumption would offset the deductions due to increased efficiency was not so far distant.

The resolution of the National Retail Coal Merchants' Association for co-operation in working out and using a slogan to advertise the use of coal was read and referred to the publicity committee.

Association Shows Active Interest in Safety

Records of Employees Essential to Keep Compensation Rates at Minimum—Problems of the Convalescent

Staff Correspondence

COMPLETE ELIMINATION or all preventable accidents was the goal set for the coal mining industry at the safety conference held at the Drake Hotel, Chicago, June 10, as part of the program of the ninth annual convention of the National Coal Association. There was general agreement among the coal men present that education of the workers was the most necessary step in accomplishing this result. This educational campaign, it was felt, could be made most effective if put upon a competitive basis. More complete records on the accident history of individual employees and more intensive studies of accident curves plotted from mine records also were urged as aids in reducing the number of accidents.

Man the Biggest of Our Hazards

The human element is the biggest factor in accident-prevention work, declared Phil H. Penna, chairman of the committee on safety, in opening the discussion. "Recklessness is a typical American characteristic. It is not only in the coal-mining industry that deaths in the United States are at a higher rate than in European countries. The same thing is true of practically all occupations and is to be accounted for to a considerable extent by the unfortunate readiness of American workmen to take chances.

"In many industries the individual pays the penalty of his own heedlessness. In our industry, on the other hand, only too frequently the carelessness of one causes the injury of others, as well as the destruction of property and loss of time to the operator. Your committee believes that it cannot put too much emphasis on the importance of training the individual in 'safety-first' knowledge and habits. It believes that money expended in promoting proper carefulness on the part of mine employees will be returned manyfold to the operators incurring it."

Mr. Penna cited the rapid increase in the number of chapters of the Joseph A. Holmes Safety Association as proof that interest in the safety movement is growing. The association at its last annual meeting divorced itself from all legal control and responsibility for the local chapters, which now are members of an unincorporated society known as the Holmes Safety Association. The parent body continues as a national incorporated organization.

How one company by reorganizing its safety work was able to reduce its accident rate per 1,000 man-days from 1.33 to 0.71 per cent in less than three years was explained to the convention by J. William Wetter, general manager of the bituminous operations of Madeira, Hill & Co.

Competition is the keynote of the accident-prevention campaign undertaken by producers in the Southeast, according to R. E. Howe, secretary, Southern Appalachian Coal Operators' Association, who addressed the convention on "One Way to Interest Employees in Safety Work." His organization has formed a sub-

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Phil H. Penna

Secretary-Treasurer of Indiana Coal Operators Association and Chairman of the Committee on Safety.

sidiary body known as the Southern Appalachian Efficiency Association to which superintendents, mine foremen, safety inspectors, fire bosses, electricians and other key men belong.

Accident prevention, of course, is the most certain method of keeping the cost of compensation insurance to the minimum, stated J. T. Rupli, superintendent of the compensation department of the Chicago, Wilmington & Franklin Coal Co. Without minimizing the importance of preventive work, however, it was the speakers opinion that the industry had not given enough attention to the efficient handling of the accident situation after the accident has occurred. One great drawback to this consideration has been the "compensation complex." Operators have treated compensation claims as a matter of insurance instead of as an operating problem, despite the fact that insurance rates are based upon the physical and moral hazards of the industry and its accident experience.

As the first step in reducing compensation costs after accidents, Mr. Rupli recommended the establishment of compensation or personnel bureaus to maintain personal contact with injured employees and function as a connecting link between the operating department and the insurance agency. Another necessary step is to employ only men physically fit for the jobs to which they may be assigned. Administration of first-aid by specially trained men is essential. Inexpert first-aid treatment in many cases does more harm than good and may aggravate the injury.

Report Before Aggravation or Infection

Every injured man should be required to report to the company surgeon or doctor for examination at the earliest practical moment. Such a requirement safeguards all parties of interest. The injured man receives proper treatment, the employer receives the necessary statistical and medical data, and malingering and fraudulent claims are effectively discouraged. The personal contact maintained with the injured by the compensation bureau likewise reduces the number of unnecessary claims and also impresses the employee with a sense of company interest in his welfare. Working of the "compensation complex" under such conditions is impossible.

When the injured man is ready to return to work, the decision whether he is able to resume his former tasks or should be given lighter duties should rest with someone competent to pass judgment. Mine bosses as a rule, said Mr. Rupli, are inclined to act upon the theory that the man's discharge from medical care is proof that he is ready to take his old job. At other times, they will encourage exaggerated claims by giving the returned worker a lighter task.

Every accident, however, trivial, should be reported. Neglect of slight injuries sometimes leads to serious permanent disabilities. Such reports will furnish data for a statistical study of accident curves which may be compared with similar data from other mines. This comparative study will give the groundwork for further investigation of accident-prevention methods. These studies should be made by mine safety committees consisting of the operating executive, mine superintendent, bosses, safety inspector and manager of the compensation bureau.

"And when I say safety inspector," Mr. Rupli declared, "I do not mean the old practical miner who has seen his best days at the face or the technical engineer fresh from college, but one who has had sufficient technical and practical experience to give him the balance of discretion. Such safety inspector should report direct to the executive management." His duties should include "periodical inspections of the mine properties with the view of checking unsafe and dangerous mining practices and violation of mining law and company rules from the standpoint of accident prevention."

The Harlan County Coal Operators' Association, W. A. Ellison, president of that association, told the convention, has installed a system of centralized reports to show the location of any employee and his credit standing with former employees and a complete record of accidents.

Does Rate of Pay Affect Accidents?

Mr. Ellison criticized the insurance companies for their varying rates. Some companies, he said, are withdrawing from the mining fields and refuse to renew expiring policies. Ratings are not always based on performance. He knew of cases where a mine with a low accident rate had been penalized and one with a high accident rate had had its premiums reduced. The National Coal Association, he thought, should look into the question of ratings so that safe mines might receive the proper consideration.

J. G. Bradley, Elk River Coal & Lumber Co., Dundon, W. Va., and Tom L. Lewis, New River Coal Operators' Association, Charleston, W. Va., took sharp issue with the statement of one speaker who claimed that high rates of pay discouraged accidents. Mr. Lewis asserted that wages had nothing to do with the question. E. C. Mahan, Southern Coal & Coke Co., Knoxville, Tenn., indorsing what Mr. Ellison had said upon the attitude of the insurance companies, declared that many operators were being forced to carry their own insurance. One company, taking its chances under its common-law liabilities, had cut its compensation costs $30,000 in nineteen months. Undue liberality on the part of insurance companies in paying claims had caused increased rates.

The session closed with the first showing of "The Story of a Rock-Dusted Mine," a film produced under the direction of the U. S. Bureau of Mines in cooperation with the Chicago, Wilmington & Franklin Coal Co. Most of the scenes had been taken underground at New Orient. A few sequences pictured some of the experimental explosions at Bruceton.

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By Pooling Purchases of Mine and Store Supplies Operators Hope to Reduce Expenditures

Standardization Makes Pooling Easy—Bituminous Industry Spends 157 Million Dollars Annually for Mine Maintenance Supplies—Co-operative Buying Makes Smaller Stocks Permissible

Staff Correspondence

THE BUYING POWER of the bituminous industry and how it may be marshalled effectively to reduce costs through pooled purchases, was the theme of a group meeting of operators' purchasing agents held at the Drake Hotel, Chicago, June 9, as part of the program of the ninth annual convention of the National Coal Association. At this meeting, the methods by which the operators in one field—the New River district of West Virginia—were substantially reducing the cost prices on merchandise purchased for resale in company stores were explained. This development still is in its infancy, but those participating in it already are studying how the movement can be extended to take in some of the mine supplies for which the bituminous industry spends over $157,000,000 per year.

John C. Dinsmore, assistant professor, commercial organizations, and purchasing agent for the University of Chicago, opened the presentation with a discussion of the general principles of pool buying. Walter Muir, purchasing agent, Raleigh Coal & Coke Co., and chairman of the purchasing agents division of the New River Coal Operators' Association, followed with a recital of what was being accomplished in his district in group buying of merchandise for company stores. Allan H. Willett, director, Bureau of Coal Economics, National Coal Association, brought the discussion to a close with a review of the buying power of the industry and a consideration of some of the problems to be met in pooled purchases of mine supplies. M. L. Garvey, president, New River Coal Operators' Association, presided.



John C. Dinsmore

The American plan of distribution, said Prof. Dinsmore, is built up around the fact that larger volumes make it possible for the factory to operate more economically and for the distributor to reduce his unit costs. "The problem of the pool buyer is to secure the co-operation of the individual members of a certain group in order that their joint order might be large enough to warrant the lower price." When an attempt is made to secure this co-operation, the pool buyer immediately discovers a wide variation in the standards used by the individual members. This means that there must be a careful analysis and comparison of existing standards and general agreement upon new ones.

With something approaching standardization in specifications, cost variations quickly challenge attention and the way is opened for a campaign for uniformity in prices. Variations on identical commodities, said Prof. Dinsmore, have ranged from 10 to 3,000 per cent. "It is evident that the mere act of routing the orders for any group of individuals through one central office must automatically call attention to so many price variations on identical commodities that big savings would result."

Reciting the savings effected by pooling purchases for small colleges, social agencies, universities and building managers' associations, Prof. Dinsmore felt that the experiences of these groups made it "safe to conclude that any group of purchasing officers who will co-operate can through their joint purchasing power reduce the average unit costs of supplies 10 per cent. Pool buying, to be effective, must go hand in hand with a study of the relative effectiveness of the various commodities offered, and these studies should result in further reducing material costs. These savings from both sources sometimes cut unit costs in half. The direct financial returns on these studies and these pools should never be less than four times the expense, and they frequently run higher. Pool buying, skillfully directed, should sometimes mean just the difference between writing the result of the year's business in black ink instead of red."

The principle underlying the associated purchasing plan of the New River producers, said Mr. Muir, "is the application of the power of concentrated effort as distinguished from individual effort." Quantity buying means lower unit prices and, in many cases, carload, instead of the higher less-than-carload freight rates. So pleased are the companies with results already attained that "it is our intention to gradually work this up to a point where we will be buying a large volume of our merchandise in pooled cars, which will make a tremendous saving at the end of the year."

Dr. Willett carried the discussion a step further by presenting some of the problems to be met if the plan is extended to take in purchases of mine supplies. Psychological drawbacks to such an extension are inertia and the ultra-competitive conditions under which the bituminous industry is operated. "Of the practical obstacles in the way of the success of co-operative buying, the most serious is due to the large number of styles, sizes and shapes of some of the common kinds of mine supplies. The companies entering into the co-operative purchasing of mine supplies will benefit most in the purchase of those materials which are widely used in standard forms. The final result of the present active interest in standardization will be to widen the profitable field of operation of co-operative buying."

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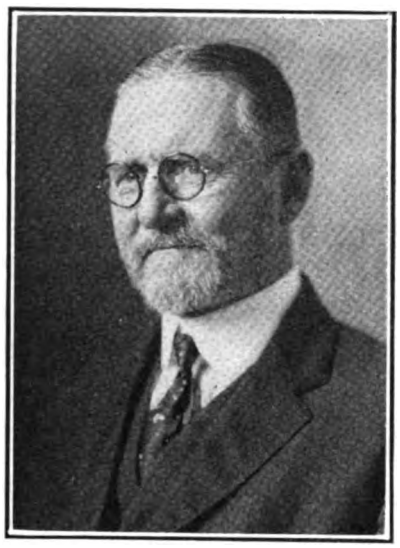
Maintenance of a common store of surplus mine supplies, however, is not necessarily an exclusive complement of co-operative buying. But such common stores are necessary if the full benefits of co-operative buying are to be realized. There are, of course, obvious limitations to the profitable application of the common store. Where mines were widely scattered, high distribution costs might easily negative the gains made in pooled buying. "An essential condition of the successful operation of the plan," said Dr. Willett, "would be a group of mines located so near one another that supplies could be distributed among them from a common center at comparatively slight expense."



Allen T. Willett

In the opinion of the speaker, the gains from co-operative buying were so patent that they required no detailed consideration. Occasionally individual companies attempt to obtain these benefits by purchasing large quantities of material in advance. In those cases, however, these gains are diminished by losses "that are almost sure to occur" from deterioration or disappearance of materials between the time of purchase and the time of utilization. One large operator had estimated that the cost of carying excess stores and supplies approximated 3 per cent per month. This cost, equal to $360 per annum for every $1,000 invested in supplies not needed in the near future, included interest, deterioration and disappearance.

"It is precisely in the minimizing of such losses," continued Dr. Willett, "that there is to be found the chief advantage of the maintenance of a common stock of mine supplies. The gain from co-operative buying is positive and is realized through lower prices. The gain from a common stock of supplies is negative, and consists in avoiding the loss and expense involved in maintaining large individual stocks. It is obvious that a dozen or twenty or fifty mines drawing supplies from a common warehouse could safely maintain a much smaller stock than the aggregate of the individual stocks of all mines if each provided for its own possible needs. This reduction in stocks would mean a smaller investment and lower interest charges, reduced cost of storage and supervison, and less loss and deterioration of the materials themselves. And even where the maintenance of a common store of supplies is impracticable because mines are too widely scattered, or for any other reason, co-operative buying is entirely feasible and practical."

The average annual realization at the mines on bituminous coal produced in the past three years has been $1,207,727,000. Dr. Willett estimated that $905,795,250 of this amount is distributed as salaries and wages and $157,004,510 is expended for materials and supplies. Most of the disbursements for wages and salaries are in turn expended by the recipients for the necessaries and the luxuries of life. In other words, the bituminous industry as a whole has a combined buying power in excess of $1,000,000,000 per annum and anything that affects that buying power unfavorably must necessarily have like reaction upon general business.

In addition to these direct disbursements, the bituminous industry also contributes several hundred millions of dollars (estimated at $856,242,000 in 1923) to the railroads for transportation. At the same time the industry is furnishing the carriers millions of tons of coal (126,340,181 tons in 1924) at declining prices. The average cost of railroad fuel, including freight, has dropped from $4.10 per ton in 1921 to $2.62 for the first two months of 1926—a decline of $1.48, or 36 per cent. Another large item not included in the estimate of the buying power of the industry is the expenditures for new equipment and replacements charged to the capital account.

NO DATA ON STORE AND IMPROVEMENT PURCHASES

There also must be considered the expenditures to supply employees with the necessaries and comforts of life, including company-store purchases, expenditures for town improvements and the maintenance of company houses. "From the scanty information available on this class of expenditures," stated the speaker, "one is justified in going no further than the broad generalization that in the aggregate it represents scores of millions of dollars of investment and many millions of annual upkeep and turnover."

Mine supplies cover a wide range of commodities, for many of which, said Dr. Willett, there were no accurate data on costs and quantities purchased. Therefore, he confined his analysis of this phase of the buying power of the industry to expenditures for explosives and mine timber. The soft-coal mines consume more than one-third of the explosives manufactured in this country for domestic use. Approximately 323 lb. are used per 1,000 tons of coal produced, as compared with 446 lb. in 1922. During the period 1917-24, black blasting powder constituted 77.8 per cent of all explosives used. By 1925 the proportion had dropped to 70.8 per cent and the proportion of permissible explosives had increased from 15.8 to 23.8 per cent. "This substitution of permissibles for black powder is an evidence of the disposition on the part of the operators to adopt methods dictated by consideration of safety as it is well known that high explosives are more expensive in themselves and more detrimental to the grade of coal produced than black blasting powder."

The bituminous industry consumes approximately 1.6 per cent of the annual timber cut. Consumption since 1906 has increased 26 per cent, but the production of coal in 1923 was nearly 80 per cent greater than in 1906. "The incentive to economy in the consumption of mine timber, as well as the use of substitutes is to be found in the rising cost." In 1906 this cost averaged $5.16 per thousand board ft.; in 1923, it averaged $16.17, an increase of 213 per cent. This increase has inspired mine managers to seek diligently for methods of economizing in the use of mine timber and for new sources of supply at reduced costs. This latter search is responsible for the rapid expansion in reforestation projects by Pennsylvania mines. This movement, predicted Dr. Willett, will spread to other states as the native supply of suitable forest timber diminishes.

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A Selling Organization Should Concentrate on Merchandising a Single Kind of Coal

Independent Jobbers Charge Ten per Cent of Sales Price Whereas Company Department Will Handle It for Six per Cent—Coals Sold by Sales Department Should Be from Same Seam and Railroad

Staff Correspondence

BETTER MERCHANDISING METHODS as the key to a profitable bituminous coal industry were advocated at a group meeting of sales managers and executives held at the Drake Hotel, Chicago, on June 10 as part of the program of the ninth annual convention of the National Coal Association. "It is very common for an operating company to spend thousands of dollars to save 10c. per ton in production costs," declared one of the speakers in epitomizing the spirit of the meeting. "It seems to me entirely possible, if the same brains and effort, and only a part of the money were appropriated for proper merchandising methods, to add this 10c. to our realization much more easily."

"It would be difficult to imagine a more appropriate time than the present to give serious consideration to the sale and distribution of the products of our industry," asserted Ralph Knode, president, General Coal Co., Philadelphia, Pa., who was the first speaker at this meeting presided over by John H. Jones, president, Bertha-Consumers Co., Pittsburgh, Pa. "I cannot imagine," continued Col. Knode, "a more valuable asset for capital invested in the coal industry than a capable sales organization."

H. A. Glover, vice-president, Knox Consolidated Coal Co., Indianapolis, Ind., laid down the dictum that "every operating company of whatever size should sell its own coal either directly to a consumer or retailer or through a sales agency of common ownership." The most expensive and least efficient method of distribution is through independent jobbers, where the costs run as high as 10 per cent of the selling price. Sales through a separately organized, but mine controlled, selling agency absorb 6 to 8 per cent of the selling price. The most efficient method of selling is through the operating company's own sales department, where costs are considerably below 6 per cent. The average cost for all classes was estimated at approximately 6 per cent of the selling price.

The only solution for the industry, as Mr. Glover saw it, "lies in concentrating our physical properties and selling organizations into larger units, the intelligent use of a larger percentage of our gross income in modern merchandising and the co-ordination of sales activities through close co-operation." Physical consolidations cannot be successful unless proper weight is given to sales consolidations. "In other words, the mere gathering together of a heterogenous group of physical properties, either large or small, will not make a successful consolidation."

The essentials of a successful consolidation, as outlined by the speaker, were:

(1) Each property must have an established business.

(2) The coals controlled must be from the same seam or seams, have the same preparation and, usually, be served by the same railroad. "One small isolated mine of a different seam or a different preparation will require as much attention from the sales department as an infinitely larger tonnage in the main group. In the Middle West, and I think it applies in the majority of fields, the originating railroad helps the operator by taking certain resultant sizes upon the movement of which the mine must depend for its successful operation. For this reason, coal is not fully interchangeable unless it originates on the same railroad."

Material progress toward general centralization of marketing can be made by the formation of local associations to co-operate in production and distribution and to report closed transactions, average realizations and unfilled orders. "By close co-operation among any small group of operators, it will be found that almost invariably some one in the group can take resultant sizes of which his neighbor may have a surplus and thus avoid dumping them on the market." Once mutual confidence has been established in this group the way is open for the formation of a single selling company owned entirely by the operators.

The third, "and the only permanently effective, step is the actual consolidation of ownership into a single company of the mines and selling agencies. It is possible, in fact desirable, to form larger units, even taking in tonnage in many fields. However, I insist, no concentration, consolidation, or even close co-operation, can achieve the greatest measure of success unless the foundation is laid in small groups of properties with the same identical operating and marketing problems. Sales efficiency lies in concentration of effort on one particular thing. It is no more possible for a sales organization to efficiently market five or six competing coals than it is for an automobile agent to properly represent five or six different cars in the same price class."

Chairman Jones agreed with the speaker that too little has been spent on marketing. One of the sore spots in selling is the fact that large consumers, particularly the railroads, dictate prices and operators are stampeding into accepting business at such prices because some competitor is willing to ship coal on that basis. C. F. Richardson, West Kentucky Coal Co., Sturgis, Ky., concurred in that view and complained that the majority permits a minority which does not know its costs to set the prices for a whole field.

In answer to a question from Mr. Richardson, Mr. Glover said that the common selling agency was only a step in a process which must end with the actual consolidation of mines as well as sales departments. F. W. Wilshire, Consolidation Coal Co., New York, stated that a common selling agency had worked successfully in the Fairmont district for a number of years, but that with the development of new mining companies not in the

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H. A. Glover



F. W. Wilshire



W. H. Cunningham

original group "we reached a point where we have had serious price wars in Fairmont, just as serious as in any place I know of."

Mr. Richardson again emphasized the drawbacks of competition from uninformed operators. Alabama, he remarked ruefully, appears to have been fairly successful in "organized selling" despite variations in grades. "We can't do it. We haven't done it. The only time we make money is when we can't help it. We are dependent as a rule and as a whole on weather conditions, car shortage or a strike, and anybody knows that there is not one of those three things that is sound. If we would spend more money in getting higher-class men, who know what it means to reduce the price a nickel, they would fight for that nickel rather than cut it to get the order."

Failure of many operators to maintain standards of preparation hurt those who took pride in their coal, declared Mr. Jenkins. When business is slack "every one commences to figure how low he can sell to keep from losing money, rather to shut down the mine and lose a lot more." If they lose a piece of business upon which they have quoted a fair price, they go out and quote 5c. less on the next bid. "Right there is the missing link."

In the absence of J. G. Puterbaugh, president, McAlester Fuel Co., McAlester, Okla., the question of fuel-oil competition was discussed extemporaneously by W. L. A. Johnson, commissioner, Southwestern Interstate Coal Operators' Association. The mines in his organization, he pointed out, are in the heart of the Mid-Continent field and have lost heavily to fuel oil in both the industrial and the domestic trade. These losses probably approximated 5,000,000 tons. Kansas City alone has over 18,000 oil-burners.

W. H. Cunningham, Basic Coal Co., Huntington, W. Va., believed that the meeting proved that the industry was alive to the value of improved facilities and methods of marketing. He knew that he was selling coal in competition with oil, but admitted that he knew little about oil. Here was a field in which the National Coal Association might well play a larger part.

That the coal industry was not as greatly overdeveloped as many believed was the contention of Warren Blauvelt, Vigo Mining Co., Terre Haute, Ind., who pointed to the excess capacity in steel and copper despite the smaller number of units in those industries. There was, too, less variation in demand for coal than in many other lines of business enterprise. Coal men, however, often make the mistake of trying to put their coals where they do not belong and cannot compete.

Fred W. Braggins, Lorain Coal & Dock Co., Columbus, Ohio, assailed speculative production and open billing of coal as demoralizing factors.

Mr. Johnson stressed the necessity of greater confidence between competing operators. He wanted help in spreading the doctrine of centralized selling agencies and was ready to volunteer to call group meetings of producers "in a private place where I could hold them all together long enough to tell them some of the things we have talked about today." C. F. Richardson expressed the thought that the association could assist in such work if funds were provided.

Just as soon as a group is assembled, remarked Mr. Johnson, the question of legality crops up. The purchasing agents, said F. W. Braggins, meet frequently to discuss coal supply and prices, "and yet we as coal operators don't meet often enough in bodies to discuss sales and production problems. If every association distributed figures on past transactions as is done in the furniture business, in the cement business and in a lot of other businesses, all the sales departments of the different companies would soon get on their toes to see that their department was not selling coal at less than the competitor's rate."

"I should like much," said Mr. Jenkins, "to see a committee appointed and immediately asked to get all the information it can from a legal standpoint and at the same time requested that there be a committee appointed in each district under the jurisdiction of this association. Then when this national committee has obtained all the information it can, I would suggest that that committee call a meeting of all the other committees and at the time of that meeting they should have something concrete and constructive to put up which the other committees could take back to their districts."

This suggestion was accepted as a motion and adopted by the meeting. The meeting then adjourned.

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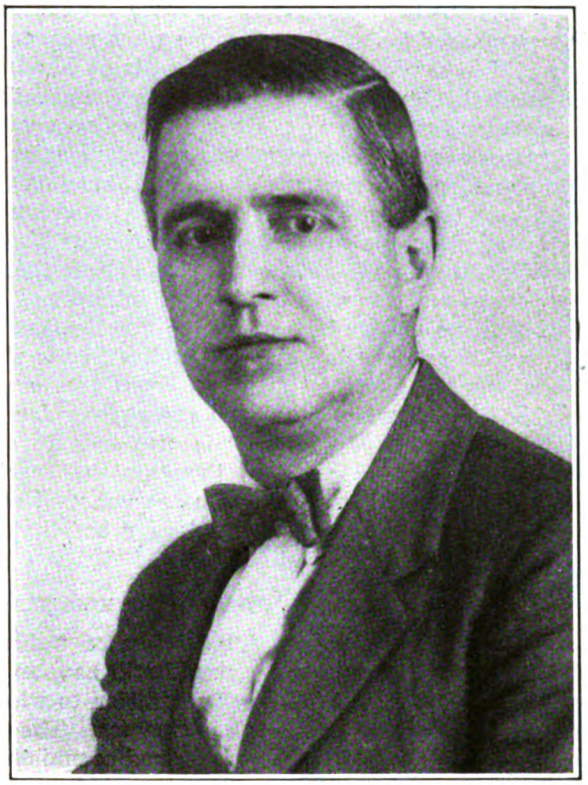
Coal-Mine Commissaries Lessen Costs by Co-Operative Buying

By Walter Muir
Store Manager and Buyer Raleigh Coal & Coke Co., Raleigh, W. Va.

THE OLD MAXIM that "goods well bought are half sold," even in this age of advanced efficiency, still holds good. Consequently the efforts of the store manager should be directed more to intelligence in buying than to urgency in selling, though I would not like to feel that our managers were lacking in a keen appreciation of the importance of selling their merchandise.

Because of the necessity of buying good merchandise at the lowest price attainable the New River store managers decided to co-ordinate their purchases and unite their buying strength, and they are confident that this is only the beginning of a great movement in an essential part of the bituminous coal industry. This movement will enable them to make definite savings in their purchases and to extend greater advantages to their patrons while adding materially to the income obtained from the conduct of their stores.

Every purchasing agent knows that most manufacturers set a lower price on one hundred cases of their product than on ten cases, and that on carlots there is a still greater differential. Moreover where carlots can be purchased, there is the further freight saving not only because of the difference in rate between a carload and less than a carload, but also because the goods can be shipped direct from the factory, which is often less distant than some central "headquarters" from which any smaller quantities of the commodity are usually shipped. Thus, by concentrating buying power and unit-



Walter Muir

ing purchases, it is possible to make worthwhile savings.

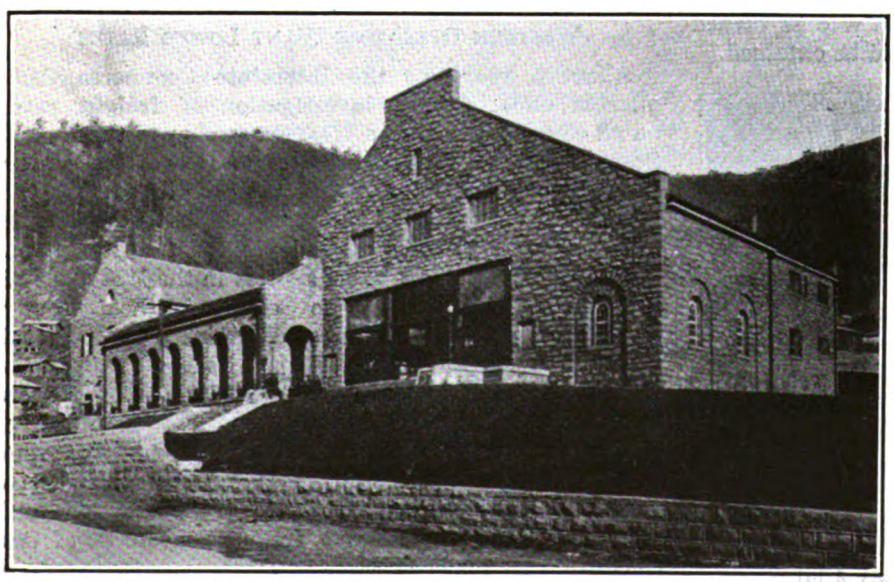
This has already been demonstrated in the New River field, where in the past few months several buyers have pooled their orders in the purchase of many commodities, thereby gaining carload prices on less than carload quantities. They have been able also to arrange to pool their purchases of canned vegetables so that they will be able to handle two cars of corn in the New River field and about the same quantity in the Winding Gulf field, thereby getting quite a concession in prices, and saving the difference between carload freight and local freight. They intend to develop gradually this practice so that they will be buying a large volume of their merchandise in pooled cars, thus making a large saving at the end of the year.

Of course, in commissaries a great variety of merchandise is handled, and some of it is put in stock in a small way for the convenience of only a few patrons. But if the hundred-and-one things dealt in at each individual commissary were multiplied by a hundred, it would make a formidable quantity of every article, even of the smaller items.

These are possibilities lying wide open to store managers. They have many units from which to draw. each manager has need for definite and fixed quantities of merchandise. By combining his requirements with those of others and purchasing with others at such times as would best serve all, great benefits would undoubtedly be derived.

I realize of course, that the volume of business on every article varies in our different commissaries. Some

Abstract of paper entitled "Benefits Derived Through Associated Buying" read at the sectional meeting of the Coal Operators' Purchasing Agents at the Ninth Annual Meeting, National Coal Association, Chicago, June 9. Mr. Muir is chairman of the Purchasing Agents' Division, New River Coal Operators' Association, Mount Hope, W. Va.



Store and Office Building, Pocahontas Fuel Co., Ittman, W. Va.

This beautiful building is located in Wyoming County. The structure adds dignity and attractiveness to the little mining village, being built of native stone and made attractive by well-kept lawns. It is unfortunate that mining towns do not usually have buildings so well designed as this. Too many fine store buildings bear the manifest marks of amateur architecture.

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articles sell more freely in one place than in another, and one commissary will frequently close out the goods it has purchased and will want more when most of the others still have plenty of the same goods on hand.

To meet that contingency it will be a comparatively easy matter for those whose stock is short to draw on those whose stock is long. Indeed, an arrangement for exchange under such circumstances can be made a valuable adjunct to the general plan, prevent the accumulation of dead stock and furnish an outlet for the disposal of articles that now and again have been bought injudiciously, and yet with the best of intentions.

No buyer, no matter how expert he may be, fails, at some time or another to get merchandise in his stock, which at the time of the purchase looks like a good "buy," but which when placed on the shelves for sale soon turns into dead stock. It is also true to some extent, more perhaps than is thought, that certain goods which are sold in one section are not used at all in another. This would be offered as proof that the plan could not be applied uniformly.

CANNOT APPLY SCHEME TO ALL COMMODITIES

But the scheme is not expected to be of universal application. Every commissary would still have to buy much merchandise independently in addition to what it bought in association with other companies. The idea is to utilize the strength of the combined commissaries in a district as users of large quantities of standard lines of merchandise, in buying all together instead of separately.

Some will claim that the saving in lower prices, etc., through associated purchases, would be more than offset by interest, storage, insurance charges and the risk of overbuying. In addition some may think that pool buying would detract from the initiative of the individual manager and cause him to lose interest in the conduct and success of his store. It would in other words, take away that personal touch that counts for so much in the success of any project.

There is only one answer to such objections. The proposal is sound in principle, and proven by experience. It will not grind out merchandise at 50 per cent profit or eliminate 25 per cent of the help in the stores, but it will save something on every associated purchase made and, on the large volume turned over in a year, substantial savings should be obtained.



Shoe Department in Big Mine Commissary

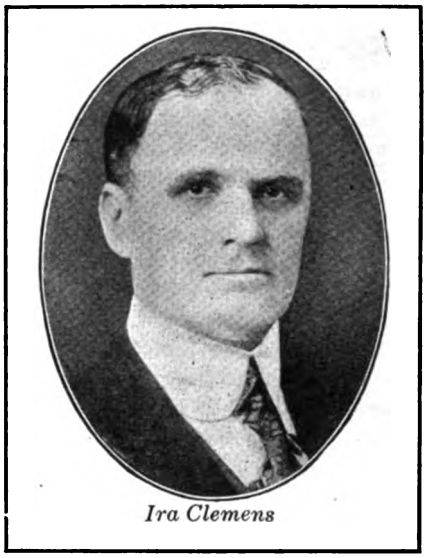
The largest saving in co-operative buying will probably be in comestibles where carload lots can be handled, but even in shoes big savings are possible.

Railroads Give Good Service But Some Ask Increases

Try to Obtain Greater Scale Tolerance—Western Roads Demand Higher Rates of Interstate Commerce Commission

By Ira Clemens
Clemens Coal Co., Pittsburg, Kans.

FOR THE FIRST TIME in the history of the National Coal Association more than a year has passed without the efficiency of the transportation service making a meeting of the transportation committee necessary. Throughout the winter the car shortages were insignificant and confined to small areas. Transportation facilities are ample to meet the needs of the industry at the present time and for some time in the future.



Ira Clemens

Several minor matters have been handled by correspondence and have been either disposed of satisfactorily or are being handled to a conclusion. Among them is the effort which some of the railroads have made to increase the scale tolerance on coal. Realizing that this is a question that more directly concerns the wholesalers and retailers, the traffic manager of the National Coal Association has been instructed to co-operate with those branches of the industry in opposing general increases in tolerance. This is being done. The question of prepayment of freight charges on coal to Canada has received the attention of the traffic manager, in co-operation with the foreign trade committee of the Association.

WESTERN OPERATORS WANT LOWER RATES

About a year ago the Interstate Commerce Commission undertook an investigation of freight rates on all commodities in the Western section of the United States. After carefully considering the scope of the Commission's investigation, it was concluded that the matter was of sectional interest and that the national organization therefore should not participate in it. Hearings were held in various cities in the West during the Fall and Winter, and the Commission has recently listened to oral arguments at Washington. The coal industry in general in the Western section is urging a decrease in rates, and the carriers are asking for an increase.

The secretary of the transportation committee, who is also the traffic manager of the Association, keeps the membership informed as to transportation and traffic matters. In this way frequent meetings of the committee are made unnecessary.

Report of transportation committee at ninth annual meeting of National Coal Commission, Chicago, June 9. Mr. Clemens is chairman.

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How Madeira-Hill Co. Has Reduced Accidents 40 per Cent Since 1924

By J. W. Wetter
General Manager, Bituminous Operations, Madeira, Hill & Co., Philipsburg, Pa.

UNTIL THE FALL of 1924, the safety effort of Madeira, Hill & Co. was directed along the same lines as is pursued by most other coal companies. It had as a member of its organization a competent safety engineer who devoted the greater part of his time to making physical examinations of the operations, both inside and outside, in an effort to detect all substandard conditions.

At the regular monthly organization meetings, at which the safety engineer was always present, his recommendations were carefully considered, and none were permitted to be carried over without definite action being taken. If the recommendation of the safety engineer entailed much time and expense, such as providing additional clearance on a main haulage road in old workings, a cost estimate was prepared as well as a time estimate, and provision was made to correct the substandard condition over a period of time, expending thereon a fixed sum each month. In some unusual cases, the removal of a substandard condition was spread over as long a time as two to four years.

The company felt it was making progress, as every month certain conditions which it thought contributed to accidents were removed, and the rating sheets showing the physical condition of each mine indicated a vast improvement. In the Fall of 1924, a survey of the operations showed that practically every major substandard condition had been removed, but notwithstanding this fact, neither the number of accidents, nor the number of days of disability had materially decreased.

AFTER ALL THE MAN COMES FIRST

The company then began to realize that its safety work was not producing results and this for the reason that it had been dealing with the physical mine conditions and neglecting the human element entering into the mine hazard. This brought a realization of the fact that no substantial and permanent results could be expected until every employee was impressed with the necessity of his complying with the mining law and with the safety rules and regulations of the company.

A survey of the organization was then made to determine whether all the men in the organization holding supervisory positions were competent to advise the workers as to the requirements of the mining law and instruct them in safe practices. It was found that a number of supervisors needed instruction in safety. From this it was plain to be seen that a safety program could not be impressed on the minds of the individual workers unless the men responsible for it were fitted and sufficiently informed to pass along the information. In other words, a successful safety program could not be made to reach all the individual employees until the top of the house had been put in order. The first step, therefore, was to organize schools for the supervisory forces, the benefits of which will be fully reflected in the results to be given later.

Abstract of paper entitled "Reducing Hazards in Mining of Coal" read at the ninth annual meeting of the National Coal Association, Chicago, June 10.



J. W. Wetter

The second step was to devise a daily reporting system which would show the exact situation in each assistant mine foreman's territory. Each assistant foreman was required to keep a written report of every working place and condition coming under his observation during the day. This at first met with much opposition from the superintendents, who took the position that it would require the assistant foreman to do too much clerical work. However, the company finally formulated a reporting system in the form of a code which would eliminate as much clerical work as possible but at the same time would convey to the general foreman the conditions as the assistant foreman found them. This plan met with favor and made the superintendents willing to give it a trial. The report book consists of a leather binder in which is inserted a pad of the assistant foreman's daily report. On the inside of the cover the code letters are printed as in Table I.

REPORTS BROUGHT QUICK RESULTS

The report form is divided into five columns showing the name or number of the heading, the room number, the check number of the miner, the code letter and the time of visit. These reports were first used Jan. 1, 1925, and an improvement in the accident record was almost immediately noticeable.

In fact, after using this reporting system for about three months, the superintendents requested that we furnish a summary sheet upon which the assistant foreman could post the daily reports each night, for they felt that thereby they would be better able to study them. The question was raised as to the manner in which this extra clerical work would be handled.

To this, the superintendents replied that the general

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foreman and the assistants were so enthusiastic over the plan that they would gladly post the records on the summary sheet each night before going home.

This summary sheet was furnished and covers one-half month. At the top of the sheet is shown the period, such as the first half of May or the second half of May, with the year, the name of the mine and the names of the assistant foremen. The sheet is 14 in. long and 25½ in. wide. The first vertical column is headed with the room, heading and check numbers, and then the dates for each half-month period, namely, from the first to the fifteenth, and from the sixteenth to the thirty-first.

Across the sheet under these captions are inserted the numbers of the rooms and headings inspected, together with the check numbers of the men working therein, and then below the check number under the dates the condition of each place as found on the day of inspection is entered.

This summary sheet shows the general foreman at one glance the conditions prevailing in every working place at the mine, and he gets this information before he goes home at night. The result is that the general foreman is informed regarding any unusual condition which needs his personal attention, and he can visit these places early the following morning and can take proper steps to remove any substandard condition. The code letters in the table cover not only safety matters, but also much valuable information relating to operating matters.

Table 1—Code Letters for Assistant Foreman's Daily Report

E	—Care and use of explosives
MC	—Handling of mine cars
P	—Preparation of coal
R	—Condition of roof
S	—Spragging of coal and boney
T	—Timbering of working place
NM	—Place not mined or cut
NC	—No coal
WC	—Waiting on cars
W	—Water in working place
FR	—Fall of roof
MF	—Misfire
NR	—Short of rails
DO	—Disobeying orders
CV	—Clay veins or rolls
M	—Miscellaneous items coming under your observation that should be brought to the Mine Foreman's attention.

Note—It is important that all time lost be marked below the code letters.

The system, therefore, permits the general foreman to put immediately his finger on the important items, and he knows at all times exactly what is taking place. For instance, if the assistant foreman's report shows that a number of men in one section of the mine has lost time waiting for cars, it is immediate notice to the general foreman that his haulage system is at fault. If, on the other hand, the report shows that a number of places have not been mined or cut, he knows that something is wrong with the cutting in that particular section. The summary sheet is also invaluable to the general superintendent and the safety engineer. They would not think of going into the mine without first having reviewed that record because it shows at a glance the places where normal conditions prevail and those which are subnormal and need attention.

The company formerly held one organization meeting each month at which both operating and safety problems were discussed, but these new reports furnished so much valuable information, both from a safety and an operating standpoint, that each month thereafter two organization meetings were held, one of which was devoted to operating questions and the other to safety matters.

Before each monthly safety meeting, two separate detailed statements are prepared for each mine. One shows a classification of every accident occurring during the month under each supervisor and the man-days lost due to each accident. This statement is 15 in. long and 16 in. wide and covers four mines.

In the first vertical column is entered the name of each general foreman, and in the second opposite this name are listed the names of the assistant foremen. The third vertical columns shows opposite the name of each assistant foreman, the accidents during the month and the man-days lost due to such accidents. The remainder of the sheet is divided into twenty-four vertical columns, the first twenty-two of which classify the various accidents such as fall of rock, fall of coal, handling of material, etc. The last two vertical columns show the totals for the month and the totals for the year.

It will readily be seen that this form enables the management to compare the degree of operating safety attained by each general foreman as well as by each assistant foreman. Copies of this form are furnished to the general manager, to each general superintendent for his district and to the safety engineer. One copy is posted at the mine for the benefit of the general and assistant foremen. At these organization meetings each accident is discussed as to its cause, and such action taken as will, in so far as possible, prevent a recurrence of an accident from that same source.

Another form is prepared covering the operations in each district, and this form shows the accident experience for the month. On this sheet is entered for each mine the details shown in Table II and in addition the number of compensable accidents, that of no-time-lost accidents, the number of temporary accidents, the number of specific accidents, the estimated compensable days lost, the estimated days lost from temporary accidents, the days lost from specific accidents, the accidents per 1,000 man-days worked, the accidents per 1,000 tons mined, the days lost per 1,000 man-days worked and the days lost per 1,000 tons mined.

KEEP RECORD OF FATALITIES SEPARATELY

In entering the days lost due to accidents the fatalities are not included because, though many ways of figuring an equivalent for these accidents have been devised and used, these accidents are of such vital importance that they are kept separate for special consideration and are not included with the non-fatal injuries.

It will be noted that the latter form, having been computed on a basis of 1,000 man-days worked and 1,000 tons mined, places each mine on a comparable basis, and in a like manner each district is placed on a comparable basis, because the form shows the average for each district for the current month and then also the average monthly experience for these same mines for the year to date as well as for the preceding year. The results of the campaign of Madeira, Hill & Co. at its bituminous operation are given in Table II. It covers six operations in one district.

TEMPORARY JOBS NOT DEDUCTED

The item, "number of man-days" in Table II covers only the days when the mine was working, whereas the total number of man-days lost due to accidents includes every day lost not only for compensable accidents but for non-compensable and temporary accidents as well. If a man was injured and could not follow his usual occupation, the total days lost from his usual occupation are included even though the man might have

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worked temporarily at some job other than that in which the accident occurred.

Also in the "days lost" each month is included the total loss incurred due to each accident. That is to say, if twenty accidents occur in any one month and five of them are specific accidents entailing a loss of 300 days each, the total loss would be 1,500 days, and if the other fifteen accidents are of a temporary nature entailing a loss of, say, ten days each, there would be another 150 days lost, or a total of 1,650 days, which total time would have to be included in the month in which the accidents hereinbefore specified occurred.

Table II—Accident Record, Six Operations, Madeira, Hill & Co.

	1924	1925	First 4 Mos 1926
Number of employees	1,043	864	1,101
Number of working days	272	284	91
Number of man-days	283,696	245,357	92,108
Number of gross tons mined	640,842	608,501	277,540
Number of fatal accidents	2	1	1
Total number of accidents	307	231	66
Total number of man-days lost due to accidents	5,759	3,419	933
Accidents per 1,000 man-days worked	1.33	0.94	0.71
Accidents per 1,000 tons mined	0.48	0.39	0.29
Days lost per 1,000 man-days	20	14	10.1
Days lost per 1,000 tons mined	9	5.6	4.11

If a man sustains a specific accident, such as the loss of a finger, which requires under the Pennsylvania Compensation Law the payment of a fixed sum, this compensation would be divided by the compensation rate per day and included in the figure for "total days lost." I make mention of this because the number of days lost as shown on the experience record might be considered as exceedingly high unless it were clearly understood that the total incurred loss is included in the figures. The yearly figures are, of course, computed on the same basis.

The figures given for the year 1924 give the experiences before this system was put into effect. It will be seen that the days lost per 1,000 man-days worked is 30 per cent less for 1925 than for 1924, and 50 per cent less for the first four months of 1926 than for the year 1924. The decrease in the number of accidents is just about in the same proportion.

The cost of compensation and medical service at the mines in this district was approximately $6,000 less in 1925 than in the year 1924. And at the present rate, the 1926 cost will be about $4,000 lower than that of 1925. In addition to this saving, the valuable operating data obtained from this system has greatly increased operating efficiency, and the cost sheets reflect the fact that the improvement in safety performance has also carried with it an improvement in production costs.

HELPS TO PROMOTE DISCIPLINE

This system has not only promoted better co-operation between the members of the organization and all the employees, but it also permits the exercise of strict discipline in enforcing the provisions of the Pennsylvania state mining law and the company's safety rules and regulations. Any employee who willfully or negligently violates a safety order is cited by the assistant foreman on his daily report. For the first offense, such employee is admonished, and, for the second offense, he is notified that the third breach of an order will mean instant dismissal.

In over two years, it has been necessary to resort to a discharge in only two cases, and in both instances the officials' action was upheld by the state mine inspectors. The employees all realize today that the instructions which are given are issued from a standpoint of protecting every individual, and the management has noted in many cases that where a man at the working face has been cited once for, say improper timbering or failure to set timbers, upon the next visit of the assistant foreman he has shown great concern as to whether his place has been timbered in a manner satisfactory to the assistant foreman so as to make certain that he would not be cited the second time and classified as an unsafe workman.

Strictly from a business point of view, the financial saving has more than made the effort worth while, but aside from this, the point of chief consideration is its value to the men themselves and their families. The management finds much gratification in the fact that in less than a year and a half nearly 50 per cent of the accidents at the mines under its supervision have been eliminated, together with the suffering of the injured employees and the hardships that would have been imposed upon their dependents.

More Timber Is Cut for Fuel Than for Any Other Single Purpose

Allen T. Willett, statistician of the National Coal Association, in discussing mine timber uses in his paper on the "Buying Power of the Bituminous Industry" at the ninth convention of the Association said:

"It is somewhat surprising to learn that of the timber cut in the United States 38.33 per cent is consumed for fuel and only 33.31 per cent goes into the next smaller class of product consisting of lumber, dimension material and sawn ties. In contrast with these important uses mine timbering furnishes a market for only 1.60 per cent of the annual cut. Nevertheless the actual amount so used is considerable. The data relate only to mine timber used underground, and do not cover lumber used outside the mine.

"In 1906 bituminous mines consumed the equivalent of 1,236,500,000 board feet of timber underground. In 1923 the consumption had increased to the equivalent of 1,559,000,000 board feet, an increase of only 26 per cent, although the output of bituminous coal in the latter year was nearly 80 per cent in excess of that of the earlier year. The report does not show the number of tons of coal produced by the mines from which figures for lumber consumption were obtained.

"If we assume that the output of these mines represented very nearly the same percentage of the total production in the two years, we find that the amount of lumber used underground per 1,000 tons of coal produced declined during that period from four to two and three-quarters thousand board feet, a decrease of more than 30 per cent. However far short of precision this percentage of decrease may be, it is a matter of common knowledge that the quantity of mine timber per ton of coal has actually decreased, the decrease being accounted for partly by greater economy in the use of timber, partly by the more general use of timber preservatives, and partly by the use of substitutes chiefly in the form of iron and steel or concrete."

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Have Statistics Any Value to the Coal Industry?

By C. E. Bockus
President, Clinchfield Coal Corporation, New York City

UNTIL THE LOCAL membership associations have inaugurated sufficient statistical work to give an adequate conception of market conditions the officers of the National Coal Association are not disposed to attempt to compile district returns believing they would not be representative of conditions in the industry.

There are many lines of desirable statistical activity, and the trade-information committee does not believe it would be well for the National Coal Association to start the work with only one line of statistics, that of the past sales report. It must be realized that though some local associations engage in much broader statistical efforts, many still do not collect and disseminate any trade information. The committee has been, and is, of the opinion that as soon as past sales reports are general, the National should take up another desirable line of reports and develop it until such trade information is available as will enable the industry to know more about itself.

At the time of the committee meeting in September, past sales reports were being compiled in the Williamson field and in the low-volatile fields of southern West Virginia through the Stover Bureau. Since then Harlan, Virginia, northern West Virginia, southern Appalachian, Kanawha and Alabama have inaugurated such activity. Kanawha has entered into an agreement with the Williamson field under which both these districts report to a common agency located at Huntington, W. Va. It is predicted that other nearby high-volatile fields in eastern Kentucky and the western part of West Virginia may become members of the same statistical bureau.

In accordance with the recommendations of the committee, the National is making up two tables weekly based on the district reports now received from seven high-volatile fields. Of these tables, one shows the average price received for coal sold during the previous week, distinguished as between prepared sizes, run-of-mine and screenings and the other arranges the same transactions for all the fields combined in price groups varying by 25c. intervals.

These tables are not given general circulation, They are sent only to the secretaries of the organizations sending in the district tables. The committee does not feel that, as yet, a sufficient tonnage is covered by the reports to justify giving them to the public. It is its hope that, as operators in other districts become acquainted with the work now being done and of its value to the operators receiving such reports, other associations will inaugurate similar work and that before long the National will be receiving reports from a sufficiently representative tonnage to justify it in giving out a combined tabulation as an approximately accurate picture of sales conditions in the industry.



C. E. Bockus

Abstract of report of trade information committee presented to the ninth annual meeting of the National Coal Association, Chicago, June 10. Mr. Bockus is chairman of the trade information committee.

CALL A HALT ON SELLING BELOW MARKET

The committee urges that the most careful consideration should be given to the advantages obtainable by gathering and distributing statistical reports dealing with conditions in the industry. It seems unnecessary to enter into a lengthy argument in favor of such work, but brief reference will be made to a few specific lines of statistical information, the usefulness of which is obvious even on superficial examination.

The bituminous-coal mining industry is highly competitive. As a result of that condition too much coal is being put on the market at unremunerative prices, often at materially less than production cost. Would not the operator be in a better position to bargain with buyers if he was informed about prices being obtained by other suppliers in the same market? Past sales reports will enable them to see what prices have been obtained currently for their commodity and should enable them to call a halt on their selling agents if the former find that the latter are making sales at prices below the market average.

Reliable figures on the geographical distribution of coal from each field would serve a similarly useful purpose in assisting the operators to decide in what consuming territories it would be particularly advantageous to attempt to push the sale of their product. It is to be hoped that such statistics showing week by week the volume of coal moving from the several fields into different consuming areas would ward off the possibility of such excessive congestions of distress coal as sometimes result from the uninformed efforts of operators anxious to find a market for their coal and would thereby remove from

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market a most demoralizing factor. In many industries *great* economies of operation have been brought about through the inauguration of a system of so-called comparative cost reports, that is, reports in which detailed costs of every separable step in production are brought together by a central agency and a compilation of average costs for each such step is then sent to the individuals furnishing the information.

SHOW OPERATOR HIS SHORTCOMINGS

Such reports in the case of bituminous-coal mining would enable an operator to discover those phases of his production in which his costs run higher than the average and, at least, be an incentive to him to institute inquiries into the reasons for this variation. In an industry in which methods of operation vary greatly from field to field there might be little practical advantage in comparative cost reports on a national scale, but separate district reports of that sort would be a yardstick for all the operators in the district.

There are other lines of statistical activity well worth considering as possibilities such as transportation, including car supply, safety measures required by law or introduced by other companies, together with reports on mine accidents, workmen's compensation measures, taxation, insurance, credit and improvements in the methods of burning bituminous coal and new uses for its byproducts. On all these the mine operator should have full, accurate, up-to-date information, if he is to be in a position to make the most of his business opportunities and responsibilities.

It is now several years since the National first considered the question of inaugurating an adequate statistical service. For some years, however, it was deterred from such activity by the uncertainty of the legality of such inquiries which, by the way, cleared up only last year. Some of the large companies do some of that work at their own expense and for their own guidance.

It is obvious, however, that only companies operating on a large scale can afford to incur the expense involved in individual efforts of that kind. If the majority of operators are ever to receive the benefit to be derived from statistical information, such information must be compiled on a co-operative basis. The committee urges operators to give careful thought to the question of expanding this profitable form of association work.

Nothing has been said about the public aspect of statistical reports. The members of the National Coal Association are all familiar with the efforts at Washington to procure the enactment of legislation making it compulsory upon bituminous-coal operators to send in reports to the Department of Commerce. The industry is opposed to any system of compulsory reporting to a Federal agency, not because it desires to have the facts concealed, but because it believes that such a move may well prove the first step in the direction of Federal regulation of the industry.

Pool Buying No New Idea But One Well Attested

By John C. Dinsmore
Assistant Professor, Commercial Organizations, University of Chicago, Chicago, Ill.

IN THE UNITED STATES more than in any other country distribution is built up around the fact that larger volumes of business make it possible for the factory to operate more economically and for the distributor to reduce his unit costs.

There is therefore every desire upon the part of most vendors to quote materially lower unit prices for large orders. The problem of the pool buyer is then usually to secure the co-operation of the individual members of a certain group in order that their joint order might be large enough to warrant the lower price.

Purchasing agents like to feel that they are buying every commodity at the lowest possible price but that is not so. The price differences for identical commodities vary ordinarily from 10 to 3,000 per cent. For instance a certain purchasing agent in Cook County recently paid 44c. per lb. for saltpeter which is worth about 4c. per lb.

It is evident that the mere act of routing the orders for any group of individuals through one central office must automatically call attention to so many price variations on identical commodities that large savings would result. If this routine scrutiny is coupled with organized research to determine just the particular commodity best fitted to do a particular job the savings effected are astounding. The supply investigator for the American Telephone and Telegraph Company recently told me that such studies frequently reduce annual costs 50 per cent.

With these generalizations as a background let me relate briefly the pertinent facts concerning two of five buying pools with which I have been associated.

About nine years ago there was in Chicago the executive office of the Association of American Colleges with a membership of some 600 small denominational colleges. As a part of the service rendered their members the Association helped prepare advertising copy. This led to the purchasing of "boiler plate" insides for booklets and this in turn led to the purchase of the paper and the printing as a joint venture. This service reduce the cost of the finished booklets about 40 per cent.

The plan worked so well that a committee was formed to buy other items on the same basis. I was called in as purchasing consultant and directed the studies which developed some interesting data. The experiment was interrupted by the war but a final survey showed that purchases had been made for eighty-six colleges in twenty-six states, had reduced average unit costs 38 per cent, and that the money saved was at the rate of a little over $100 for each hour of service rendered. In one instance a much better product was supplied at less than one-third the average price paid before the pool was formed.

The next study was made for the Chicago Council of Social Agencies. This is an organization of nearly two hundred charitable organizations in Chicago ranging all the way from the great hospitals to the visiting nurse's association and the settlement houses. This study showed that the cheapest price on liquid soap was 8c. and the highest price $2.75 per gallon. The fact also was developed that the price paid for similar quantities of bulk milk varied nearly 100 per cent.

Abstract of paper read at ninth annual meeting of National Coal Association, Chicago, June 9.

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With Competition as Incentive Employees Will Back Safety Movement

By R. E. Howe
Vice-president Climax Coal Co.,
Knoxville, Tenn.

ACCIDENTS are expensive and for that reason should be avoided as well as for the larger reason that their elimination is a duty that the operator owes to humanity. They disorganize the mine force and cost much money; they run up the compensation-insurance rates and often take the men who are most valuable in the operation of the mine. However, the chief reason for the prevention of accidents is the saving of life and limb.

Safety, however, has a three-fold aspect: First and foremost, the protection of the men employed in the mine. Second, the preservation of equipment and supplies. Whenever a machine, track or wire is in jeopardy from bad top, it should be removed, bearing in mind the safety of the men whose duty it is to remove it. The safety of equipment from outside influences, such as lightning, storms, vandalism and other preventable causes, should have constant attention. Third and finally, the protection of the investment of those who have put their money into the business.



R. E. Howe

We should not, through our own negligence—and in the final analysis it is the negligence of the operator—permit our employees to overlook or forget safety in its three-fold aspect.

How much safety work in the mines can accomplish is shown by innumerable instances. One large company in the Tennessee field, which has several mines, gives a prize once a month to the keymen of the mine which has the least number of accidents in proportion to output. For the last three consecutive months the most hazardous mine in this group has received the award, showing conclusively that carefulness prevents accidents.

Records kept by one company in the South, employing 1,400 men show that the percentage of injuries to men who have not had first-aid training, is eight times that of those who have. This shows the desirability that all employees should take such first-aid training and some large companies in the West, I understand, do not permit a man to work for them until he has had this instruction.

With these facts in mind, the Southern Appalachian Coal Operators' Association has formed a subsidiary organization, known as the Southern Appalachian Efficiency Association. Its purpose, as the name indicates, is efficiency, and the greatest single division of efficiency is safety.

This organization consists of the superintendents, mine foremen, safety inspectors, firebosses, electricians, and other keymen employed by the members of the Southern Appalachian Coal Operators' Association. The mine inspectors of the insurance companies that carry our compensation insurance, the State Mining Department and the Bureau of Mines all hold honorary memberships. Meetings ars held once a month, at which there are round-table discussions on accident prevention and the production of coal.

This association has fostered safety and first-aid teams, has awarded prizes, both money and medal, has conducted contests and, in fact, done almost everything to keep before the employees the question of efficiency. The great problem we have found is to maintain the interest of all the men in the mines in the safety movement. The Association has found that competition is the keynote. Prizes are offered for new ideas which will prevent accidents or reduce costs and to the teams exceeding in first aid. Medals are given for meritorious service.

Much has been accomplished in this organization by merely bringing operating men together where they can learn of one another how best to meet their difficulties. Some sage has said that we are part of all we touch, and one hundred of these operating men cannot get together without increasing their interest in their work and absorbing something from others. Having this in mind, the Association has fostered local organizations, everyone where possible being given some definite work.

Mine discipline is an important matter. One large Alabama concern which employs a large number of colored men, kept a record of accidents covering a period of ten years. These records show that per number of white men and per number of colored employed, there were twice as many white men injured as there were colored, the natural assumption being that this was because the colored men obeyed orders better than the white men. A white man will obey orders if he sees the reason behind the order.

Every general and every leader no matter in what walk of life knows that team work is what counts, and if competitive co-operation can be established at the mines safety can be brought to its highest pitch.

Abstract of paper entitled "One Way to Interest Employees in Safety Work," presented at ninth annual meeting, National Coal Association, Chicago, June 10. Mr. Howe is secretary of the Southern Appalachian Coal Operators' Association, of Knoxville, Tenn.

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Coal Salesmen Should Know How Coal Is Prepared and Mined

Thus Being Stimulated to Maintain a Reasonable Price and Enabled to Defend Quality

By Ralph Knode
President, General Coal Co., Philadelphia, Pa.

NOT FOR A long time has the salesman had as his sole function the duty of explaining just why the operating department could not make full shipments against its orders. Certainly, that condition never occurs today. Every salesman is busy selling coal.

No more valuable asset can capital invested in the coal industry have than a capable sales organization, in which every salesman believes heartily in the coal industry and in his company. Every salesman meeting the consumer should be fully familiar with all general phases of the production of coal, the general chemical analysis of the product and the comparative values of the coal he is selling as compared with that marketed by others. This knowledge can be obtained in a practical way only by having the salesman spend a reasonable length of time at the mines by which the coal is produced where he will learn in a general way just how coal is mined, prepared and inspected for the market.

Established Standards of Preparation

Most producing companies have, I believe, a standard of preparation and inspection for the particular coal they are mining. Some coals require little preparation, others receive all the preparation at the face, some are prepared over picking tables, and still others cleaned by various mechanical methods. When these facts are realized by the salesman he can the more intelligently carry on a conversation with possible consumers.

The companies with which I am associated have a standard preparation for the particular coal being mined, and it is the duty of each mine superintendent to prepare the coal each day to that standard, and he is held responsible for the results.

In order further to satisfy the sales organization that the coal is being mined and prepared to that standard, an inspector is stationed at each mine that is of sufficient size to justify the practice. If an inspector finds one or more cars of coal which have not been prepared to the standard previously determined, the coal in that car or group of cars is re-prepared or used for business where a coal of the agreed standard is not required.

In order that the inspection department shall be absolutely unbiased in its work, these companies have found it advisable to put the inspection department directly under the sales department or under an executive officer in charge of not only the mining of coal, but its sale and distribution, so that there will be no organic connection between the local operating department at the mines and the inspection of the coal.

Abstract of a paper on "Coal Salesmanship" delivered at the sectional meeting of bituminous coal sales' managers during the ninth annual meeting of the National Coal Association, Chicago, June 10.



Ralph Knode

One can readily see how much more confident a salesman will be in discussing intelligently a spot order or a contract, when he realizes that each car of coal is and must be prepared to the standard which has been fixed and is maintained by his company.

The time spent by the salesman at the mines gives him a direct idea of the expenditures of capital needed to produce a ton of coal, so that he is more able to explain intelligently why a reasonable price must be obtained for the coal which he is to sell than perhaps is paid for other coals offered in competition where the question of value seems to be of little concern.

Many operating and sales organizations have developed a real pride in the quality of coal being produced and sold and, when the individual salesman is imbued with that spirit of pride in his own particular coal and company, it is not a great effort to pass that feeling to the consumer.

Individualizing One's Product

I cannot think of a more important phase of coal salesmanship than the practice of individualizing and trade-marking a particular coal, for this unquestionably takes even average-quality coals out of the average class and puts them in position to command a better price than coals lacking this distinction. English coals are thus marketed perhaps to a greater and more satisfactory degree than those of any country in the world. Outside of the coal industry in this country are many concrete illustrations of what can be done by specializing and trade-marking a product.

Representatives of sales organizations meeting the public should be familiar not only with the method of mining and standard of preparation of their coal, but should understand also the conditions prevailing in the various competing fields. Thus they will be in position to carry on an intelligent conversation with possible

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consumers and be helpful in providing consumers with information that will prevent their coal supply from being in any way embarrassed.

It is not difficult to realize that the salesman who has fitted himself in this respect is a much more welcome visitor at a consumer's plant than one who is not so well fitted. Sales organizations should keep their salesmen informed of prevailing conditions in their own and competing fields by semi-monthly or monthly meetings.

The salesman with such knowledge is frequently in position to clarify in the minds of consumers the erroneous opinions many of them have today with regard to the coal industry as a whole.

It does not seem practical to provide that each member of a sales organization meeting the public should be a qualified combustion engineer, but he unquestionably should have a general knowledge of how his particular coal will perform and the purposes for which it is best suited. Many organizations have individuals who have made a careful study of the consumption of their coal for special purposes, such as illuminating-gas manufacturing, byproduct coking and other uses, where most efficient results must be secured.

Every sales organization should have a combustion engineer who can be helpful in demonstrating the coal to the consumer, in meeting complaints that often are not caused by the coal, but by the methods of combustion. To him, salesmen can submit their troubles in their daily contact with consumers.

Consolidations in the coal industry have been given much consideration during the past three years. They have been hailed as a solution of the difficulties of the coal business. The subject can in a general way be divided into two phases. First, consolidation of physical properties and second, consolidation of sales and distribution units. In an effort to accomplish the first phase in a proportion worthy of consideration we are faced with two major difficulties. The large capital required and the vast difference of opinion which exists with regard to the values of mines.

Easy to Consolidate Selling Forces

These two factors are, however, of little importance when considering the consolidation of sales and distributing units. The main feature necessary to accomplish this purpose which unquestionably would be helpful for the industry is complete agreement of purpose by the parties involved. There is unquestionably real merit to this form of consolidation, but we do not seem to have reached the point of action on the subject, as nothing worthy of mention has been accomplished up to this time. Therefore, meanwhile, sales organizations will do well to adopt as their slogan the rule "No sale is worthy of consideration unless the return represents a reasonable profit on the capital invested," from the standpoint of an average cost and reasonable investment.

Just as soon as the sales organizations in the industry dispose of their products, with their value in mind, just so soon will those companies that have a cost that is in general competitive be able to market their products at a price which will represent a reasonable return on the capital invested. The great majority of consumers do not wish to purchase their coal below the actual cost of production of mines able to meet competitive conditions.

Substantial consumers have told me that many times, particularly during the past two years, but they add that they deserve to be assured that their competitors will not be able to purchase like grades of coal for similar purposes at prices materially lower than they receive. We cannot in all fairness to the consumer expect him to pay a reasonable price for coal when he can at materially lower prices, purchase approximately the same quality of coal from others.

I believe, therefore, that the industry can go a long way toward improving its situation, if salesmen are given proper training and education before coming in contact with consumers, so that they will be better able to understand why it is uneconomical, and in fact ridiculous, to dispose of the product of the mine without any regard to value.

I have a high regard for the sales organization or individual salesman that has the courage to say to a consumer that they or he, as the case may be, cannot accept business at other than a reasonable price; when other sales organizations are perhaps doing a larger volume of business but without regard to value.

Foreign Trade Increases Only Temporary

By H. N. Taylor
President, Sheridan-Wyoming Coal Co., New York City

Little, if any, progress has been made in increasing the quantity of coal exported during the past year, except during the past few weeks due entirely to the British strike. It is yet too early to state the real effect of this disturbance in England on our future foreign coal trade. Some coal was brought into this country from various European countries during the anthracite strike, but the importation ceased with the conclusion of the strike, and was never large.



H. N. Taylor

Among the subjects that the foreign-trade committee has studied are the American merchant marine and the requirement that coal consigned to Canada should have the freight prepaid. The ships of this country are handicapped by arbitrary laws which hamper them in competition with ships of foreign countries. The American people need to be awakened to the fact that there will be no real American merchant marine until our ships are permitted to meet world competition on a more equal footing.

The negotiations as to the prepayment of freight charges on coal to Canada is in general making satisfactory progress, but the matter is not entirely settled. Efforts are being continued toward a complete elimination of this requirement.

Report of foreign-trade committee of National Coal Association at its ninth annual meeting, Chicago, June 9. Mr. Taylor is chairman of this committee.

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Centralized Service-and-Accident Reports: Their Advantages to the Coal Operator

By W. A. Ellison
General Manager, Southern Harlan Coal Co., Harlan, Ky.

THE HARLAN COUNTY Coal Operators' Association at its office in Harlan, Ky., has established a system of records to accomplish the following results: First, to be able to locate any employee and to record his indebtedness, if any, to his former employer; Second, to provide information regarding accidents showing the name of the injured employee, the date, cause and nature of injury.

In our field, as no doubt in others, the problem of how to prevent overdrafts gives much anxiety. This was especially true during, and following, the war period. A scarcity of labor and a desire to increase output at the mines always has a tendency to encourage the operator to take chances in the giving of credits to his employees.

Retail and wholesale businesses protect themselves through the medium of credit associations or bureaus, but the coal mine office and commissary are at the mercy of the dishonest employee. It was thought, and it has since proved to be true, that a Bureau similar to a credit association could be conducted by the association for the protection of its members. Consequently the association installed a card-index system showing the name of the man employed, the mine at which he worked and the date on which he left the service, together, with his indebtedness on leaving, if any.

Each operating company makes a weekly report to the association, giving this information which is transcribed to 4x6-in. cards, and which are filed alphabetically in a desk filing cabinet according to the names of the employees.

If an employee leaves "Company A" owing that company, say $50, and is employed by "Company B," the service record form of "Company A" would show the date of the employee leaving its service and a similar form of "Company B" would show when he entered the employment of that company.

When this happens, the association office, on receipt of the service record report, from "Company B" sends to "Company A" a form reading as follows: "Mr. X who left your service April 1, 1926, owing you $50 is now employed by 'Company B' at ———, Ky." The function of the association ceases with the transmission of this information. The collection of the debt is left to the creditor company.

This method has reduced losses by overdraft to a minimum. There are, however, no attempts made on the part of the association to ascertain the amount of money collected, and it has no way of discovering how much "Company B" has saved by knowing in advance that the man newly hired is a "debtor employee," but it is natural to suppose that caution will be taken in extending credit to him.

During the latter part of 1925, a safety-first meeting was held in our field, at which meeting several insurance carriers were on the program. They explained that the high cost of compensation insurance appeared to be due to the large number of malingerers. Lack of a clearing house seemed to be the reason for this situation as well as for other conditions that resulted in high compensation costs.

The only information any mine had of accidents and their causes was the experience supplied by that mine alone, so the association devised a system of reporting accidents and recording them, which, though it has been in effect only since Jan. 1 of this year, has materially improved conditions already.

The operators belonging to the association are requested to send it a copy of the accident report which they make to the compensation board. These reports, when received, are classified, both as to the cause of the



W. A. Ellison

Table 1—Causes of Accidents

As reported to Harlan County Coal Operators' Association.
Slate or roof falls
Coal from face
Mining machines
Cars, tools, etc., at working face
Handling explosives
Explosions
Timbering, inside
Haulage, to employees thus engaged
Haulage, miscellaneous
Wrecks
Replacing or re-railing cars
Track, construction or upkeep
Wiring, bonding, etc.
Miscellaneous, inside, not otherwise specified
Knucklemen
Inclined planes
Tipplemen
Handling railroad cars
Timbermen, woodsmen outside.
Shop, repairs to tools, cars etc.
Carpenters, outside
Handling live stock outside
Foremen, office men, storemen, etc.
Miscellaneous, outside, not otherwise specified
Total this month
Total last month

Article entitled "Centralized Accident Reports—Their Advantages and Benefits" presented at the ninth annual convention of the National Coal Association, Chicago, June 10. Mr. Ellison is president of the Harlan County Coal Operators' Association.

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accident and the nature of the injury. The causes are classified as in Table I and the injuries in Table II.

A report is made by the association showing the various causes of the accidents for the month, together with the nature of the injury. In addition to this, a bulletin is issued each month, showing the names of the various employees who for any cause have been injured in the previous month, also the total number of times injured is carried forward for each employee.

The bulletins are posted at the various operations, one at the mine mouth, one on the tipple and one on the bulletin board at the mine office. These bulletins show each month, in addition to the name of the injured party, the number of tons of coal mined in the field per accident. A plea is made in the bulletin that this record be improved from month to month. The publicity given to the men injured has a telling effect on all employees.

With the record thus installed in the office, each mine in the field is rated according to the tons mined per accident, and a circular is sent to each mine monthly showing how its tonnage per accident compares with that of other mines in the same field. Fatal accidents at any mine place it automatically at the bottom of the list. The officials of the various mines try to get near the top of the list and stay there.

Table II—Nature of Injury

As reported to Harlan County Coal Operators' Association.

Fatal
Arms, contused, lacerated, etc.
Arms, fractured, broken, etc.
Back and hip fractures
Back strained
Bad air or gas
Body, external injuries to
Body, internal injuries to
Ear
Eye
Fingers mashed, cut and broken
Fingers amputated
Feet and toes, minor injuries to
Feet and toes, fractured, broken, etc.
Feet and toes amputated
Hand injuries to
Hands amputated
Head, major injuries to, fractures, concussions
Head, minor injuries to, contusion, lacerations, burns
Hernia
Legs, contused, lacerated
Legs, fractured, broken, etc.
Mouth, jaws, and teeth
Neck and throat
Total for this month
Total for last month

When the accident reports are received by the association, proper records are made according to the classifications mentioned and the name of the injured person, the date of the accident, the mine at which it occurred and a brief description of the cause and nature are card-indexed in the service record. This entry is made on a card 4x6 in. and of a color different from that of the card previously described. The service record of the man is also transferred to this card, which is regarded as the permanent record.

After accidents have been recorded, should the injured employee move to another mine in the field, his accident record follows him on a form as follows:

"Mr. X whom you have recently employed was injured at Mine No. — on ————. Cause of accident was ———— and nature of injury was ————."

This information acquaints the new employer with evidence of the care or carelessness of the new employee and has been helpful in establishing the malingerer. To illustrate its effectiveness, it uncovered one case where a man had been paid compensation for a double hernia on three different occasions. Only the high spots of the system have been covered in this paper but it should be added that the members have found it most helpful.

Research the Life Blood of Commercial Progress

By Walter Barnum
President, Pacific Coast Co., New York City

SEVERAL MONTHS ago an article appeared in the Membership Bulletin of the National Coal Association, which quoted Dr. O. P. Hood, Chief of the Fuels Division of the U. S. Bureau of Mines as follows: "The hope of the coal industry lies in the fields of research and invention." I was pleased to note this comment on Dr. Hood's statement in an editorial in the *West Virginian*. "Nothing truer has been said about the coal industry in years, but the importance of the remark lies in the impression it has made upon the national organization of coal producers. It is going to take a lot of pressure to make the coal men of this country take an interest in the possibilities of research and it would be a hopeless undertaking if the coal men's organization were not sympathetic."

In replying to this newspaper, I think I can safely speak for the members of the National when I say that the operators' association is sympathetic towards research. I pledge my personal efforts to press the cause of research in every possible direction. I hold to the creed that the price of progress is research. Just as soon as the ranks of the National are augmented by a sufficient number of non-member coal producers who owe it to their industry to contribute financial support to this organization of the industry, it will be possible for us to pay the price of progress, whereupon we shall enjoy progress. In the meantime, however, we will do as much missionary work as possible and co-ordinate activities of engineering societies and others employed in research as effectively as means permit.

On this point permit me to quote from the preliminary program of your Research Committee, prepared last winter. "The Committee has determined upon a policy which contemplates in the beginning at least no original research work as that word is usually understood, but on the other hand, the closest possible contact with and first-hand study of the work of the numerous research bodies, private, institutional and corporate, whose work is in any way related to coal, to the end that it may collect in permanent form knowledge and information to be used (1) for the library, (2) for distribution to the members of the National Coal Association, and (3) for distribution to the users of coal and the public generally.

"Thus the Committee will keep producers informed of what consumers are developing, so that the producers can realize all the opportunities and possibilities in their respective territories. The Committee will be a clearing house of practical and progressive information, serving both producers and consumers."

Excerpt from an address on "Research and Its Value to the Coal Industry" delivered at the ninth annual convention of the National Coal Association, Chicago, Ill., June 9. Mr. Barnum, now president, was then chairman of the research committee.

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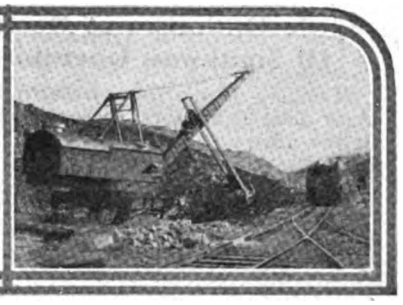
News Of the Industry



Court Refuses Injunction Sought to Enforce Union Wage Agreement With Mines in Scott's Run Field

The United Mine Workers was unsuccessful in its first effort to use injunctions to prevent non-union operation of coal mines covered by a union wage agreement. Judge I. Grant Lazelle in the Monongalia County Circuit Court at Morgantown, W. Va., on June 9, refused a restraining order sought by members of the union against four companies operating in the Scott's Run coal field, which he had been asked to enjoin from operating at wages lower than the union scale, from employing men not members of the union and from ousting union members from company houses.

Saying not only that contracts ought to be enforced if enforceable, but that labor unions should be granted injunction, in proper cases, as quickly if not quicker than other parties, Judge Lazelle, however, ruled he could not consider the one in question an enforceable contract.

Finds Baltimore Pact Obscure

The so-called Baltimore agreement between the union and the Monongahela Coal Association he declared to be one of the most difficult to understand that he had ever seen, but his principal point was that it could not bind the four companies defendants in this case because although he had little doubt that some of the signers for the operators were connected with these companies, there was nothing from which he could take judicial notice of that fact.

Reading the signatures of the scale committees, including those of Stephen Arkwright and Samuel Pursglove, he pointed out that it was not signed by the Monongahela Coal Association or by the Cleveland & Morgantown Coal Co., the Pursglove Coal Mining Co., the Arkwright Coal Co., the Connellsville By-Product Coal Co., the four defendants, nor by the United Mine Workers as corporations or organizations.

The agreement, he said, purported to be between the membership of the union and the membership of the coal association and the membership does not constitute such an entity that it can contract and be contracted with.

In regard to the employment of non-union men the Court said he believed that if the contract were not too broad, so that it would cover the entire coal business, and if it were for a proper consideration, one could be made provided it could be carried out. The time has not come, he said, when a few men can sit down at a table and sell the labor of thousands without their consent and compel them to work. He added that he did not believe such was the purpose of the organization, but that a man has the right to quit just as he has the right to start work and that, if a better opportunity offered, he had the right to go there, which could not be taken from him by a court or by anybody else.

The Court said the third phase of the injunction petition, eviction of the miners from company houses, included no allegation that there was not an adequate remedy at law for any grievance of this sort, although if there had been a violation of contract he conceded obtaining of damages might not be an adequate remedy.

Judge Lazelle expressed the belief that the renting of houses to the miners by the operating companies was a separate contract, though it was true they could not work without the houses.

The four defendant companies closed down the mines as union operations and shortly afterward reopened them, offering a scale of wages substantially the same as the 1917 scale. All are now operating on a non-union basis, although union officials assert that their output has been much curtailed. The union men, defendants in many injunction cases, including several granted by Judge Lazelle, asked injunctions against the companies, charging they had violated a contract in ignoring the terms of the Baltimore agreement.

It had generally been expected that, whatever the decision in the Circuit Court, the case would be appealed to the Supreme Court. After the decision was announced, union counsel went into consultation without making an announcement as to their next move.

Rescue Men in Get-together.—The Smoke Eaters' Association, composed of mine-rescue men of West Virginia, Pennsylvania and adjoining states, will meet in the Hotel Morgan, Morgantown, W. Va., on June 19, beginning at 1:30 p.m. A banquet will be one of the features.

The West Virginia Mining Institute will hold its summer meeting July 13 and 14 at Bluefield, W. Va.

Big Advance in Efficiency Of American Industry

Increased manufacturing efficiency of American industry since pre-war days is strikingly evidenced by figures recently issued by the National Industrial Conference Board, New York. The volume of production in 1923, according to an analysis of industrial productivity in the United States made by the Board, was 33 per cent greater per wage earner than it had been in 1914, and required 25 per cent less labor, 13 per cent less power, 17 per cent less management personnel per unit of production, and 7 per cent less actual working time per man.

The explanation of our increased industrial productivity, according to the Conference Board's study, is largely to be found in the greater application of power, more intensive mechanization and increased managerial efficiency. In 1923, 16 per cent more primary installed power was back of each worker in American factories than in 1914, correspondingly increasing his productive capacity and making possible the higher wage level. Labor cost per wage earner per month in 1923 was 36 per cent greater than it had been in 1914, against a production increase of 33 per cent, and although 25 per cent less labor was required per unit of production in 1923 than in 1914, the total amount of wages paid for an equal amount of production was still nearly 2 per cent higher. The cost of management, on the other hand, or the total of salaries paid to management personnel, decreased 12 per cent from 1914 to 1923 per unit of production.

Pineville, Ky., Soon to Have Mine Rescue Station

A mine rescue station with a mine rescue car and a trained force of operatives will be established at Pineville, Ky., within a week, according to a telegram from Congressman J. M. Robsion. The matter of establishing a mine rescue station there has been under advisement for some time.

The Bureau of Mines has agreed to open the new station so that the car and equipment can be used throughout the Harlan and Bell coal fields, it was said. The car and equipment for this field will be sent from Columbus, Ohio.

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Little Optimism at Meeting Of Southwest Operators

Members of the Southwestern Interstate Coal Operators' Association met in the offices of the association, Keith & Perry Building, Kansas City, Mo., June 7 and 8, made four changes in the list of officers of the organization, unanimously agreed that business was "rotten," and adjourned. It was the twenty-third annual convention of the association.

The one optimistic note in the annual report of W. L. A. Johnson, general commissioner, concerned the efficacy of the Interstate Joint Commission, consisting of Mr. Johnson for the operators and John P. White, formerly international president of the United Workers, for the miners, in settling disputes with employees.

Its success not only in the immediate adjustment of disputes referred to it but in establishing precedents in the interpretation of the contract by which subsequent misunderstandings of a similar nature may be avoided is evident in the steadily decreasing number of disputes reported.

Figures quoted in the commissioner's report showed that the production in the four states of the Southwestern district, which in 1918 was 20,470,493 tons, had dropped to 10,511,000 in 1924, and to 10,248,000 in 1925. Of the 1924 production, 6,340,279 tons was produced by members of the Southwestern Interstate Coal Operators' Association, paying the union scale. Of the 1925 production, only 5,352,817 was from that source.

Officers elected for the coming year are as follows: President, George J. L. Wulff, St. Louis, Mo.; vice-president at large, John A. Sargent, Kansas City, Mo.; vice-president for Kansas, Frank Thomas, Pittsburg; vice-president for Arkansas, Robert Boyd, Huntington; vice-president for Oklahoma, William Harkes, Kansas City, Mo.; vice-president for Missouri, A. E. Marriott, Moberly, Mo.; secretary, C. H. Markham, Kansas City, Mo.; treasurer and assistant secretary, George Manuel, Kansas City, Mo.; general commissioner, W. L. A. Johnson, Kansas City, Mo.

Norfolk & Western Cuts Rate To Cincinnati

The long sought reduction on coal freight rates has finally been granted by the Norfolk & Western Ry., which recently announced a cut of 10c. a ton on coal shipped to Cincinnati and Cincinnati switching points. Effective Sept. 1 next, the new rates on coal from the Tug River and Pocahontas fields will be $1.89 per ton and the Thacker and Williamson fields will be given a rate of $1.79 a ton.

Efforts to obtain this reduction in rates have been going on for several years and the operators feel that they are now on an equal footing with the western and southern Kentucky fields served by the Louisville & Nashville Ry. Prior to granting of the new rate West Virginia operators said that they were unable to compete on a parity with the Kentucky fields in the Cincinnati district.

Illinois Institute to Hold Four-Day Meeting

The Illinois Mining Institute will hold its annual meeting aboard the steamer "Cape Girardeau," which will make a 450-mile trip from St. Louis, Mo., to Nauvoo, Ill., and return, lasting from June 24 to 27. Besides the scenic attractions an interesting program has been arranged. Six business sessions will be held on June 25 and 26, including the following papers:

Opening address by F. G. Lewis, president of the Institute, followed by Frank Farrington, president, District 12, United Mine Workers; "Freight Rates on Competitive Coals," W. Y. Wildman, Illinois Coal Traffic Bureau; "The Geological Story of the Mississippi Valley Above St. Louis," Dr. M. M. Leighton, chief, Illinois State Geological Survey; "Sealing Fires in Gaseous Mines," John T. Ryan, Mine Safety Appliances Co.; "Open-Pit Coal Mining," Chas. Gottschalk, consulting engineer; "Predominating Hazards in Coal Mines and Their Remedy," H. T. Bannister, safety inspector, Madison Coal Corp.; "Safety Practices in a Southeast Missouri Lead Mine," J. H. Steinmesch, superintendent, Desloge Consolidated Lead Co.; "Cleaning and Preparation of Mechanically Loaded Coal," F. F. Jorgensen, general superintendent, Superior Coal Co.

Merger of 41 Midwest Mines Reported Under Way

Negotiations for the merger of forty-one Illinois and Indiana coal mines are under way, according to advices from Pinckneyville, Ill. Capital stock of $5,000,000 and a $17,000,000 bond issue is said to be contemplated. Twenty-four mines in Illinois and seventeen in Indiana are said to be involved in the big deal.

The report gained strength following the sale on June 8 of three coal mines and 3,000 acres of coal land owned by the Southern Gem Coal Corporation and $145,000 of bonds of the Wabash, Chester & Western R.R. owned by the coal corporation to W. A. Brewerton, wealthy mine operator of Chicago. The price bid for the Southern Gem holdings was $60,000 subject to taxes and other liens. The purchasers are said to contemplate the purchase of the remaining $455,000 bonds of the railroad outstanding.

Coal properties mentioned in connection with the reports of the big deal include the O'Gara Coal Co., Greene County, Illinois; John A. Logan Coal Co. and Franklin County Coal Co., Franklin County; several mines of Southern Gem Coal Corporation in Jefferson County, Perry County and Franklin County; Chicago Fuel Co. mines in Perry and Jackson counties, and several mines operated by W. A. Brewerton in Sangamon County.

Burning Shaft of Ebbw Vale Mine Still Sealed

Since May 12, when fire was discovered at 11 p.m., the Ebbw Vale Coal Co.'s mine at Sullivan, Ind., has been burning. A 3-ft. clay-and-sand seal lies over the mouth of the shaft, this having been placed on the shaft head following the fire. This fire is believed to have originated in the locomotive charging station about 40 ft. from the bottom of the shaft. Thence it spread to the main shaft feeding on the wooden lining and buntons.

Three men were in the mine when the fire was discovered but could make no headway in fighting the blaze. Before the seal was completed the flame had traveled to the top of the 250-ft. shaft, and one cage which stood at the ground landing was "white hot" when the rope parted and let it drop. Arrows on the illustration point to the points where the steel warped and the guides were charred.

The Ebbw Vale mine is a new development. The first coal was hoisted in the winter of 1922-23. Production has been at the rate of 2,000 to 2,500 tons per day. The mine is gaseous. There is considerable speculation as to the fate of the mine because it is said that the wood-lined shaft penetrates a thick bed of quicksand.



Ebbw Vale Coal Co.'s Shaft After Sealing Against Fire

Arrows show where the intense heat has bent the bracing girders. This headframe was braced in three directions.

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Acrimonious Debates Mark Meetings Of British Miners and Operators; Charge Falsity in Owners' Figures

Despite the hopeful indications recorded last week the coal operators and mine workers of Great Britain appear as far apart as ever. In fact, the relation between the two was rather envenomed than improved by the pourparlers of June 8, which are reported to have been acrimonious. The miners not only declined to budge an inch from their position not to work longer hours or to accept less pay but denied the facts submitted by the operators as to economic ability of the industry to pay the present wages; even declaring that the figures were falsified.

Evan Williams, C. B. Crawshaw, Sir Adam Nimmo and W. A. Lee represented the operators and Herbert Smith, A. J. Cook, W. P. Richardson and T. Richards spoke for the miners. The latter wanted a voice in the setting of coal prices and suggested a joint arrangement for the creation of a joint selling agency to regulate the price of coal to domestic users. The miners proposed that a subsidy be given by the government to enable the mine owners to enter the foreign market, recognizing that prices could not be raised arbitrarily in foreign countries as they were determined they should be in Great Britain.

"Make some consumers pay more for coal," said Mr. Cook and his coadjutors, "so that the miners' status can be maintained. Charge more or obtain a subsidy for the export of coal or sell to foreign competitors just what you can. Let the miners join with the operators in establishing a coal monopoly."

Show Price of Reorganization

In vain the operators pointed out that a reorganization of the industry would close 50 per cent of the mines and permanently dispossess of employment 500,000 miners. In vain they protested that higher prices for coal would put the British manufacturer who had to pay the price at a disadvantage which he could not overcome in selling his product in Europe. In vain they declared that a ton of steel in its manufacture required four tons of coal and that therefore the cost of coal was an important item in the market price of that product. Discussing the conference, A. J. Cook for the miners said:

"The coal owners at yesterday's meeting declared the only terms they would consider included an eight-hour day and the 1921 wage agreement. This would mean a reduction of 13½ per cent from the national minimum. Failing this, they said wages would have to be based upon the capacity of the various districts to pay, which would mean that in some districts they would be lower than the 1921 agreement.

"All suggestions of reorganization of the selling agencies and the shutting up of uneconomic pits they treated with the utmost contempt, stating there was nothing in them."

Much condemnation has fallen on the mine workers because of their acceptance of Russian contributions. Said Lord Birkenhead June 9 at the British Imperial Conference:

"The moneys received by the British miners do not come from the Russian miners, but officially from the Soviet Government, whose intentions, openly avowed, are to foment revolution in this country.

"We are furnished by the miners' leaders with the suggestion that a higher price for coal should be charged to the domestic consumer than to the foreigner. It appears never to have struck them that if you charge a higher rate for coal to our manufacturers than that paid by foreign manufacturers you will deal one fatal and final blow to every industry except their own.

"And this higher price is to be paid in the interests of men working shorter hours and receiving higher wages than any others in the world except those in America. It is too ridiculous.

"Mr. Cook, who once described himself as a humble disciple of Lenin, and recently 'thanked God for Russia,' has explained that £400,000 is being received 'from comrades in Russian mines to support the dependents of their English colleagues.'

"This confession has revived, if it ever flagged, our faith in our common human nature. It is indeed a touching reflection on the miners of Russia, who have to work ten hours a day so that their British colleagues may work seven and subscribe a portion of their wages of 25s. a week so that their British comrades may get 40s.

"Prominent representatives of the Soviet openly boasted that they attempted to assist the general strike here, and it has been claimed by persons speaking in Moscow that the money sent to the miners here is being paid officially not by the Russian miners but by the Russian Government.

See Revolutionary Motive

"Therefore it becomes necessary to ask from what motive these moneys have been advanced which have led Cook to 'thank God for Russia.' They are undoubtedly sent to encourage revolution in this country. The government has not yet had time to deal with the latter, but it will eventually make time to deal with it."

Colonel Lane-Fox, answering a question in Parliament, stated that Russian miners work from eight to ten hours daily to get the equivalent of a $6.50 average weekly wage. The conclusion is that they are incapable of making a sacrifice for their British comrades and, if capable, it would be hypocritical, for their own condition is much worse.

Government intervention in the coal strike is thought by some to be probable. Meantime some of the miners show a more reasonable spirit, and A. J. Cook has been trying to discipline them, but has found the miners' executive board deemed it best to leave the matter to the Miners' Federation. The men whose action has angered Mr. Cook are Frank Hodges and F. B. Varley.

Merryweather Named to Head Wholesale Association

G. H. Merryweather, Chicago, was elected president of the American Wholesale Coal Association at the closing session of the tenth annual convention of that organization held at the Hotel Secor, Toledo, Ohio, June 7-9. Leonard F. Leighton, Boston, Mass. succeeds Mr. Merryweather as vice-president of the organization. Roscoe B. Starek, Chicago, was re-elected secretary-treasurer.

The directors named were E. H. Hemingway, Hartford, Conn.; J. W. Dykstra, Detroit, Mich.; B. H. Read, Baltimore, Md.; W. N. Clark, Omaha, Neb.; F. H. Hoag, Buffalo, N. Y.; G. N. Snider, New York City; R. M. Buck, Watertown, N. Y.; Fred Legg, Cincinnati, Ohio; John M. Taylor, Columbus, Ohio; Arthur Kuppinger, Philadelphia, Pa.; Warren Bixler, Pittsburgh, Pa.; W. J. Prescott, Memphis, Tenn.; S. L. Platka, Burlington, Vt.; E. S. Simpson, Richmond, Va.; W. C. Maas, Milwaukee, Wis.; C. C. McGill, Toronto, Ont.; G. W. Harsh, Toledo, Ohio, and H. E. Northrup, Troy, N. Y.

The association formally reiterated its opposition to federal control as unnecessary, inadvisable and a contradiction of the principle of less government in business.

Industrial Coal Stocks Fall To 36,876,000 Tons

Coal stocks in the hands of industrial consumers on May 1 totaled 36,876,000 tons, a considerably lower figure than that shown for April 1, according to the National Association of Purchasing Agents. Conservative retrenchment has principally caused this depletion of supply on hand. The fact that only twenty-six days' supply was the estimated amount of stocks on hand at the end of April indicates the result of the above policy. Industrial coal consumption for the month of April is estimated at 39,048,000 tons.

Production in the bituminous fields fell off over six million tons during April, the total for the month being 40,079,000 net tons. Unusual weather conditions maintain the anthracite production rate, a 7,929,000 tonnage showing a decrease of approximately 300,000 tons from last month's figure.

The coke industry slowed up slightly on production during April, the by-product plants operating at 91 per cent of their capacity, producing 3,602,000 tons. The beehive ovens produced 981,000 net tons, 15 per cent less than the figure for March.

Comparative Estimates of Output, Consumption and Stocks

(In Thousands of Tons)

	Output	Industrial Consumption	On Hand in Industries
December	55,281	39,040	67,433
January	52,328	41,892	68,399
February	48,654	43,747	66,190
March	54,038	46,313	60,014
April	48,008	39,048	49,150
May	.....	.....	36,876

Days' Supply on Hand May 1 In Selected Industries

Steel plants	20
Electric utilities and coal-gas plants	48
Byproduct coke plants	15
Railroads	24
Other industries	18
Canada	60

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How Coal Produced in And Imported Into the United States Is Used

The sources of coal used in the United States are well covered by statistics relating to the quantity of coal produced in various territorial subdivisions of of this country The question "Where does the coal go?" cannot be so readily answered by statistical material because of difficulty in tracing coal through the numerous channels of distribution and consumption, which offer many chances for misstatement and error. Therefore, distribution statistics are not so often compiled. Many factors influence the movement of coal to the ultimate consumer. Besides the vagaries of weather, and customs and preferences which obviously play their part in controlling the movement of household fuel, far greater influences are exerted by varying demands among industries, which are the principal users of coal. In accounting for the disposition of the annual supply of coal, imports and exports must be considered, as well as net changes in quantities moving into or out of storage.

The apportionment to major consumptive groups of anthracite and bituminous coal used during the calendar year 1923, the latest year for which information is sufficiently complete to afford estimates, as compiled by the U. S. Bureau of Mines, is as in the accompanying table.

Balance Sheet for Coal, 1923

Anthracite (a)

Coal to Be Accounted For

	Net Tons
Production	93,339,000
Imports	300,000
	93,639,000
Less exports	5,090,000
	88,549,000
Less increase in stocks during year	1,635,000
Balance—United States consumption	86,914,000

Distribution of United States Consumption

	Net Tons	Per Cent of Total
Power and heat at coal mines(b)	8,018,000	9.2
Railroads	4,578,000	5.3
Artificial gas plants	1,101,000	1.3
Electric utilities, including electric railways	2,273,000	2.6
Domestic trade(domestic sizes not included elsewhere)	52,344,000	60.2
Steam trade (steam sizes not included elsewhere for heating and industrial use)	18,600,000	21.4
Total	86,914,000	100.0

Bituminous (a)

Coal to Be Accounted For

	Net Tons
Production	564,565,000
Imports	1,882,000
	566,447,000
Less exports	21,447,000
	545,000,000
Less increase in stocks during year	26,000,000
Balance—United States consumption	519,000,000

Distribution of United States Consumption

	Net Tons	Per Cent of Total
Power and heat at coal mines.	8,765,000	1.7
Mines and quarries, other than coal	4,190,000	.8
Railroads	155,795,000	30.0
Public Utilities:		
Electric, including electric railways	36,800,000	7.1
Gas	5,150,000	1.0
Beehive coke plants	30,085,000	5.8
Byproduct coke plants	54,280,000	10.4
Bunkers:		
Foreign	5,095,000	1.0
Coastwise and Lake trade	2,940,000	.6
Iron and steel works, not including coal for coke(c)	30,220,000	5.8
General industrial and other unspecified uses	119,280,000	23.0
Domestic consumers	66,400,000	12.8
Total	519,000,000	100.0

(a) Figures are in part estimates based on information contained in Bureau of Foreign and Domestic Commerce, Census, and Interstate Commerce reports. (b) Includes 167,000 tons, or 0.2 per cent of coal used at mines and quarries other than coal mines. (c) Includes blast furnaces, steel works and rolling mills.

U. S. Coal Miner's Output Tops All Others

The American coal miner produces almost three times as much per man as a worker in the mines of any of the other leading coal countries, according to the U. S. Bureau of Labor Statistics, which has made an analysis of the recent report of the British Coal Commission. This report contained a table giving the annual per capita output for some 50 years past.

In 1924 American bituminous miners produced an average of 781 tons a year; American anthracite miners, 550, with a total average for all miners of 731. This is an increase over the period 1919-1923, when the total average was 698. From 1879 down to the World War, our production rose conspicuously and steadily. There was a setback after 1918, and the high total average of 795 for the period 1914-1918 has not been reached.

The British production per man, however, the Commission pointed out, was decreasing. As long ago as 1879-1893 per capita output was 358 tons. In 1924, however, it was 246, and in 1925, 243.

In France the average yearly output of coal per person employed in 1925 was only 170 tons; in Belgium, 158; and in Germany, 262.

The principal reason for the great increases in American output is the widespread use of machinery and the development of better methods of production, it was said.

Editors Nominate Officers

The Nominating Committee of the Editorial Conference of the New York Business Publishers' Association, Inc., reports the following nominations for officers and directors of the Editorial Conference for the business year 1926-1927: Chairman, Robert J. Patterson, *American Hatter;* vice-chairman, W. W. Macon, *Iron Age;* secretary and treasurer, Sidney D. Kirkpatrick, *Chemical and Metallurgical Engineering;* directors, Roy V. Wright, *Railway Age;* Ray W. Sherman, *Motor;* S. A. Dennis, *Electrical Record.*

Program for Fall Meeting of A.I.M.E. Takes Shape

A tentative program for the 134th meeting of the American Institute of Mining and Metallurgical Engineers, which is to be held in Pittsburgh next autumn, was drawn up by the members and the ladies' auxiliary of the Pittsburgh section, following a dinner at the Pittsburgh station of the U. S. Bureau of Mines on April 26.

According to the plans thus far arranged, the meeting will open Wednesday, Oct. 6, and technical sessions will be held in the morning and in the afternoon. In the evening a smoker will be held for the men and a special entertainment arranged for the women.

On the second day an all-day trip will be taken on the Monongahela River to Clairton and return. This trip will give the various members an opportunity to become acquainted and at the same time get a glimpse of the various industries located along the banks of the Monongahela River. A visit will be made to the Clairton byproduct coke plant of the U. S. Steel Corporation and possibly to the National Tube Works at McKeesport. In the evening a private view of the International Art Exhibit at the Carnegie Institute is being arranged for the members and guests of the Institute in advance of the regular opening.

A technical session is to be arranged for the morning of the third day, but those who do not care to attend this session will be guided on several trips to various industrial plants in the district. The afternoon will be taken up by a visit to the Experimental Mine of the Bureau of Mines at Bruceton, Pa., and by trips elsewhere. The meeting will close with a banquet.

Coal Used and Power Output By Utilities Waning

Public-utility power plants in the United States consumed 3,482,347 net tons of coal in March, according to the U. S. Geological Survey, compared with 3,312,902 tons in the short month of February and 3,722,597 tons in January. Fuel-oil consumption by these plants in March totaled 724,308 barrels, as against 735,807 barrels in February and 1,025,746 barrels in January.

The daily production of electricity by public-utility power plants in March was about 1½ per cent less than the output for February. In 1925 the decrease in average daily output from February to March was about 2½ per cent. The average daily production of electricity by the use of water power again exceeded all previous rates for the month, amounting to 72,500,000 kw.-hr. per day. This rate is about 7 per cent larger than the rates for February, 1926, and April, 1925—the two months whose average daily production by water power ranks next. The proportion of the total output produced by water power in March, however, was slightly less than that in March, 1925.

The total output for the first quarter of this year was about 15 per cent larger than for the same period in 1925.

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Inflexible Attitude of Operators and Lewis Feared as Wage Pact Nears End; Senate to Resume Retail Price Probe

By Paul Wooton
Washington Correspondent of *Coal Age*

While some members of Congress are convinced that the bituminous operators are spoiling for a showdown with the union, they also feel that the United Mine Workers have been just as lacking in constructive suggestions for safeguarding the public fuel supply as have the operators. They discern that the union does not accept the idea of a mediation board. This is in spite of the fact that it is much more to the interest of the union to avoid a strike than it is to the operators.

Recent testimony before the House committee on interstate and foreign commerce brought out clearly that the offensive power of the United Mine Workers in the bituminous field is less today than formerly. This has given rise to the hope that Mr. Lewis will see that the wise thing for him to do is to settle with the operators in October and avoid an open break. If he does not do so many expect him to learn by experience that the expansion of non-union capacity and the drift away from the union have made it possible for the non-union fields to supply the needs of the country. Even Pennsylvania now has enough non-union tonnage to meet its urgent requirements.

Strike Would Hurt Union Prestige

With the prospect of a suspension, consumers would stock up months ahead of time. Under present conditions there would be little prospect of bringing them to their knees. These considerations lead to the hope that the miners will do their part to avoid a fight.

At the same time it is realized that a strike would have a particularly harmful effect on business under conditions which exist now and which may continue next spring. The effect of a coal strike always is demoralizing. The threat of a strike arouses great uncertainty and is especially hurtful when business is somewhat on the downgrade. In a situation likely to prevail for the next year it is regarded as important in the interest of the country that no feeling of uncertainty be permitted to allow the decline to proceed to the point of a depression.

An indication of the prevailing sentiment in Congress toward the coal industry may be had from the action of the District of Columbia committee of the Senate, which has voted to continue its investigations of retail prices of coal in the District. The committee began its investigation during the anthracite strike. Not satisfied with the presentations of the retailers, the committee appointed an expert accountant from the office of the Comptroller General to get a more accurate idea as to the prices which had been paid for coal and the profits which had been taken. The accountant just has reported to the committee that the dealers refused to make available the information necessary to determine these facts.

Members of the committee were outspoken in their criticism of the attitude of the retailers and it was voted to confer with representatives of the Department of Justice as to what steps that agency could take.

This is a straw which indicates the way the wind is blowing in Congress. This Congress is distinctly conservative and the majority is disposed to listen to the pleas of business, but there can be no disputing the fact that the impression is general that neither the operators, the retailers, nor the mine workers are taking a constructive position, and have withheld any assurance of better service in the future.

Ohio Pig Iron Men Discuss Coal Problems

Coal production and distribution came in for extensive consideration at the annual meeting of the Ohio Pig Iron & Coke Association, recently held in Cincinnati. Frank A. Ray, of Columbus, presented a proposal that the union fields adopt a bonus system whereby the mine workers would be paid a portion of the profits—if any—in six-month periods. J. R. Burton gave a talk on the sampling of Elkhorn coal; Samuel A. Taylor, president of the A.I.M.E. delivered an address on stream pollution, and C. E. Lesher, assistant to the president, Pittsburgh Coal Co., spoke on the evaluation of coal.

Illinois Associations Merged In New Organization

The three operators' associations in Illinois were consolidated in Chicago last week in a new organization called the Coal Operators' Association of Illinois. Rice Miller, of Hillsboro, was elected president; Herman C. Perry, of St. Louis, vice-president; C. L. McLaughlin, Chicago, secretary, and Luce H. Smith, Chicago, treasurer. The merger, which was the culmination of efforts to that end extending over ten years, includes the Illinois Coal Operators' Association, the Central Illinois Coal Operators' Association and the Coal Operators' Association of the Fifth and Ninth Districts of Illinois.

Coming so close to the opening of the National Coal Association convention at the Drake Hotel in Chicago, June 9, there was considerable talk on the prospects of the new association joining the National Coal Association. The Illinois operators withdrew from membership in the National four years ago when differences of opinion arose while the negotiation of the wage agreement with the United Mine Workers was on. Illinois operators objected to methods employed by the National Association officials. The National took no direct part in the agreement, however, and since then, it is believed, the major part of the dispute has been ironed out.

A board of directors of the new association and an executive committee has been formed.

The executive committee, composed of nine members, follows: L. H. Smith, Spring Valley Coal Co.; M. S. Peltier, Peabody Coal Co.; S. A. Shafer, Pana Coal Co.; O. L. Lumaghi, Lumaghi Coal Co.; E. C. Searls, Crerar-Clinch Coal Co.; J. D. Zook, O'Gara Coal Co.; George B. Harrington, Chicago, Wilmington & Franklin Coal Co.; M. S. Coleman, Saline County Coal Corporation, and F. S. Pfahler, Superior Coal Co.

Increased Industrial Efficiency, Says Mellon, Holds Future of Prosperity in United States

America can no longer depend on her natural resources but must place her faith in increasing the efficiency of her industrial system, Secretary of the Treasury Mellon stated recently in an address by radio to the annual convention of the National Electric Light Association at Atlantic City.

Comparing economic conditions in this country and Europe, Mr. Mellon declared that America had adjusted herself to the economic laws of the new industrial era, and has evolved an industrial organization which can maintain itself, not only because it is efficient but because it is bringing about a greater diffusion of prosperity among all classes.

The success of American industry and America's rapid growth in wealth, he said, is based on private initiative. The foundation of her present development was laid in a system in which free play was given to the energy and initiative of the individual and which at the same time encouraged competition and permitted corporate organization in industry, he continued.

"Whether we shall continue to grow and expand depends upon whether we pursue an intelligent and constructive, or a hostile and destructive policy toward those forces which have brought about our present development," Mr. Mellon said.

"A sound industrial policy must square with economic laws. And a consistent policy is necessary in order that capital, labor and the public may know what to expect. President Coolidge has pursued a clear, consistent course and has made it plain that his administration will not interfere with legitimate business merely because it is big, but desires that business and industry, so far as possible, shall work out their own problems, provided they conform strictly to the law."

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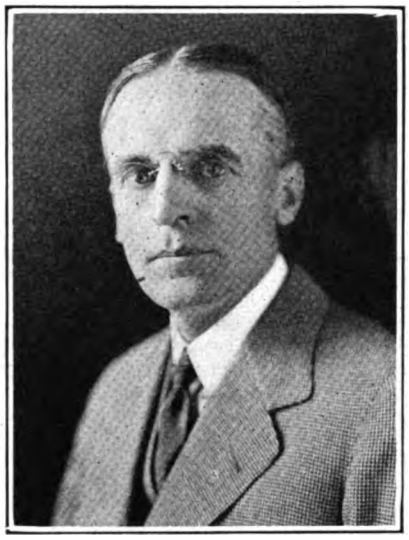
Industrial Conference Board Elects Officers

Loyall A. Osborne, president of the Westinghouse Electric International Co., was elected chairman of the National Industrial Conference Board at the tenth annual meeting of that organization in New York City.

In accepting this office, Mr. Osborne assumes the chairmanship of a body whose members are the delegates of 27 national and state industrial organizations and four government departments, comprising more than 50,000 manufacturing concerns employing a total of more than 7,000,000 men and women. The board maintains a large staff of economists, statisticians and engineers who are continually investigating domestic and foreign problems of economic-industrial interest, and since its organization in 1916, has issued 115 research and 35 special reports and many monographs on subjects of timely and practical concern.

Mr. Osborne, who is a graduate of Cornell University, '91, joined the Westinghouse organization immediately upon leaving college, and was made vice-president of the Westinghouse Electric & Manufacturing Co. in 1902. He is now senior vice-president of that organization. During the war, he was a member of the Council of National Defense, a member of the War Labor Planning Commission, and of the War Labor Board. He succeeds Frederick P. Fish, Richardson & Neave, Boston, as chairman of the Conference Board.

Other officers of the Conference Board are: Frederick P. Fish, honorary chairman; Charles Cheney, of South Manchester, Conn., vice-chairman; John W. O'Leary, of Chicago, vice-chairman; Magnus W. Alexander, New York City, president; Fred I. Kent, New York City, treasurer; James M. Robertson, New York City, secretary. These with William W. Coleman, of South Milwaukee, Wis., Irenee du Pont, Wilmington, Del., Russel H. Leonard, Boston, and William H. Nichols, Jr., compose the Executive Committee of the Conference Board.



Loyall A. Osborne

President of the Westinghouse Electric International Co., who was elected chairman of the National Industrial Conference Board at its tenth annual meeting.

Co-operative Mining Banned By Ohio Union

Members of the United Mine Workers are prohibited from participating in co-operative mining operations in all sections of Ohio by an order issued June 9 by the Ohio union. Since competition under the Jacksonville scale has become so strong and many southern Ohio operations have suspended, many co-operative mining ventures were started in which union miners produced coal, sold it on the market and divided the profits. These operations were generally small ones and were leased from the owner on a royalty basis. A considerable tonnage had been produced in that manner and it is said that miners participating did not realize the union scale, according to the Jacksonville agreement.

The order was the result of a meeting held at Nelsonville recently by about 1,500 idle miners, who brought the matter to the attention of the union officials. The threat is made that unless the miners comply they will be disbarred from the union. Operators do not expect the order to be complied with by all miners, especially in the Pomeroy field, where some special agreements are in force.

Coal production in West Virginia in 1925 was a record breaker, with 123,061,985 tons produced, according to an announcement made on June 12 by Robert M. Lambie, chief of the state Department of Mines. This is an increase of 20,000,000 tons over the previous year. The final figures have just been struck.

Coal-Mine Fatalities During April, 1926, by Causes and States

(Compiled by Bureau of Mines and Published by *Coal Age*)

State	Underground											Shaft					Surface							Total by States	
	Falls of roof (coal, rock, etc.).	Falls of face or pillar coal.	Mine cars and locomotives.	Gas explosions and burning gas.	Explosives.	Suffocation from mine gases.	Electricity.	Animals.	Mining machines.	Mine fires (burned, suffocated, etc.).	Other causes.	Total.	Falling down shafts or slopes.	Objects falling down shafts or slopes.	Cars, skip or bucket.	Other causes.	Total.	Mine cars and mine locomotives.	Electricity.	Machinery.	Boiler explosions or bursting steam pipes	Railway cars and locomotives.	Other causes.	Total.	1926	1925
Alabama	5	....	3	....	....	....	....	....	....	....	....	8	....	....	....	....	....	....	....	....	....	....	....	....	8	11
Alaska	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Arkansas	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	1
Colorado	....	1	1	....	....	....	....	....	....	....	....	2	....	1	....	....	1	....	....	....	....	....	....	....	3	3
Illinois	6	....	....	....	....	....	....	....	....	....	1	7	1	....	1	....	2	....	....	....	....	....	....	....	9	10
Indiana	1	....	....	....	....	....	1	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	2	3
Iowa	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Kansas	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	0
Kentucky	6	....	2	....	1	....	1	....	....	....	....	10	....	....	....	....	....	....	....	....	....	....	....	....	10	16
Maryland	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	1
Michigan	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Missouri	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Montana	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
New Mexico	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	3
North Dakota	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Ohio	6	....	1	....	....	....	1	....	....	....	....	8	....	....	....	....	....	....	....	....	....	....	....	....	8	8
Oklahoma	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	2
Pennsylvania (bituminous)	15	1	6	....	....	....	1	....	....	....	....	23	....	....	....	....	....	1	....	....	....	....	....	1	24	27
South Dakota	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Tennessee	3	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	3	1
Texas	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	1
Utah	3	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	3	1
Virginia	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	5
Washington	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
West Virginia	12	....	6	....	4	....	1	....	....	....	2	25	....	....	....	....	....	1	....	....	....	1	1	3	28	25
Wyoming	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	2
Total (bituminous)	60	2	19	....	5	..	5	...	...	....	3	94	1	1	1	...	3	2	...	...	.....	1	1	4	101	119
Pennsylvania (anthracite)	15	3	5	....	3	1	...	...	...	...	1	28	....	....	....	....	....	....	....	....	.....	1	...	1	29	41
Total April, 1926	75	5	24	....	8	1	5	...	...	....	4	122	1	1	1	...	3	2	...	'	.....	2	1	5	130	....
Total April, 1925	86	7	24	13	6	....	5	...	7	....	5	153	....	....	....	...	....	4	...	1	.....	1	1	7	.....	160

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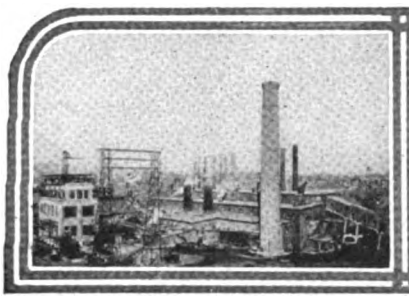
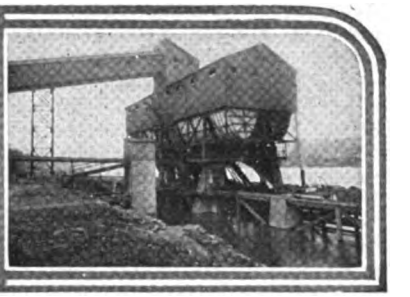


News Items From Field and Trade



ARKANSAS

Speedy Trial for Dalrymple. — William R. Dalrymple, suspended president of the District No. 21, United Mine Workers, will be given a trial before international board members immediately, L. R. Kendricks, District Board member announced at Fort Smith last week. Charges will be pressed by the District Board, which ordered his suspension and named Gomer Jones, district vice-president, to succeed him. Dalrymple was given a trial at Muskogee, Okla., recently, but the findings were incomplete and were never announced.

Coal mines at Prairie View which have not been operated for several months, have been reopened, with about 20 men at work.

ILLINOIS

New Orient After More Records?— The New Orient mine of the Chicago, Wilmington & Franklin Coal Co., generally known as the world's largest mine, has resumed operations with full force. This plant laid off about three-fourths of its normal working force on March 30 and confined the activities of the remaining limited force to developing new territory in order to increase daily output. New men will be added to the force as the newly developed territory can be made ready for them and the force of about 1,400 now employed will be increased probably to 1,600 by the time snow flies.

During April 158 Illinois mines averaged 15.1 days work and produced 4,647,003 tons of coal, 51,879 miners were employed, 9 were killed and 1,463 injured. In April, 1925, 3,700,159 tons was produced.

IOWA

Corn Belt Dealers Organize.—H. J. Bane, of Iowa City, was elected president of the Corn Belt Coal Dealers' Association, formed by Iowa and Minnesota coal men at a recent meeting at the Hotel Savery, Des Moines. Des Moines was designated as the location of the central office.

KANSAS

Three Mines to Reopen Soon.—Three large mines in the Pittsburgh district are reported to be preparing to resume operations within three weeks, after a long period of idleness. The mines said to be getting ready to resume are No. 9 of the Hamilton Coal & Mercantile Co., north of Cherokee; No. 19 of the Sheridan Coal Co., near Mulberry, and No. 17 of the Jackson-Walker Coal & Mining Co., near Frontenac. The last two will be operated by sub-lessees. The three operations employ a total of more than 500 men.

The Frontenac State Bank, of which J. S. Patton is president, closed its doors June 4 after 22 years of continuous operation. Mr. Patton for many years has been a coal operator in the Pittsburg district, largely in steam shovel mines. Frozen assets were given as the cause of closing. There has been little activity the last year or two in the coal mining zone from which the Frontenac bank drew its business.

To Try Coking Kansas Coal.—A test to determine the adaptability to coking of southwestern Kansas coal will be financed by the Pittsburg Realtors' Association. This decision was made at a meeting of the association June 2. It was announced arrangements have been made with a coking plant to make the tests.

John Fulton, lessee of the Jackson Walker Coal & Mining Co.'s mine No. 16, near Pittsburgh, reopened it June 4, with thirty-nine men, after it had been closed down nearly a month.

KENTUCKY

Walkout Short-Lived.—After being out just one and one-half days, 350 workers in the plant of the Norton Coal Mining Co., Nortonville, near Madisonville, in western Kentucky, returned to work on June 3. The men quit work at noon over a disagreement on the wage scale, alleging that the company attempted to work them nine hours at an eight-hour price. The old scale was ratified before the men returned to work.

State Institutions Want Coal.—The Kentucky Board of Charities & Corrections has announced that bids will be opened and contracts let on July 1 for approximately 45,000 tons of screenings to be supplied to seven state institutions, located at Eddyville, Hopkinsville, Lakeland, Greendale, Lexington and Frankfort. Milton F. Conley, Commissioner of Public Institutions, stated that 550 forms had been sent to operators and jobbers. More than a hundred bids were received last year, and the average contract price was $1 per ton f.o.b. mine.

Columbus Mining Co. Expands.—The Columbus Mining Co., Chicago, is rejorted now to control the largest tonnage in the Hazard field of eastern Kentucky, having taken over the production of the Meem-Haskins Coal Corporation at Carrs Fork, which operates two mines; one mine of the Diamond Block Coal Co., at Hazard, and one mine of the Apex Coal Co., in the Elkhorn field, all of which was formerly sold through the Pocahontas Coal Sales Co. The Columbus outfit now handles the production of twelve mines.

A fire loss of around $25,000 was reported at the Elkhorn-Shelby Creek Coal Co. plant at Esto, near Pikeville, on June 2, when commissary, supply house, post office, etc., burned. Dynamite was used to prevent the spread of the flames.

MONTANA

The Chicago, Milwaukee & St. Paul Ry. is testing a Montana lignite at the shops at Aberdeen, S. D. It is called Geneva coal and is expected to furnish a cheaper fuel. The shops use from 700 tons a month in summer to 1,400 tons a month in cold weather, and if the new coal maintains its promise of economy, it will make a material saving.

OHIO

Consumers See Ohio Mines. — A special train containing owners of coal-consuming factories in Cleveland, Akron, Canton and Kent visited the eastern Ohio coal fields during the last week as part of a "Use-Ohio-Coal-Campaign." The mine owners financed the trip.

Mine No. 119 of the Sunday Creek Coal Co., of Columbus, located at Millfield, has been reopened after a suspension of several months.

Toledo Docks Busy. — The Hocking Valley docks at Toledo dumped 321,957 tons during the week ended June 2 as compared with 356,401 tons during the corresponding week last year. The New York Central docks loaded 208,989 tons as compared with 84,195 during the corresponding week last year. The total tonnage loaded to date by the Hocking Valley was 1,766,062 as compared with 2,110,566 tons last season up to June 2 while the New York Central docks handled 719,575 tons as compared with 485,217 tons in the season of 1925 up to June 2.

Starr Mine Equipment Sold. — The Southern Ohio Coal Co., with headquarters in the Brunson Bldg., Columbus, recently purchased at receiver's sale, the equipment of the Starr-Jackson Mining Co., which operated the old Starr mine on a lease, but which was forced into bankruptcy several months ago. The mine is owned by the Southern Ohio Coal Co., of which J. S. McVey is president and manager. Joseph P. Eagleson was receiver. The property

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consisted of mining machines, mine cars, three 6-ton electric locomotives, blowers and pumps.

The Green's Run Coal Co., of Nelsonville, recently chartered with a capital of $25,000, has taken over the property of the Northern & Southern Coal Co., located at Jacksonville, on the New York Central lines. C. C. Sharp has been elected president, and Edwin Sharp, secretary and treasurer. The property consists of 500 acres of coal, with modern equipment. The mine is now being put into shape for operation when market conditions improve. The capacity of the mine is about 700 tons daily.

PENNSYLVANIA

Many Idle as Mine Slows Up.—More than 100 men have been laid off in the mines of the McKinney Steel Co. at Wolfpit, where, it is reported, the mining of the lower seam of coal is suspended and only one seam is now being worked. A similar situation faces the Greasy Creek mines, a few miles away operated by the same company. Fewer men are out of employment at Greasy Creek as it is a smaller operation.

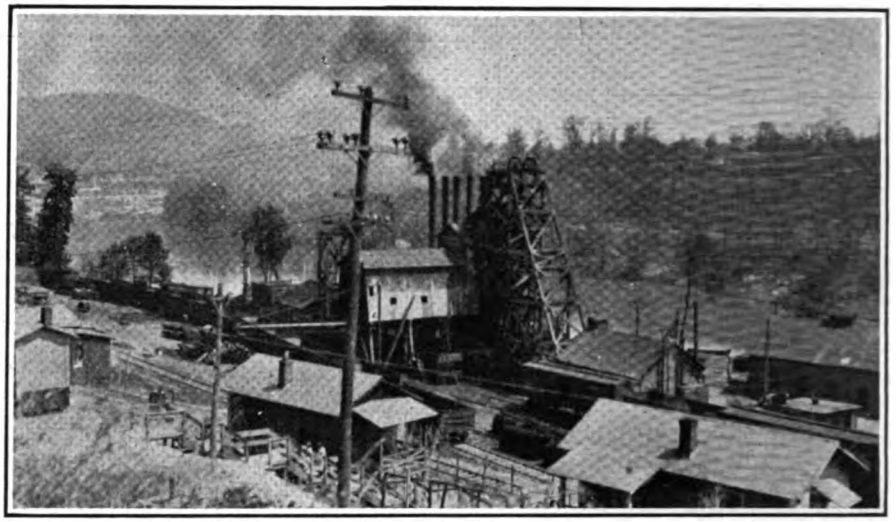
Receiver for Pennsy Coal Co.—The Pennsy Coal Co., of Franklin, the sales office of which was formerly at Buffalo, with E. T. Bline general sales agent, has gone into the hands of a receiver. The liabilities are given as $500,000, with less than $100 cash on hand and no means for paying on either sinking fund or coupons. The company has five mines, four at Summerville and one at Sligo, all on the Lake Erie, Franklin & Clarion R.R. The receiver is I. W. Lesher, of Clarion. The mines had been taken over by W. R. Calverly, of Pittsburgh, who failed to make good on the operation of them. Production was at one time nearly 1,000 tons a day.

The Jones & Laughlin Steel Corporation has awarded a contract for four miles of railroad to its new coal mine in Greene County on which work is now being rushed to permit its opening for production by the end of the year.

Two Firms Taxed for Same Tract.—It developed recently at the Northumberland County court house that the Colonial Coal Co. and the Coxe estate, of Hazleton, have been paying large taxes on the same property in Shamokin for a number of years. The Colonial has paid on a valuation of $200 an acre while the Coxe interests have been assessed on a $50 acre basis. It is held that the Coxe interests are the real owners of the tract, which consists of 174 acres in Coal Township. It is understood there are thousands of tons of unmined coal in the property.

Bituminous coal (revenue) transported by Reading Company during April, 1926, totaled 1,454,854 gross tons. In the corresponding month a year ago the company moved 1,262,490 tons.

Glen Alden Dividend $5.—Directors of the Glen Alden Coal Co., Scranton, at their meeting June 8 declared a dividend of $5 covering the past six months. It also was announced that hereafter dividends will be declared quarterly. The previous dividend has been $3.50 semi-annually, the last being paid Dec. 31, 1925. The dividend is payable June 21 to stock of record June 10. It is generally believed that the present declaration of $5 a share places the Glen Alden stock on a $10 annual basis.



No. 42 Mine of Bethlehem Mines Corporation, near Fairmont, W. Va.

The name of this operation is Dakota Mine. A tributary of the Monongahela River can be seen in the rear. Owing to the narrowness of the valley the plant is located near the water. The railroad is the Baltimore & Ohio.

Coke Plants Slower.—The H. C. Frick Coke Co. closed down a number of plants in the Connellsville coke region last week, including Wynn, Brownfield, Fairchance and Continental Nos. 1, 2 and 3. The Oliver & Snyder Steel Co. closed down No. 1 and 2 plants and is operating No. 3 mine about full, shipping to its byproduct coke ovens at Troy, N. Y. W. J. Rainey, Inc., and the Hillman Coal & Coke Co. coke region plants are operating about full, being nearly the only companies doing so.

SOUTH DAKOTA

The state has placed orders for fuel for state institutions for the first time on a guaranteed performance basis. Successful bidders were the Sioux Falls Fuel Co., Schoenemann Bros., Mills Grain & Supply Co. and H. T. Parmley, all of Sioux Falls, besides the state owned mine. The state mine is to furnish 20,405 tons; 11,400 tons of Western coal will be used and about 10,000 tons will come from Illinois, Kentucky and Virginia.

TENNESSEE

O. P. Pile, Chief Mine Inspector, and the board of mine foreman examiners will hold an examination for mine foremen at the Post Office building in Knoxville on June 9 and 10.

The storeroom of the College Coal & Mining Co., Pikeville, recently was destroyed by fire with a loss of $20,000.

UTAH

Certain stockholders of the Sevier Valley Coal Co., with headquarters in Richfield, are to be prosecuted, according to the State Securities Commission, for the alleged act of offering personal stock of the company held in escrow. Some time ago the company was authorized to sell 60,000 shares of its stock at $1 a share, and it is charged that while this treasury sale was in progress some of the stockholders violated the escrow agreement and sold some of their personal holdings, handicapping the treasury sale and the proper financing of the company.

B. F. Bauer was the successful bidder for the lease of the 80-acre tract of coal land located near Thompsons, in Grand County. Bauer outbid N. B. Knight, on whose petition the land was offered. The successful bid went $1,000 above the terms of the lease. The land adjoins the property of the Chesterfield Coal Co., of Salt Lake City.

The Rains mine in Carbon County, operated by the Carbon Fuel Co., has been on fire for a few days, but it is now under control and plans are under way to reopen it on June 7.

The 1926 school year book of the Carbon County High School at Price is dedicated to the coal mining industry of Utah. Illustrations show mines and tipples and the like.

VIRGINIA

Rail Orders for Virginia Mines.—Contracts for more than 2,000,000 tons of railroad coal in the Virginia field have been announced. The Southern Ry. will get approximately 1,000,000 tons from the Stonega Coke & Coal Co. Between them the Seaboard Air Line and the Atlantic Coast Line will purchase 1,203,000 tons from a dozen different mines in the Virginia field. It is stated that the Toms Creek mines of the Virginia Iron, Coal & Coke Co. will obtain a liberal portion of the orders. Much of the Seaboard Air Line and Coast Line business was placed through the Whitney-Kemmerer Company, some tonnage coming through other agencies and some being placed direct with the contracting mines.

To Extend Coal Development?—W. E. D. Stokes, Jr., who has succeeded his father, the late W. E. D. Stokes, as president of the Chesapeake & Western Ry., a 40-mile road that runs across the Shenandoah Valley from Elkton to Stokesville, will bring engineers to Virginia within a few weeks to investigate the anthracite deposit near Stokesville,

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which his father discovered. Young Stokes plans to extend the railroad west to the mining field, if such a project is found feasible. If conditions warrant, Mr. Stokes will operate the road on a more comprehensive scale.

The Raleigh Smokeless Fuel Co. has been awarded the contract to supply 12,000 tons of Pocahontas or New River Navy Standard coal to the city of Norfolk, at $1.74 per net ton, mines. The State of Virginia divided its 60,000 ton annual contract between several firms, the bids ranging from $1.60 to $1.75.

WEST VIRGINIA

Scholz Denies Deal Is Closed.—The Raleigh-Wyoming Coal Co., of Charleston, announced recently that it had started work on 100 additional miners' houses, 50 at Edwight, in Raleigh County, and 50 at Glen Rogers, Wyoming County. The firm expects to spend $200,000 for houses at these towns. The work will be completed in 75 days. An additional fan will be installed by the company at Glen Rogers, which will be completed in 60 days. Carl Scholz, vice-president and general manager of the company, was in new York City last week, presumably in regard to the deal with the Old Ben Coal Corporation, of Chicago, which has been reported as being closed frequently, but which the management of the Raleigh-Wyoming company contends is not a fact. There are 1,800 acres of coal land in the two properties, 9,000 acres at Glen Rogers, which is smokeless coal, and 9,000 acres at Edwight, which is byproduct coal land. There are 175 houses at each mining town.

Fletcher & Farley are erecting a storage plant for bituminous coal at Alderson, Monroe County. The coal will be retailed locally.

Seven men will be graduated from the mining engineering department, University of West Virginia at Morgantown this year. They are Percy Henry Gillie, Harry Greene Kennedy, Russell Warden King and Patrick Daniel McMurrer, all of Charleston; Ivan Allen Given, of Sutton; Grier Hartzell Pierce, of Huntington, and Franklin Pierce Tallman, of Beech Hill.

Thompsons May Build Plant.—It is reported that the Thompson interests are preparing to begin the construction of a plant at their holdings on the Durbin branch of the Western Maryland R.R. in Pocahontas County. This will be the first coal mine opened in that field. A seam of smokeless coal has been found there, it is reported.

Ocean Mine Resumes.—Officials of the Elk Horn Coal Corporation announced a resumption of operations at the Ocean mine, between Clarksburg and Bridgeport, on June 1. The mine has been shut down since about the middle of March. The company expects to be in a position to operate the mine regularly until the middle of November, when the lake season closes, and possibly even for a longer period. About 125 men are being employed.

May Develop Large Lorain Tract.—The Lorain Coal & Dock Co. may open up a 16,000-acre tract of coal land on Big Wheeling Creek, south of Elm Grove, in Ohio County, according to a semi-official report. Engineers of the company in eastern Ohio have been surveying the area during the last few weeks, with a view to making certain openings. The tract was purchased by the company about four years ago, but no development work has ever been undertaken. If new mines are opened, coal will be produced on a non-union basis. Three of the five mines of the company in Belmont County are now closed down, ostensibly because of inability to operate under the Jacksonville agreement.

Tait Mine Resumes Open-Shop.—Operations were resumed on an open-shop basis May 28 at the Tait mine, in the Maidsville section of Monongalia County, after an idleness of three years. The mine, which is owned by John and Gordon Tait, of Morgantown, has a capacity of about 10 cars a day. It is proposed by the owners to push production to capacity. About 20 men were at work on the day the mine was opened, but the force will be increased as additional men are needed. The Maidsville section, which has now become exclusively open-shop, was one of the last strongholds of the union prior to March 31.

Keen Competition on Railway Fuel.—Railroad fuel business closed recently included contracts for 500,000 tons for the Seaboard Air Line placed with firms in West Virginia along the Chesapeake & Ohio. This road paid $1.30 to $1.50 for mine-run. Keen competition marked the bidding, with the result that the price levels are down to a point close to the production cost. The Atlantic Coast Line placed 370,000 tons in southern West Virginia, paying $1.30 to operators along the C. & O., $1.35 to concerns located on the N. & W. and $1.50 to firms with mines in the Clinch Valley.

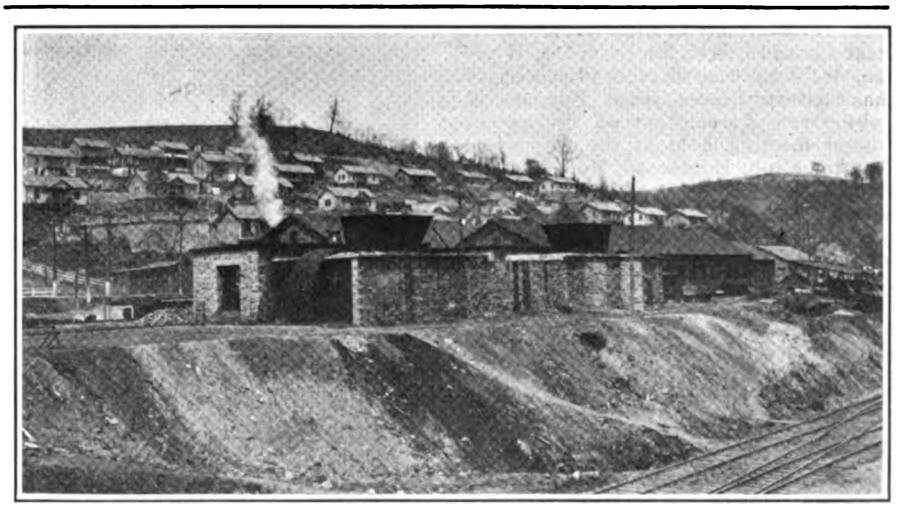
A new sternwheel steamboat of the Ohio River Co., a subsidiary of the West Virginia Coal & Coke Co., has been launched at Charleston. The boat will be operated in the coal towing trade between Huntington and Cincinnati.

Eagle Mine Under Hammer.—The Gauley By-Products Coal Co.'s Eagle mine, located near Vaughan, Nicholas County, recently was sold at a trustee's sale and the property was purchased under a leasehold by the Federal Coal Co., of Scranton, Pa., which owns the coal land. Six hundred and fifty acres of splint and gas coal land is included in the tract together with the equipped mine, which produces 250 tons of gas coal a day. The property was put under the hammer at the Nicholas County court house, at Sommersville.

The Detroit Mining Co., owned by Fred Essex, of Columbus, Ohio, and associates, recently opened up a new mine on White's branch of Little Coal River, Boone County, near Van. The mine is now under development and produces 6,000 tons of coal a month, but ultimately will mine 20,000 tons a month. A wooden tipple and a rope and button conveyor have been installed. Twenty miners' houses have been built. Splint and high-volatile low-sulphur coal is being mined.

CANADA

To Reorganize British Empire Corp.—The British Empire Steel Corporation, Ltd., and constituent companies, which include the Dominion Coal Co., for the year ended Dec. 31, 1925, had an operating loss of $1,133,443 before depreciation, depletion, interest, etc., comparing with operating profit of $923,774 in 1924. President Roy M. Wolvin announces that the deficit in operation since the inception of the corporation amounts to a total of $5,738,-018. He anticipates that the interest and sinking fund payments on the company's bonds probably will not be met when due on July 1 next. Among the causes assigned for this unsatisfactory condition of affairs are keen competition with European and American steel products owing to inadequate tariff protection and the losses occasioned by the five months' strike of the Cape Breton miners. Under these unfavorable circumstances a reorganization of the corporation and its subsidiary companies has been decided upon, and it is expected that within the next sixty days some plan will be formulated for submission to all who may be concerned in the corporation's affairs.



Fan Installation at Mine No. 41, Bethlehem Mines Corporation

Here, as may be noted by the two short evasé stacks, is a double fan installation, one driven by a uniflow engine and the other by an electric motor. This was installed about 1923. The village is that of Barrackville, W. Va. The picture is taken from the rear of the fan houses.

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Among the Coal Men

Thomas F. Farrell, a vice-president of Burns Bros., New York City, has been elected a director to succeed Mason B. Starring, who resigned because of his removal to the Pacific Coast.

Ed Holyoke, formerly of the Wyoming Coal Sales Co. and the Cory-Mann-George Co., has been appointed Western manager for the Indian Run Coal Co. and its offices have been moved to the Fourth National Bank Building, Cincinnati. **James C. Layne Jr.,** who formerly had this position, is now devoting all of his time to the Katoma Coal Co.

Erskine Ramsey, chairman of the board, Alabama By-Products Corporation, Birmingham, Ala., who recently left to attend the Kiwanis International Convention, at Montreal, Can., will be away about a month. He will return by auto, stopping at New York on the way.

C. Bascom Slemp, chairman of the board, Wakenva Coal Co., representing a merger of fourteen companies, and former secretary to President Coolidge, recently joined the "hole-in-one" coterie of golfers. He did it at the Burning Tree Club, near Washington, D. C., on a hole of a little more than 150 yards.

A Dorman, managing director, and **W. L. Johnson,** an associate director, of Dorman, Long & Co., and **E. D. Morgan,** general works manager of the Port Clarence Iron & Steel Co., were among a party of prominent English industrialists who visited the Birmingham (Ala.) district recently to inspect the steel plants, coal and ore mines and for a study of industrial and trade conditions. They were conducted on a tour of the plants of the Tennessee Coal, Iron & Railroad Co. by **George Gordon Crawford,** president, who later entertained the visitors at an informal dinner. They proceeded from Birmingham to Chicago.

H. E. McDonnell, superintendent of blast furnaces, Weirton Steel Co., Weirton, W. Va., was elected president of the Eastern States Blast Furnace & Coke Oven Association at the recent annual meeting held at the Edgewood Country Club, Edgewood, Pa. He is a charter member, was secretary-treasurer in 1924-1925, and vice-president last year. **Charles R. Meissner,** superintendent of coke plant, Weirton Steel Co., who has been secretary-treasurer of the association during the last year, was elected vice-president. **B. W. Winship,** superintendent of the coke plant of the Bethlehem Steel Co. at Steelton, Pa., was named secretary-treasurer.

Eugene C. Hultman, chairman of the Massachusetts Commission on the Necessaries of Life, calls the attention of commercial and industrial coal consumers of New England to the possibility of serious effects on the coal market from the British strike. He says that the foreign demand for American coal is likely to increase considerably, and the result is likely to be felt more quickly in New England than in any other section of the country. While admitting that bituminous mines might increase output sufficiently to take care of the larger demand, he thinks that the foreign demand would be largely for the kind of coal desired in New England and would, therefore, be more likely to interfere with supplies to that part of the country.

J. W. Powell, since 1924 chief mining engineer of the Autonomous Industrial Colony, Kuzbas, which is located in the Kuznetz Basin, Southwestern Siberia, sailed on the Cunard liner "Carmania," on June 12 for London, where he will reembark for Riga, Latvia. From this point he will travel by rail to Siberia. Mr. Powell was formerly Inspector of Mines in the Province of Alberta, Canada, and later was general superintendent of the Elkhorn division of the Consolidation Coal Co., Jenkins, Ky. Mr. Powell has been in the United States for the past three months on a vacation, during which time he has availed himself of the opportunity of investigating the latest types of coal mining machinery and equipment adaptable to conditions in the Kuznetz coal basin. He expects to remain in Siberia for three years to develop and carry to completion projected plans. He reports great progress during the 1½ years he has been connected with the Kuzbas enterprise.

Obituary

Joseph Louis, age 62, general superintendent of the Chicago, Wilmington & Franklin Coal Co., better known as Uncle Joe, died on June 8 as the result of a fall and head injury in alighting from his automobile near Vandalia, Ill. Prior to the accident he enjoyed good health. Mr. Louis had been in the services of the Chicago, Wilmington & Franklin Coal Co., and the old Chicago, Wilmington & Vermillion Coal Co. for about 40 years. His early years were spent at work in the mines of the last-named company in the Wilmington field of northern Illinois, where he rose from his first mine job of weighman to superintendent in 1905. In 1912 he was transferred to southern Illinois and appointed superintendent of Orient No. 1, and in 1920 was promoted to general superintendent. His headquarters and residence were in Benton, Ill. He leaves his wife and six daughters.



Joseph Louis

Charles James Myles, head of the firm of Thomas Myles, Sons, Ltd., Hamilton, Ont., died at his home in that city on June 7, following an illness of three weeks. Mr. Myles, who was 82 years of age, was born in Limerick, Ireland, and had lived in Hamilton nearly all his life. He entered the coal business with his father when very young, and carried it on successfully until his death. In the early days Mr. Myles owned several sailing vessels, in which the first coal was brought to Hamilton by water. These gave place to steamboats in 1876. He was a promoter of the Hamilton, Grimsby and Beamsville Radial Ry., and was a former president of the road.

Association Activities

The Central Pennsylvania Coal Producers' Association and the Association of Bituminous Coal Operators of Central Pennsylvania held their annual meeting in Altoona on June 10. The Producers' Association elected the following officers: President, B. M. Clark, Indiana; vice-president, G. Webb, Shillingford, Clearfield; secretary-treasurer, Charles O'Neill, Altoona; statistician, W. A. Jones, Altoona. The association of operators, which deals with labor problems, elected Charles O'Neill president-secretary-treasurer. Plans were completed for the appearance of the association's representatives at the rate hearings in Washington on June 14 and at Atlantic City on June 21.

The Pennsylvania Retail Coal Merchants' Association at its recent annual meeting, re-elected Samuel B. Crowell, of Philadelphia, as president. Other officers re-elected were: Vice-president, Walter L. Montgomery, Harrisburg, treasurer, J. Arthur Strunk, Reading; directors, Frank Sener, Lancaster; James C. Tattersall, Trenton; John Robinson, Camden; Leon Walker, Wilmington, and Thomas J. Murphy, Phillipsburg, N. J.

The West Virginia State Coal Association met in the Kanawha Hotel, Charleston, on June 1, and re-elected the following officers for the ensuing year: President, J. G. Bradley, of Dundon; vice-president, G. H. Caperton, of Charleston; secretary, Walter H. Cunningham, of Huntington, and treasurer, C. C. Dickinson, of Charleston. Plans were made to close the mines in the state on Mine Safety Day, which will be observed on Aug. 21, when mine-rescue contests will be held in Huntington. The association at its meeting went on record as being opposed to the passage of the proposed Parker bill.

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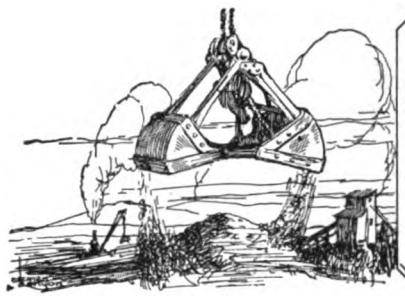
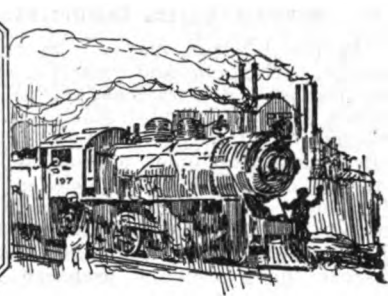


Production And the Market



Seasonal Dullness Pervades Soft-Coal Market; Lake Movement a Steadying Influence

There has been comparatively slight surface change in the bituminous coal trade of the country during the last week. While the customary seasonal dullness is in evidence in most sections, the market is holding its own in good style. An important factor, of course, is the steadying influence of the heavy movement of coal to the lakes, which, after a belated start, is exceeding the weekly flow at this time last year. Last week 13,171 carloads passed through Cincinnati headed lakeward, an increase of 964 over the total for the corresponding week of 1925.

A further factor of favorable effect is the continuance of the British strike. From a speculative standpoint, however, this development has been a distinct disappointment, for the demand has fallen far short of expectations, and as a consequence the effect upon prices has been almost negligible. The export trade at Baltimore has increased noticeably, though not to an extent sufficient to exert a marked effect on the home market. On the other hand, in New England, where the possible effect of demand from consumers usually supplied by British coal was most feared, a distinctly weaker tone is evident from the standpoint of both demand and price.

Midwest Mines Curtail Running Time

Midwestern markets reflect such an indifferent attitude on the part of consumers that Illinois and Indiana operators are curtailing running time. The dullness extends to steam as well as domestic grades, and prices show a wobbly tendency. Kentucky coals are moving with a little more freedom and prices are somewhat firmer. Shipments from the Northwest docks are no better than normal, but a firmer tone has appeared with the cessation of price cutting. A backward disposition prevails in regard to contracting. The balancing effect of tidewater demand and lake movement, however, has served to preserve some semblance of price stability.

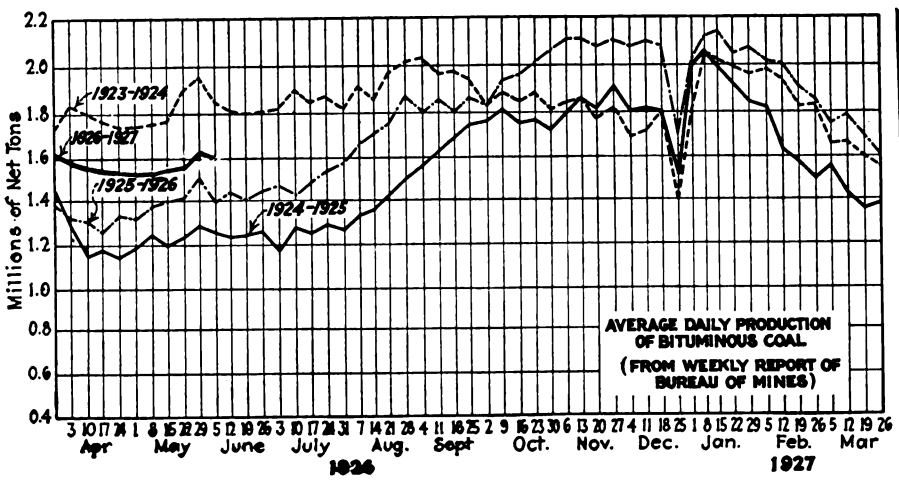
Average spot quotations registered a further decline during the week. *Coal Age* Index of spot bituminous prices on June 14 stood at 156. The corresponding price is $1.89. The figures for the previous week were 157 and $1.90, respectively.

The observance of Memorial Day caused a pronounced falling off in the output of bituminous coal during the week ended June 5, the total for which is estimated by the Bureau of Mines at 8,651,000 net tons, or 1,032,000 tons less than during the preceding week. Lake dumpings during the week ended June 13 totaled 1,038,369 tons of cargo and 48,885 tons of vessel fuel. Anthracite production during the week ended June 5 was 1,665,000 tons, a decrease of 424,000 tons from the week previous.

Hard-Coal Demand Easing Off

The decline in anthracite output was a development devoutly to be wished, as distributing channels are hard put to keep pace with production. As a matter of fact, some of the independent producers have already placed their operations on part time. Though fill-up orders are far behind the volume usual at this time, some consolation is felt in that much business of this character is still to be placed. Demand for stove coal is good and company egg moves without much difficulty. Independents are shading egg a little, and chestnut drags. The steam sizes are quite weak and surpluses are accumulating. One company shipper is said to be willing to shade prices on good sized tonnages.

In the Connellsville coke market production has been more evenly adjusted to contract requirements, with prices and demand practically unchanged.



Estimates of Production

(Net Tons)

	1925	1926
BITUMINOUS		
May 22	8,451,000	9,282,000
May 29 (*a*)	8,141,000	9,683,000
June 5 (*b*)	8,375,000	8,651,000
Daily average	1,396,000	1,602,000
Cal. yr. to date	(*c*) 203,970,000	233,395,000
Daily av. to date	1,543,000	1,765,000
ANTHRACITE		
May 22	1,708,000	1,750,000
May 29 (*a*)	1,681,000	2,089,000
June 5 (*b*)	1,634,000	1,665,000
Cal. yr. to date	(*c*) 37,881,000	28,967,000
BEEHIVE COKE		
May 29 (*a*)	132,000	194,000
June 5 (*b*)	130,000	195,000
Cal. yr. to date	(*c*) 4,794,000	5,972,000

(*a*) Revised since last report. (*b*) Subject to revision. (*c*) Adjusted to equalize number of days in the two years.

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Midwest Buyers Indifferent

In the Chicago market the buying public, both steam and domestic, shows no interest in the purchase of fuel, and mines in Illinois and Indiana are curtailing operation. Demand for anthracite is extremely quiet, but coke is moving in fair volume, as is smokeless coal in prepared sizes. Prices in smokeless, however, are anything but firm. Mine-run is offered at $1.65 to $2.10, according to the grade, and prepared sizes vary widely. The demand for high-volatile coals from eastern Kentucky and West Virginia is weak, price concessions having failed to stimulate the demand. The steam-coal market is extremely unsatisfactory. Those who have 2-in. or 1¼-in. screenings are having difficulty in finding buyers at a satisfactory price, though production has been sharply curtailed.

Railroad coal is about all that keeps the southern Illinois field going. True there is a little steam trade and some mines are crushing mine-run to carry out their contracts and here and there a little lump, egg and nut is moving, but for the most part the larger sizes have blocked up the mine tracks and all mines have a large number of "no bills" in these sizes. Strip mines are working practically all the time.

In the Duquoin field the mines are working about three days a week. In the Mount Olive district some mines are working and crushing mine-run for steam contracts and others are shipping lump on railroad mine-run orders. In the Standard field conditions are unusually bad. The mines getting the best working time are co-operatives.

At St. Louis domestic business continues quiet. Practically nothing is going into storage—neither anthracite, smokeless nor southern Illinois. Coke also is unusually quiet.

Movement Gaining in Kentucky

Kentucky coals are moving somewhat better, and prices have stiffened a little in both eastern and western Kentucky. Except for a little off-grade distress coal not much 4-in. block is being offered at $2 in eastern Kentucky, and mine-run is $1.35@$1.60. In western Kentucky 6-in. block is $1.75@$1.85 and mine-run $1.10@$1.40. Screenings are holding firmly.

Demand for screenings is increasing somewhat due to public institutions and others stocking winter supplies and steady movement to utility and industrial plants. Steam coal has been in good general movement, and railroad consumption is normal.

Movement of coal from eastern Kentucky to the lakes is increasing steadily. There also is a fair scattered movement to the Southeast, and also north of the Ohio. Western Kentucky hasn't moved as much coal North and West as had been expected as a result of arrangements made with Chicago and Northern jobbers, but buying is improving.

Northwest Market Steadier

Conditions at the Head of the Lakes are more stable than a week ago. The price war for contracts with industrial

Current Quotations—Spot Prices. Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	June 15 1925	May 31 1926	June 7 1926	June 14 1926†
Smokeless lump	Columbus	$2.85	$3.10	$3.10	$3.00@$3.25
Smokeless mine run	Columbus	1.85	2.05	2.05	2.00@ 2.15
Smokeless screenings	Columbus	1.30	1.25	1.25	1.20@ 1.35
Smokeless lump	Chicago	3.10	3.10	3.00	2.75@ 3.25
Smokeless mine run	Chicago	1.95	2.00	1.90	1.85@ 2.00
Smokeless lump	Cincinnati	2.85	3.00	3.10	*3.00*
Smokeless mine run	Cincinnati	1.85	1.85	2.00	2.00
Smokeless screenings	Cincinnati	1.25	1.35	1.35	*1.25@ 1.35*
*Smokeless mine run	Boston	4.25	4.65	4.50	*4.25@ 4.40*
Clearfield mine run	Boston	1.75	1.80	1.80	*1.65@ 1.90*
Cambria mine run	Boston	2.10	2.10	2.05	*1.90@ 2.15*
Somerset mine run	Boston	1.95	2.00	1.90	*1.75@ 2.00*
Pool 1 (Navy Standard)	New York	2.55	2.60	2.60	2.50@ 2.75
Pool 1 (Navy Standard)	Philadelphia	2.60	2.65	2.65	2.50@ 2.80
Pool 1 (Navy Standard)	Baltimore	1.85	2.00	2.00	1.95@ 2.05
Pool 9 (Super. Low Vol.)	New York	2.00	2.05	2.05	**2.00@ 2.25**
Pool 9 (Super. Low Vol.)	Philadelphia	2.00	2.10	2.10	2.00@ 2.25
Pool 9 (Super. Low Vol.)	Baltimore	1.75	1.80	1.80	1.75@ 1.85
Pool 10 (H.Gr.Low Vol.)	New York	1.85	1.85	1.85	1.75@ 2.00
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.70	1.85	1.85	1.75@ 2.00
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.60	1.65	1.65	1.60@ 1.70
Pool 11 (Low Vol.)	New York	1.55	1.65	1.65	**1.60@ 1.80**
Pool 11 (Low Vol.)	Philadelphia	1.55	1.55	1.55	1.45@ 1.70
Pool 11 (Low Vol.)	Baltimore	1.40	1.60	1.60	1.55@ 1.65
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.50	1.40	1.40	1.30@ 1.55
Pool 54-64 (Gas and St.)	Philadelphia	1.50	1.45	1.45	1.35@ 1.55
Pool 54-64 (Gas and St.)	Baltimore	1.45	1.40	1.40	1.40@ 1.45
Pittsburgh sc'd gas	Pittsburgh	2.40	2.25	2.25	2.20@ 2.30
Pittsburgh gas mine run	Pittsburgh	2.15	2.00	2.00	1.90@ 2.10
Pittsburgh mine run (St.)	Pittsburgh	1.95	1.80	1.80	*1.60@ 1.90*
Pittsburgh slack (Gas)	Pittsburgh	1.45	1.35	1.35	*1.20@ 1.25*
Kanawha lump	Columbus	2.10	2.05	2.05	1.85@ 2.25
Kanawha mine run	Columbus	1.40	1.55	1.55	1.40@ 1.75
Kanawha screenings	Columbus	1.10	.95	1.05	.95@ 1.15
W. Va. lump	Cincinnati	2.10	2.10	2.25	*2.00@ 2.25*
W. Va. gas mine run	Cincinnati	1.45	1.50	1.50	1.40@ 1.65
W. Va. steam mine run	Cincinnati	1.40	1.35	1.35	1.25@ 1.50
W. Va. screenings	Cincinnati	1.10	1.05	1.15	*1.00@ 1.15*
Hocking lump	Columbus	2.15	2.35	2.35	2.25@ 2.50
Hocking mine run	Columbus	1.50	1.55	1.55	1.40@ 1.70
Hocking screenings	Columbus	1.30	1.10	1.10	1.00@ 1.20
Pitts. No. 8 lump	Cleveland	2.20	2.15	2.15	**1.85@ 2.50**
Pitts. No. 8 mine run	Cleveland	1.85	1.70	1.70	**1.80@ 1.85**
Pitts. No. 8 screenings	Cleveland	1.40	1.30	1.25	**1.25@ 1.35**

Midwest	Market Quoted	June 15 1925	May 31 1926	June 7 1926	June 14 1926†
Franklin, Ill. lump	Chicago	$2.60	$2.60	$2.60	$2.60
Franklin, Ill. mine run	Chicago	2.35	2.40	2.25	2.25
Franklin, Ill. screenings	Chicago	2.10	1.90	1.65	**1.60@ 2.00**
Central, Ill. lump	Chicago	2.35	2.30	2.30	2.25@ 2.40
Central, Ill. mine run	Chicago	2.10	2.05	2.05	2.00@ 2.15
Central, Ill. screenings	Chicago	1.75	1.75	1.75	1.60@ 1.90
Ind. 4th Vein lump	Chicago	2.60	2.40	2.40	2.25@ 2.60
Ind. 4th Vein mine run	Chicago	2.35	2.15	2.15	2.10@ 2.25
Ind. 4th Vein screenings	Chicago	1.85	1.80	1.80	**1.75@ 2.00**
Ind. 5th Vein lump	Cnicago	2.25	2.15	2.15	2.00@ 2.35
Ind. 5th Vein mine run	Chicago	1.95	1.95	1.95	1.85@ 2.10
Ind. 5th Vein screenings	Cnicago	1.50	1.35	1.40	**1.40@ 1.50**
Mt. Olive lump	St. Louis	2.50	2.35	2.35	2.25@ 2.50
Mt. Olive mine run	St. Louis	2.25	2.15	2.15	2.15
Mt. Olive screenings	St. Louis	1.75	1.55	1.55	1.50@ 1.60
Standard lump	St. Louis	2.25	2.25	2.25	2.25
Standard mine run	St. Louis	1.80	1.80	1.80	1.75@ 1.85
Standard screenings	St. Louis	1.70	1.30	1.30	**1.25@ 1.50**
West Ky. block	Louisville	1.50	1.75	1.75	**1.75@ 1.85**
West Ky. mine run	Louisville	1.15	1.20	1.20	*1.10@ 1.40*
West Ky. screenings	Louisville	1.15	1.10	1.10	1.00@ 1.25
West Ky. block	Chicago	2.00	1.75	1.75	1.65@ 1.85
West Ky. mine run	Chicago	1.30	1.15	1.15	.95@ 1.35
South and Southwest					
Big Seam lump	Birmingham	2.10	2.30	2.30	2.05@ 2.55
Big Seam mine run	Birmingham	1.75	2.00	1.85	1.75@ 2.00
Big Seam (washed)	Birmingham	1.85	2.00	1.85	**1.75@ 2.25**
S. E. Ky. block	Chicago	2.25	2.40	2.40	2.10@ 2.75
S. E. Ky. mine run	Chicago	1.70	1.65	1.65	1.50@ 1.85
S. E. Ky. block	Louisville	2.25	2.00	2.00	**2.00@ 2.35**
S. E. Ky. mine run	Louisville	1.50	1.35	1.35	**1.35@ 1.60**
S. E. Ky. screenings	Louisville	1.10	1.15	1.15	1.10@ 1.25
S. E. Ky. block	Cincinnati	2.25	2.15	2.15	2.00@ 2.30
S. E. Ky. mine run	Cincinnati	1.45	1.50	1.50	**1.35@ 1.75**
S. E. Ky. screenings	Cincinnati	1.10	1.05	1.10	1.00@ 1.25
Kansas lump	Kansas City	4.00	4.00	4.00	4.00
Kansas mine run	Kansas City	3.00	3.00	3.00	3.00
Kansas screenings	Kansas City	2.60	2.50	2.50	*2.35@ 2.50*

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**; declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	June 15,'1925 Independent	June 15,'1925 Company	June 7, 1926 Independent	June 7, 1926 Company	June 14, 1926† Independent	June 14, 1926† Company
Broken	New York	$2.34	.....	$8.10@$8.70	.....	$8.25@$9.25	.....	$8.25@$9.25
Broken	Philadelphia	2.39	.....	8.60	$9.25	8.50@ 9.15	$9.25	8.50@ 9.15
Egg	New York	2.34	$8.50@$8.75	8.45@ 8.70	8.75@ 9.25	8.75@ 9.25	*8.50@ 9.25*	8.75@ 9.25
Egg	Philadelphia	2.39	8.70@ 9.30	8.50@ 8.70	9.15@ 9.85	9.00@ 9.15	*9.00@ 9.85*	9.00@ 9.15
Egg	Chicago*	5.06	7.86@ 8.50	7.44@ 8.18	8.48	8.13	8.48	8.13
Stove	New York	2.34	8.90@ 9.25	8.95@ 9.20	9.25@ 9.75	9.25@ 9.50	9.25@ 9.75	9.25@ 9.50
Stove	Philadelphia	2.39	9.30@ 9.65	8.95@ 9.10	9.40@ 10.30	9.35@ 9.50	*9.15@ 10.30*	9.35@ 9.50
Stove	Chicago*	5.06	8.22@ 8.70	7.92@ 8.10	8.84	8.33@ 8.58	8.84	8.33@ 8.58
Chestnut	New York	2.34	8.35@ 8.65	8.45@ 8.70	8.75@ 9.25	8.75@ 9.15	*8.50@ 9.25*	8.75@ 9.15
Chestnut	Philadelphia	2.39	8.70@ 9.55	8.60@ 8.70	9.00@ 10.05	9.00@ 9.15	*8.75@ 10.05*	9.00@ 9.15
Chestnut	Chicago*	5.06	8.14@ 8.35	7.69@ 8.00	8.71	8.38@ 8.53	8.71	8.38@ 8.53
Pea	New York	2.22	4.75@ 5.50	5.00@ 5.70	6.25@ 7.00	6.00@ 6.25	**6.50@ 7.00**	6.00@ 6.25
Pea	Philadelphia	2.14	5.50@ 5.75	5.00@ 5.40	6.25@ 6.75	6.00@ 6.35	6.25@ 6.75	6.00@ 6.35
Pea	Chicago*	4.79	4.91@ 5.36	4.69@ 5.00	6.03	5.65@ 5.80	6.03	5.65@ 5.80
Buckwheat No. 1	New York	2.22	2.00@ 2.50	2.50	1.75@ 2.25	3.00@ 3.50	1.75@ 2.25	3.00@ 3.50
Buckwheat No. 1	Philadelphia	2.14	2.15@ 2.75	2.50	2.15@ 2.50	2.50@ 2.75	2.15@ 2.50	*2.25@ 2.75*
Rice	New York	2.22	1.75@ 2.00	2.00	1.50@ 1.85	2.00@ 2.25	*1.40@ 1.85*	2.00@ 2.25
Rice	Philadelphia	2.14	1.85@ 2.00	2.00	1.75@ 2.00	2.00@ 2.25	*1.65@ 2.00*	*1.75@ 2.25*
Barley	New York	2.22	1.40@ 1.50	1.50	1.20@ 1.50	1.50@ 1.75	*1.10@ 1.40*	1.50@ 1.75
Barley	Philadelphia	2.14	1.40@ 1.50	1.50	1.50@ 1.75	1.50@ 1.75	1.50@ 1.75	1.50@ 1.75
Birdseye	New York	2.22	1.50@ 1.65	1.60	1.30@ 1.60	2.00	1.30@ 1.60	2.00

* Net tons, f.o.b. mines. † Advances over previous week shown in **heavy type**; declines in *italics*.

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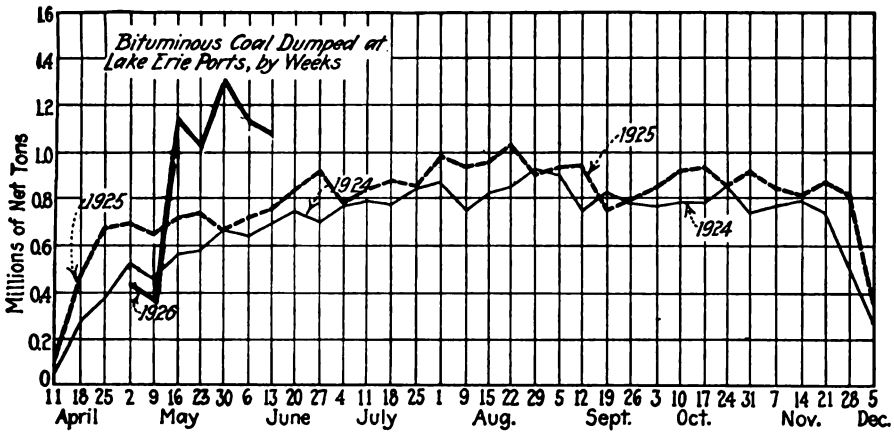


consumers seems to have spent itself.

May receipts at the docks were 115,538 tons of anthracite and 1,691,569 tons of bituminous. Compared with the same month last year hard-coal receipts decreased 269,840 tons and soft-coal increased 115,938 tons. The latest weekly report shows the arrival of 46 cargoes, including 2 of anthracite, and 26 cargoes, including 4 of anthracite, were reported en route.

Shipments of coal from the docks during May totaled 11,808 cars, as compared with 11,855 cars during April and 12,302 cars during May last year. Shipments so far during June have been about the same as last month.

Buying at the Twin Cities is confined to current needs. There is little stocking for the future, though prices now quoted are tempting. Coal is moving out so slowly at Milwaukee just now, while receipts by cargo continue so heavy that it is difficult to keep the docks clear for incoming cargoes. The dullness is largely seasonal. Prices are unchanged since the recent shading of Pocahontas to stimulate bin filling.

Storage Buying Brisk in Southwest

Only a few Kansas shafts are working on contracts. Most of the coal from this field now marketed is from shovel mines, and much of it is being crushed. Shaft screenings, when they can be had, sell for $2.50, but this trade for the most part, is being supplied with crushed shovel mine run at $2.35@$2.50. There is a good demand for Kansas coal for threshing. Orders for Arkansas semi-anthracite for summer storage are so brisk that operators expect no difficulty in keeping the mines working full time all summer.

Domestic trade is sluggish in Colorado, but steam demand is somewhat better. The mines are at about 50 per cent running time and the trade is not in the mood for much storage coal. Prices reflect little change.

In Utah the market is unusually active for June, due to the low prices of larger sizes to induce summer storage. Lump of the best quality is retailing at $6.50 and $6.45 c.o.d., compared with $9 not long ago. "No bills" have been cut down about 80 per cent. The slack situation is improving.

Dullness Settles in Cincinnati

Dog day dullness is beginning to settle on the Cincinnati market. During the past week demand from the lakes has been just strong enough to keep pace with that from tidewater and keep prices on an even keel.

A little better tone to the west helped prepared smokeless, but there were a few concessions under $3 for both lump and egg. Stove holds about to the June circular as does nut. Mine-run is still firm at $2. The heavy "make" for the lakes precluded much change in screenings.

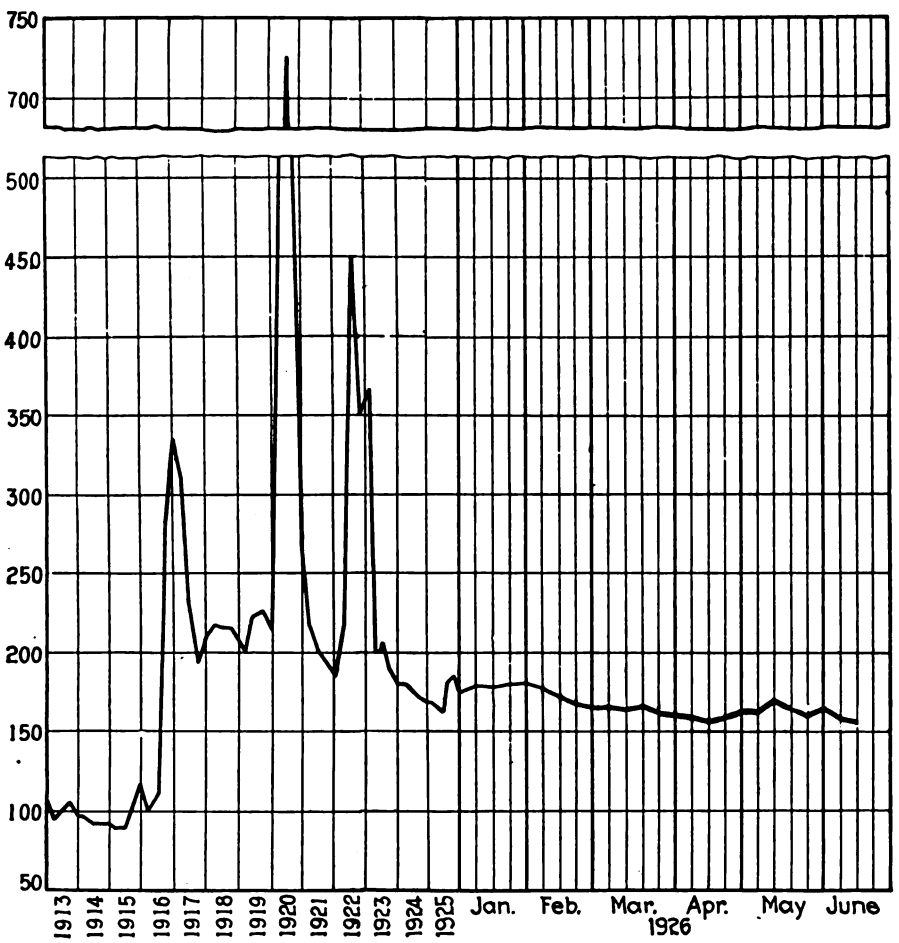
The spread in the price of high-volatile lump is $2@$2.50. Egg business has been fairly good since the price has advanced. Mine-run, after a spurt, has lulled a little, but slack holds its own.

Last week 13,171 carloads of coal moved through the Cincinnati gateway. This total, which was a decrease of 1,693 compared to last week, but an increase of 964 compared to same week last year, included 3,635 cars of lake coal en route to Toledo and Sandusky. There was an increase of 60 in the number of empties sent to the mines.

Columbus More Active

With the lake trade running along smoothly and a better feeling developing in domestic circles, slightly more activity is reported in the Columbus market. Retail stocks as a rule are not heavy and buying to replenish them is expected to be steady.

Steam business shows no particular change in the last week. Many manufacturing plants have been cutting in on their reserves, which has reduced spot purchases and contract shipments. Public utilities are about the only exception to this rule. Railroads are taking their usual requirements, but in some cases are buying on the open market. Contracting is slow in every way, owing to the low prices on distress coal. Individual embargoes against lake shipments during the past week forced considerable cheap coal onto the Columbus market.



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926				1925	1924
	June 14	June 7	May 31	May 24	June 15	June 16
Index	156	157	160	157	160	166
Weighted average price	$1.89	$1.90	$1.94	$1.89	$1.94	$2.01

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.

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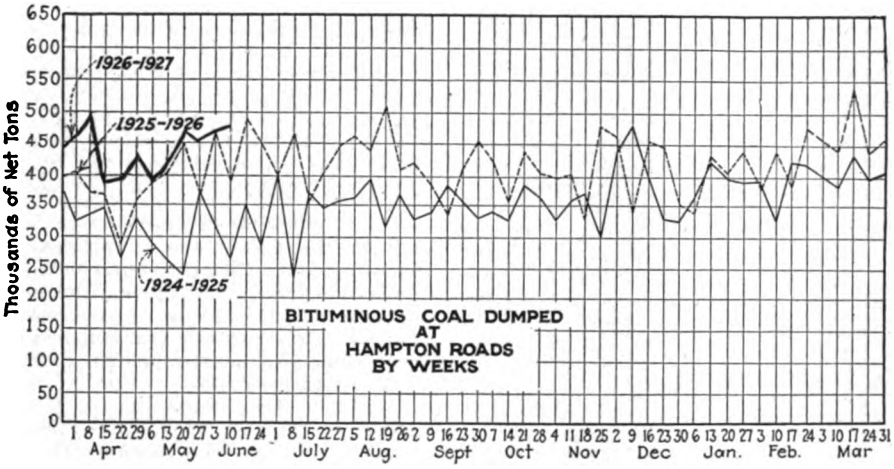


Output in the southern Ohio field is now about 15 per cent and will be lower soon as the result of an order by the Ohio Mine Workers, closing all mines being operated on a co-operative basis.

In eastern Ohio a slight improvement is discernible, in that coal is less abundant and prices are a little firmer.

The railroads are taking normal tonnage, and the No. 8 field is participating to at least one-third of the weekly output, but the retailers are very quiet, especially in so far as Ohio coals are concerned.

About 75 per cent of the lake movement is via the ports of Toledo and Sandusky and the No. 8 field is participating in this movement less during the present season than ever before. Ohio mines, however, are furnishing considerable vessel fuel, but not in the same volume as formerly.

Eastern Ohio production for the week ended June 5 aggregated 161,000 tons, or about 27 per cent of potential capacity. This was 45,000 tons under the corresponding week a year ago.

Pittsburgh Trade Still Slipping

Conditions in the Pittsburgh market continue to grow poorer. The field of distribution is being narrowed by offerings of West Virginia and other fields, which is sharpening competition among the Pittsburgh operators who are trying to run.

The steel industry has been tapering off less than it did a year ago. Prices still show a softening tendency.

Seasonal dullness and keen competition are reflected in short working time and low earnings in the central Pennsylvania field. The district is now working about one-half normal.

Conditions at Buffalo show little change. Prices maintain recent levels. Low volatile is very quiet and the movement of high volatile is light. The hard-coal trade is not improving.

At Toronto there is a fair volume of business in anthracite. The yards are well stocked, with plenty of supplies coming through from the mines. Little activity is reported in soft coals, however, as industrial concerns have not yet begun placing orders. Prices are unchanged.

New England Still Sinking

The bituminous market in New England is a shade nearer the bottom, although the low point of the season doubtless is yet to be reached. Prices all along the line have slumped, although the modifications from day to day are not so noticeable.

Hampton Roads accumulations are not large, but prices are depressed. No sales in the last few days have been noted at more than $4.35 per gross ton f.o.b. vessel for No. 1 Navy Standard, and it is possible that $4.25 has actually been touched. Distributors at this end also are finding the going hard.

Pennsylvania coals are at a minimum, and this means that consumers in the twilight zone are trying their luck here and there with all-rail coal to the exclusion of the smokeless grades. This accounts for only a small tonnage, however, though it has a bearing on the large stocks on hand at most of the storage yards. On cars Boston and Providence it can hardly be said that the current level is anything in excess of $5.50 per gross ton, if indeed actual sales are made at figures higher than $5.35.

New York Market Quiet

The New York market is dull. Railroads as well as industrial consumers are holding off contracts in many cases and either buying from month to month or living on their stockpiles. Stocks have got down to a point, however, where many consumers who have not been in the market recently will have to do some buying before long. Exports are quite heavy as a result of the British coal strike, but this business is confined largely to Southern coals. A little extra bunker business is coming to this port, but it has had no noticeable effect on the market, tidewater prices remaining stationary.

A tendency to mark time still prevails in the Philadelphia market. Many large railroad contracts are still unsigned, but the roads have a receptive ear if the price is in accordance with their ideas. The market in slack seems to be an in and out affair. Tide conditions are quiet outside of bunkers.

The only element of decided interest in the Baltimore trade is an increase in demand for exports and bunkers, though this has not been heavy enough to cause any flurry in the home market.

Birmingham Trade at Low Level

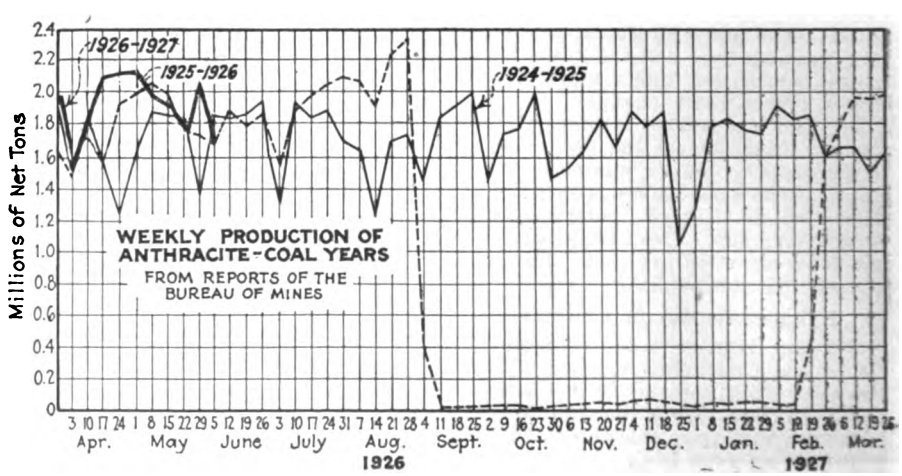
At Birmingham the volume of business is at the lowest point for the year. Most all the regular industrial contracts have been renewed. The Southern and Seaboard Air Line awards, the last of the large rail contracts, are still pending. Bunker trade shows no stimulus from the British strike. Quotable prices are virtually unchanged. The average running time is about four days per week. Spot demand for foundry coke is fairly good at $6, and some contracting is being done for the third quarter at $5.50 per ton. Domestic sizes are $3.50 to $5, with only a moderate inquiry.

Anthracite Demand Weakens

Demand for anthracite at New York is easing off to such an extent that the selling end is unable to keep up with output. Some of the independents, in fact already are operating part time. There is still a good demand for stove coal, and company egg is moving well. Independents also have no trouble in disposing of egg at a price, but chestnut is hard to move on any terms, and as a result the price has weakened further. Independent stove is short in supply but has come down a little in price. No. 1 buckwheat and rice are about equally soft, with some extremely low prices heard of on distress lots at tidewater. Barley also is weak.

A further falling off is noticeable at Philadelphia. Retailers cannot induce customers to take in coal, but are standing quite firm on prices. The steam market is dull and there is much surplus coal. Independent prices for distress coal are quite low, and now it is reported that at least one company shipper is willing to accept $2.25 for buckwheat and $1.75 for rice in fairly sizable tonnages. Extreme dullness prevails at Baltimore.

Anthracite shipments by lake from Buffalo during the week ended June 10 totaled 53,700 tons, of which 25,200



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Car Loadings and Supply

	Cars Loaded All Cars	Cars Loaded Coal Cars
Week ended May 29, 1926	1,081,164	177,600
Preceding week	1,039,385	165,212
Week ended May 30, 1925	913,087	149,604

Week Ended	Surplus Cars All Cars	Surplus Cars Coal Cars	Car Shortages All Cars	Car Shortages Coal Cars
May 31, 1926	257,926	75,253	.....	.....
May 23, 1926	259,788	82,304	.....	.....
May 31, 1925	323,624	133,559	.....	.....

tons cleared for Duluth and Superior, 14,300 tons for Chicago and 14,200 tons for Milwaukee.

Spot Coke Market Tone Firmer

Connellsville spot furnace coke is quotable at $2.75@$2.90, but there seems to be a better adjustment of production to contract shipping requirements, which presages greater firmness if any considerable tonnages have to be bought.

Negotiations on third-quarter or second-half contracts are dragging, not so much through haggling about prices on renewals as because some consumers would like to switch to better brands.

Standard foundry coke remains quotable at $4@$4.50. Some contracts for second half have been made at $4.75, while others, for practically standard coke, have been made at slightly less.

Production in the Connellsville and Lower Connellsville region in the week ended June 5, according to the *Courier*, was 80,400 tons by the furnace ovens, a decrease of 5,100 tons, and 61,590 tons by the merchant ovens, a decrease of 2,950 tons.

Western Europe Takes Most of British Coal Exports

Great Britain's principal markets during the coal year from April 1, 1925 to March 31, 1926, were in western Europe. British shipments to that area of more than 16,000,000 tons almost equalled the total United States coal exports during the same period, according to the Minerals Section of the Department of Commerce.

Northern Europe was second in importance as a receiving area of British coal, with imports for the period mentioned above amounting to 10,000,000 tons; southern Europe followed with 7,000,000 tons; South America took 4,000,000 tons; Africa 3,000,000 tons and North America about 1,000,000 tons.

France was the largest importer of British coal during the year with receipts totaling 7,962,000 tons. Italy was second with imports amounting to 6,124,000 tons; Argentina followed with receipts of 2,489,000 tons; while Egypt ranked in fourth place with a total of 1,946,000 tons. Following Egypt in the order of the size of their imports were Brazil, 1,149,000 tons; French Africa, 994,000 tons; Canada, 573,000 tons; Uruguay, 339,000 tons, and Chile, 102,000 tons.

Canada Increases Coke Production

The increasing use of coke as a household fuel in Canada is indicated by the production of 152,480 net tons during March, an increase of 10 per cent over the same month last year, but an 8 per cent decrease from February, 1926. Coke imports during March totaled 102,485 tons, compared with 73,796 in February. Most of this fuel was brought into the Province of Ontario, which always has been the principal market in Canada for imported fuel. The marked advance in imports appears to have been accompanied by an increase in coke consumption to 249,633 tons in March, compared with 235,359 tons in February and 200,364 in March, 1925.

Of the 237,565 tons of bituminous coal used for coke-making, 151,005 tons was imported from the United States and the balance supplied by domestic mines. Of the total production, 65,619 tons was sold to consumers, 67,967 used in smelters and 18,919 in coke plants. The Province of Ontario led with a production of 75,720 tons, followed by Eastern Canada, with 53,386 tons.

Exports decreased from 5,453 tons in March, 1925, to 5,332 tons in the corresponding month of the current year.

Penna. Soft-Coal Output 135,266,612 Tons in 1925

Total output of bituminous coal in Pennsylvania in 1925, according to figures just compiled by Frank Hall, Deputy Secretary of Mines, was 135,266,612 net tons. The total production of coke was 10,589,359 tons. The largest production of both bituminous and coke was in Fayette County, which produced 28,684,339 tons of coal and 6,273,261 tons of coke.

The Department of Mines' figures on bituminous coal and coke production in net tons by counties follow:

Counties	Production of Coal	Production of Coke
Allegheny	11,644,959	.....
Armstrong	3,126,898	.....
Beaver	80,006	.....
Bedford	452,286	.....
Blair	298,051	8,672
Bradford	9,181	.....
Butler	1,945,287	.....
Cambria	16,656,181	*1,702,636
Center	916,112	.....
Clarion	1,462,529	.....
Clearfield	5,440,701	14,085
Clinton	182,964	.....
Elk	1,052,684	.....
Fayette	28,684,339	6,273,261
Fulton	168,357	.....
Greene	4,992,995	20,701
Huntingdon	669,587	.....
Indiana	8,008,676	160,740
Jefferson	2,967,590	221,633
Lawrence	279,183	.....
Lycoming	23,919	.....
Mercer	279,087	.....
Somerset	9,629,892	.....
Tioga	144,680	.....
Venango	8,197	.....
Washington	15,421,542	54,546
Westmoreland	20,720,626	2,133,085
Totals	135,266,612	10,589,359

* 1,504,209 tons of coal purchased.

Anthracite Output by Counties in 1925

(In Net Tons)

Counties	Coal Shipped to Market	Used at Collieries for Steam and Heat	Total Production
Carbon	1,807,586	139,529	1,999,427
Columbia	582,571	82,003	685,300
Dauphin	652,419	91,662	773,400
Lackawanna	12,636,595	862,847	13,962,503
Luzerne	21,078,597	2,086,751	24,495,676
Northumberland	4,166,065	588,010	4,949,763
Schuylkill	12,009,041	1,659,348	14,073,904
Sullivan	117,176	19,443	142,435
Susquehanna	170,184	36,088	221,850
Wayne	52,566	351	53,061
Totals	53,272,800	5,566,032	†61,357,319

† Includes 2,518,487 tons sold to local trade and used by employees.

Coal Produced in Iowa in 1924[a]

(Exclusive of Product of Wagon Mines)

County	Net Tons: Loaded at Mines for Shipment	Net Tons: Sold to Local Trade and Used by Employees	Net Tons: Used at Mines for Steam and Heat	Net Tons: Total Quantity	Value: Total	Value: Average Per Ton	Number of Employees: Underground Miners b	Number of Employees: Underground All Others	Number of Employees: Surface	Number of Employees: Total	Average Number of Days Worked	Average Tons Per Man Per Day
Adams	.....	7,796	3	7,799	$33,000	$4.23	31	5	5	41	171	1.11
Appanoose	711,641	88,128	14,031	813,800	2,860,000	3.51	2,408	483	240	3,131	134	1.95
Boone	227,799	63,727	3,568	295,094	1,189,000	4.03	471	208	49	728	176	2.30
Dallas	516,011	14,534	4,306	534,851	1,772,000	3.31	603	265	87	955	196	2.86
Davis, Jefferson, Lucas, and Warren	630,368	14,790	24,051	669,209	1,966,000	2.94	548	197	84	829	182	4.43
Greene	.....	3,156	.....	3,156	16,000	5.07	15	3	3	21	114	1.32
Guthrie	.....	5,112	36	5,148	25,000	4.86	24	4	3	31	137	1.21
Jasper	77,08	25,867	6,682	109,638	377,000	3.44	122	70	34	226	154	3.14
Keokuk	.....	9,673	562	10,235	32,000	3.13	16	7	7	30	126	2.71
Mahaska	4,729	52,208	513	57,450	175,000	3.05	136	41	35	212	105	2.58
Marion	767,102	44,150	24,389	835,641	2,525,000	3.02	869	276	114	1,259	195	3.41
Monroe	992,828	63,544	29,511	1,085,883	3,549,000	3.27	1,660	577	152	2,389	151	3.01
Page and Taylor	5,998	26,250	50	32,298	146,000	4.52	64	8	9	81	207	1.92
Polk	400,538	478,612	13,932	893,082	3,028,000	3.39	1,140	474	174	1,788	176	2.84
Story and Webster	.....	6,692	200	6,892	28,000	4.06	17	5	5	27	216	1.18
Van Buren	4,189	4,406	50	8,645	27,000	3.12	17	6	5	28	142	2.18
Wapello	1,800	69,397	1,213	72,410	255,000	3.52	150	31	27	208	154	2.26
Wayne	11,160	15,351	708	27,219	94,000	3.45	91	17	9	117	128	1.81
Total	4,351,252	993,393	123,805	5,468,450	18,097,000	$3.31	8,382	2,677	1,042	12,101	161	2.80

(a) Note that the coal statistics of the Geological Survey for a given year include only the mines that had an output in that year. Many mines that operated in 1923 produced no coal in 1924: moreover, many of the mines that did produce in 1924 worked for a short time only. The number of active mines of commercial size in Iowa was 151 in 1923 and 256 in 1924.

(b) Includes also loaders and shotfirers.

Statistics issued by U. S. Bureau of Mines.

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Foreign Market And Export News

Strict Regulations as Well As Continuance of Strike Tie Up British Coal Trade

London, June 4.—The strictness of the regulations governing release very nearly prohibits export business in Welsh coals, and transactions are closed only in rare instances. The intention at present is to bunker vessels at Welsh ports from cargoes due from Germany. Exporters are handling American and German coals for home and depots, and through coal f.o.b. Rotterdam is 25s. 6d.@27s. 6d., and American mine-run, $7.50@$8, Hampton Roads. Some bunkers have been sold f.o.b. Brixham at 42s. 6d. The growing list of lost contracts includes the Portuguese State Railways, which have bought 15,000 tons of American and German coal and the South American Railways, which have purchased 50,000 tons of American coal.

Stocks of British bunkering coal at foreign depots have been exhausted and are being replenished from America and Germany. Some of the British Channel ports still hold fair stocks of domestic coal, and in some cases these have been augmented by French supplies. The public utilities, foreseeing industrial trouble have laid in good stocks, but all the chief railways are operating on a reduced schedule.

Coal is being strictly rationed to householders at the rate of 56 lb. per week for each house. Those houses which have gas or oil cookers or any alternative form of heating or cooking are not allowed any coal at all. There is no restriction on coke. Prices at foreign depots have risen from 10 to 50 per cent in the past few weeks.

French Coals in Brisk Demand Due to British Strike

Paris, May 28.—Owing to the stoppage of British collieries, French coals are much sought at the present time and most of the French mines are behind in deliveries. Some British steamers are bunkering at French ports. Transportation from the Nord and Pas-de-Calais coal field both by rail and by water is unimpeded.

Canal freight rates are on the increase; the Béthune to Paris rate is now 30 fr. to 30 fr. 50c.

The Nord and Pas-de-Calais collieries are regularly enforcing their new schedule of prices, which implies in the main, the following increases per ton as from May 16: 10 fr. on unwashed industrial coals, 13 fr. on washed industrial coals, 20 fr. on domestic sizes and 15 fr. on cokes. French miners in the other coal fields are now suing for an increase in wages similar to that obtained by workers in the Nord and Pas-de-Calais, namely, about 3 fr. per day.

The inland selling prices of the Sarre coal field have been increased by 5 per cent, namely, by 4 to 6 fr. for unwashed coals, 6 fr. for washed coals and 6 to 9 fr. for cokes. Ordinary coke of the Sarre is now sold at 152 fr. and special coke at 162 fr. per ton.

Deliveries of indemnity fuels during the first eight days of May, to the O.H.S. included 102,800 tons of coal, 69,700 tons of coke and 7,600 tons of lignite briquets. During the first twenty-five days of May the O.R.C.A. received from the Ruhr 219,275 tons of coke.

Belgian Market Rushed For All Grades

Brussels, May 28.—The Belgian coal market has undergone a complete transformation in the last few days and there is now almost a run on all kinds of coal. No fresh orders are being accepted for anthracite, whatever the price offered by purchasers. Of course, the stoppage of British collieries is the cause of this reversal of conditions, as Belgian collieries have now practically no more foreign competition to contend with.

The inland demand is strong and that from the East of France also has increased. Prices have become quite firm both for industrial and for domestic coals.

During the month of April, Belgium received 254,969 tons of indemnity fuels from the Ruhr.

Reich Makes Cash Grant to Aid German Coal Industry

An important decision which will materially benefit the German coal-mining industry, amounting in effect to a substantial subsidy, was recently reported in a Reuter dispatch.

Under the reparation agreement the price credited to Germany was the inland price of coal. Subsequently the British inland price was taken as the basis, but as the British subsidy to the mines was not taken into calculation, the German mines suffered heavy losses on reparation coal, averaging 3 marks a ton on average monthly deliveries of one million tons.

The German owners demanded that the Reich should meet this deficit on the ground that the Reich issues the orders for the reparation deliveries, and the government committee which deals with such economic questions has decided that the government is liable for the difference in price. The German industry will, therefore, receive immediately large cash payments, stated to exceed 15,000,000 marks.

The importance of the decision, however, lies in the protection it affords against future losses caused by the differences between German and British coal prices.

Export Clearances Week Ended June 10

	Tons
For Italy:	
Ital. Str. Marina O. for Genoa	1,821
Br. Str. Nile, for Genoa	8,218
Ital. Str. Clara, for Venice	5,193
Jugoslav. Str. Frederika Glavic, for Palermo	8,299
Ital. Str. Aurania, for Genoa	6,989
For Uruguay:	
Br. Str. Lancaster Castle, for Montevideo	6,970
For Brazil:	
Nor. Str. Tilthorn, for Rio de Janeiro	9,030
Braz. Str. Campos, for Pernambuco	3,779
Br. Str. Boverton, for Para	4,161
Br. Str. Beatus, for Rio de Janeiro	6,907
Br. Str. Portfield, for Rio de Janeiro	6,379
For Jamaica:	
Nor Str. Dampen, for Kingston	2,201
Nor. Str. Ottar, for Kingston	1,359
For United Kingdom:	
Br. Str. Queen Olga, for a port in England	7,376
Br. Str. Lady Brinda, for United Kingdom ports	4,561
Br. Str. Eastern Prince, for United Kingdom ports	9,774
Br. Str. Electrician, for Liverpool	6,810
Br. Str. Falls City, for an English port	7,323
For Canary Islands:	
Br. Str. Merioneth, for Teneriffe	6,923
For Argentina:	
Br. Str. Lenfield, for Buenos Aires	5,999
Ital. Str. Artico, for Buenos Aires	8,102
Nor. Str. Herakles, for Puerto La Plata	6,560
For Cuba:	
Br. Str. Berwindmoor, for Havana	9,682
For Egypt:	
Grk. Str. Vasilevusa, for Port Said	6,587
For Canada:	
Br. Str. Emperor of Port McNicoll, for Quebec	2,278
Br. Str. Wentworth, for Montreal	7,203
Br. Str. Philip T. Dodge, for Port Alfred	6,486
For Virgin Islands:	
Br. Str. Mountbank, for St. Thomas	3,743
For Spain:	
Dan. Str. Josey, for Gibraltar	3,613
For Colombia:	
Br. Atr. Almagro, for Puerto Columbia	518

FROM BALTIMORE

	Tons
For United Kingdom:	
Dan. Str. Kronberg, for Garston	5,216
Br. Str. Llanberis, for Dublin	5,511
Gr. Str. Poseidon, for Queenstown	5,579
Dan. Str. Uranienborg, for Garston	5,721
Span. Str. Gorbea Mendi, for Liverpool	5,747
For France:	
Gr. Str. Emanuele Stavrondis, for Havre	6,512
For Italy:	
Ital. Str. Mincio, for——	6,941
For Porto Rico:	
Am. Str. Delfini (coke) for San Juan	137

Hampton Roads Coal Dumpings*

(In Gross Tons)

	June 3	June 10
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week	149,842	150,268
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	85,260	78,268
C. & O. Piers, Newport News:		
Tons dumped for week	182,954	193,115

* Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS

	June 5	June 12†
Pool 1, New York	$5.45@$5.70	*$5.40@$5.15*
Pool 9, New York	4.90@ 5.15	4.90@ *5.60*
Pool 10, New York	4.65@ 4.85	*4.60@ 4.00*
Pool 11, New York	4.35@ 4.55	4.35@ 4.50
Pool 9, Philadelphia	4.95@ 5.30	4.95@ *5.50*
Pool 10, Philadelphia	4.70@ 5.00	4.70@ *5.00*
Pool 11, Philadelphia	4.35@ 4.65	4.35@ *4.35*
Pool 1, Hamp. Roads	4.45@ 4.50	*4.40@ 4.55*
Pool 2, Hamp. Roads	4.20@ 4.30	*4.25@ 4.35*
Pool 3, Hamp. Roads	4.00@ 4.10	*3.90@ 4.00*
Pools 5-6-7, Hamp. Rds.	3.90@ 4.00	*4.00@ 4.15*

BUNKERS

Pool 1, New York	$5.70@ $5.95	$5.70@ $5.95
Pool 9, New York	5.15@ 5.30	5.15@ 5.30
Pool 10, New York	4.90@ 5.10	4.90@ 5.10
Pool 11, New York	4.60@ 4.80	4.60@ 4.80
Pool 9, Philadelphia	5.20@ 5.55	5.20@ 5.55
Pool 10, Philadelphia	4.95@ 5.25	4.95@ 5.25
Pool 11, Philadelphia	4.60@ 4.90	4.60@ 4.90
Pool 1, Hamp. Roads	4.50	4.50
Pool 2, Hamp. Roads	4.30	4.35
Pools, 5-6-7, Hamp. Rds.	4.10	4.10

†Advances over previous week shown in **heavy** type; declines in *italics*.

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Coming Meetings

American Society for Testing Materials. Convention at Haddon Hall, Atlantic City, N. J., June 21-25. Secretary, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

American Institute of Electrical Engineers. Annual convention, White Sulphur Springs, W. Va., June 21-25. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

Illinois Mining Institute. Annual summer meeting on steamer "Cape Girardeau," leaving St. Louis, Mo., June 24 and returning June 26. Secretary, Frank F. Tirre, Central National Bank Bldg., St. Louis, Mo.

American Society of Mechanical Engineers. Spring convention at San Francisco, Calif., June 28-30. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

Illinois and Wisconsin Retail Coal Dealers' Association. Thirty-first annual convention, Highland Hotel, Lake Delavan, Wis., June 28-30. Managing Director, N. H. Kendall, Great Northern Hotel, Chicago, Ill.

Fifth International First-Aid and Mine-Rescue Contest, San Francisco, Calif., during the first week of September, 1926, under the auspices of the Bureau of Mines, Department of Commerce.

Coal Mining Institute of America. Annual meeting, Chamber of Commerce, Pittsburgh, Pa., Dec. 8, 9 and 10. Secretary, H. D. Mason, Jr., Box 604, Ebensburg, Pa.

New Companies

The Washington Star Mining Co., 230 South Clark Street, Chicago, has been incorporated with a capital of $18,000 to own and operate mining properties. The incorporators are J. F. Spoerri, W. A. Bradford and H. C. Nagle.

The Talbot Coal Corp., New York City engaged in coal mining, has been chartered at Albany, N. Y., with a capital of 750 shares of no par value. F. H. Butehorn, F. C. Taylor and J. T. Aspbury, 120 Broadway, New York City, are directors and subscribers. Weeks Brothers, 52 William St., New York City, are attorneys for corporation.

Gulf Roan Smokeless Coal Co., Clarksburg, W. Va., was organized recently to mine coal, manufacture coke and coal briquets in Harrison County, with Levi W. Keaster, George G. Lynch, Walter Elliott, Mamie Lee Morris and Dennis S. McIntire, all of Clarksburg, as incorporators. The capital stock is $300,000.

The Watts Coal Co., capital $20,000, has been incorporated in Corydon, Ky., by Alex. Watts, Wm. Kavanaugh and others.

The Logan-Central Coal Co., of St. Albans, W. Va., was organized recently to mine coal. The incorporators are E. R. Milligan, N. E. Milligan, C. L. Milligan, W. C. Sharpe and I. F. Sommerville, all of St. Albans.

New Equipment

Full-Revolving Shovel with Upsetting Scoop

The underground loading machine invented and developed by R. S. Butler, assistant manager of the Barnsdall Zinc Co., Joplin, Mo., first placed on the market by the Lake Superior Loader Co., of Duluth, Minn., is now made by the Nordberg Manufacturing Co., of Milwaukee, Wis.

Since its acquisition by that company, the design has been materially changed. The new shovel operates in the same general way as did the earlier model—that is, it is of the full-revolving type, and the dipper is pushed into the material, loaded, filled and dumped. The design, however, has been changed throughout. Instead of using castings for the dipper arms and side frames, steel bars and rolled shapes are employed. It is also stated that in the old shovel the dipper, when dumped, operated in the same manner as the dipper of the ordinary steam shovel—that is, the bottom dropped open, permitting the material to fall through. In the new shovel the bucket is rotated and dumped in an entirely different manner. This may readily be seen from the accompanying illustration of the shovel.

Dipper Turns Completely Over

With the old shovel, it is also stated, it was somewhat difficult to handle coarse broken material, as there was a tendency for this to clog in trying to pass through the bucket. With the up-to-date machine, it is possible to load a single rock that is much larger than the dipper, as it does not have to pass through the dipper when being discharged. On the old machine, furthermore, there were hydraulic cylinders or pots to control the lifting stroke of the dipper. These have been eliminated entirely in the new machine.

The design, says the company, has been strengthened and simplified in many ways, which will eliminate the breakage that was not uncommon with earlier models. It is furthermore stated that the new shovel is extremely rapid in its operation.

The new model consists of three principal parts: the base, the operating cylinder, and the dipper assembly. The base casting or truck frame is of steel, to which is attached the wheels for transporting the machine underground; also the clamping device for securing the machine to the rails. This casting serves to support the rotating portion of the shovel, which revolves on a set of steel balls. This revolving member consists of two side frames that support the cylinder and arms of the dipper assembly. The power required for rotating is supplied by a small four-cylinder air engine attached to the base.

One Cylinder Gives All Movements

All the movements of the dipper arm assembly are supplied from one operating cylinder. This cylinder has a 10-in. diameter and 42-in. stroke, in which there are two pistons acting as one when imparting the crowding motion or lifting motion to the dipper. For the digging and dumping motions, air is introduced between the pistons, which forces them apart and then by means of cables and links gives a positive and effective dipper action. The dipper when digging exerts most of its reaction against the floor of the mine, thus absorbing the pressure and preventing strains from being imparted to the frame of the machine. The dipper assembly is made of materials well suited for such severe service. Side arms are of heavy bar steel, but the design is such that strains encountered in digging are borne by the dipper and not by the arms.

Cars Can Be Loaded on Any Track

The shovel is of the full-revolving type and will therefore load cars at either side or at the rear as desired. The compact design of the shovel permits its use in drifts 5½ x 7 ft., and its wide clean-up radius of 18 ft. 6 in. makes it suitable for use in large tunnels, rooms, and other underground

Butler Loader

Small in size and full-revolving, with its scoop turning over in discharge this loader is well adapted to use underground. Its comparatively light weight also makes it easy to move from place to place. It can load cars spotted either beside or behind itself.



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workings. It can dig below grade in any direction and will load cars 48 in. or higher, and will leave the floor and corners clean.

Its air consumption is low, not exceeding 135 cu.ft. of air per minute at 70 to 90 lb. pressure, according to the manufacturers. Large capacity is claimed for the shovel, inasmuch as the quarter-yard dipper is operated at a speed of 3½ passes a minute. In actual performance, under ordinary conditions, this means that it will handle from fifteen to thirty tons an hour. Tonnage, however, will depend on the specific gravity of the material handled.

SHOVEL IS EASILY TRANSPORTED

The shovel is light, weighing only 4,000 lb., and can, therefore, easily be transported about the mine on its roller-bearing wheels. It can be run or a mine cage 36x54 in. without disassembling. If necessary, the operator's platform, which extends 12 in. from the side, can be unshipped to reduce the width.

The two controls for the shovel's movements are simple, convenient, and naturally positioned, according to the company. This makes it possible for a new operator to handle the shovel without difficulty.

Roller Bearings That Adjust Themselves on Each Turn

The bearing shown has at the bottom of its housing two oil wipers of copper, one at each end, to prevent oil drifting along the shaft and out of the bearing.

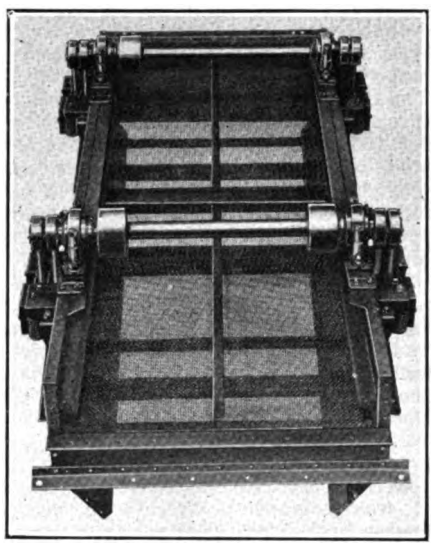
The two load collars are built wide, so as to carry a heavy load, and they are split and held together by long screws, so that the housing can be taken apart and re-set together over the shaft in a very short time. The collars have a groove in the middle for housing the steel spacing rings, which keep the rolls in their respective places and apart without friction, thus insuring smooth running.

It is claimed that no end thrust is produced in these bearings, as the rolls readjust themselves on every turn, the two load collars that carry the rools being self-aligning in a vertical as well as in a horizontal direction. The lubrication of this bearing is one of its particularly interesting features. The rolls rotate around their axes as well as around the shaft, and on each turn dip into the oil cellar, which actually creates an oil bath all around the shaft. The bearing described is manufactured by the Chandler Machine Co., of Ayer, Mass.

Screen Imparts Vibration To Material Sifted

Another new model of vibrating screen has recently been added to those on the market by the Pittsburgh Coal Washer Co., of Pittsburgh, Pa. This is a so-called "vibratory" screen, the action being attained by an eccentric shaft mounted in self-aligning ball-bearing pillow blocks, the eccentric connecting rods being carried on self-aligning ball bearings and attached to the screen-frame supports. Other details of the screen are as follows:

A screen cloth of suitable mesh is mounted on a steel frame, securely fastened to supporting members located outside the sheet-metal frame. These members are carried on four coil springs, which float the frame and permit it to vibrate freely under load.



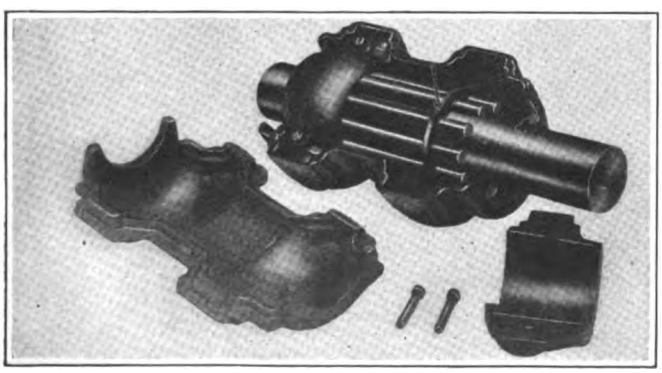
Screen and Its Frame

Positive vibration of the wire cloth screening surface prevents clogging. Light weight and positive lubrication assures easy operation.

Attached to each of the spring-suspended supports at each side of the frame is a rigid connecting rod, the upper end of which is connected to the main driving shaft through the connecting-rod bearings.

Both the self-aligning main bearings and the connecting-rod bearings are equipped for high-pressure lubrication.

The screen cloth is made of sections of standard meshes and is attached to the screen frame in a manner which stretches and holds the cloth securely in place. The frame may easily be removed by taking out four bolts.



Split Bearing

Being split horizontally this bearing is easily put in place or removed. Two oil wipers prevent oil drifting along shaft and out of bearing.

Trade Literature

Cableways for Coal Storage and Reclaiming. Lidgerwood Mfg. Co., New York City. Bulletin No. 36. Illustrates and describes the systems in use at the Westport generating station of the Consolidated Gas, Electric Light & Power Co. of Baltimore and the Toronto super-power station.

Climax Engineering Co., Clinton, Iowa, recently published the following: **Gasoline Power Units,** portable and stationary types. Bulletin E., 11 pp. **Electric Generators, Direct-Connected, Alternating and Direct Current,** 20 to 75 kw. Bulletin F, 6 pp. **Centrifugal Pumps, Direct Driven.** Bulletin G, 6 pp. These are all 8½x11 in. and illustrated.

Steam Economy. Republic Flow Meters Co., Chicago, Ill. Catalog No. S-33. Pp. 55; 8½x11 in.; illustrated. Covers steam, water and gas meters, liquid level recorders and indicators, pyrometers, draft instruments, CO_2 recorders and coal meters.

The Pyramid Grate. Pyramid Iron Products Corp., New York City. Pp. 12; 8½x11 in.; illustrated. This grate is designed for the use of any size or kind of coal and can be installed in any size or type of boiler.

Brown Pyrometers. The Brown Instrument Co., Philadelphia, Pa. Catalog 15. Pp. 80; 8x10½ in.; illustrated. Recorders, new moisture-proof rotary switch, thermocouple protecting tubes, are some of the equipment illustrated and described.

Handling and Preparing Coal at the Mine. Link-Belt Co., Chicago, Ill. Book No. 555. Pp. 72; 8½x11 in.; illustrated. Describes some of the preparation plants built by this company.

Direct-Injection Oil Engines for All Purposes. Ingersoll-Rand Co., New York City. Pp. 31; 8½x11 in.; illustrated. Describes the "PO" oil engines of 55, 110 and 150 hp.

Engberg's Electric & Mechanical Works, St. Joseph, Mich., have issued bulletin No. 302B, supplement to catalog No. 302 covering vertical engines. Bulletin 302b contains horsepower tables. This company also has issued Bulletin No. 601, describing and illustrating the Engberg **Direct and Alternating-Current Generators** and their application to internal combustion engines, and bulletin No. 801 covering **Alternating Current, Direct-Connected Generating Sets.**

Crouse-Hinds Co., Syracuse, N. Y., has issued the following: **Condulets for Grounding Service Wire and Conduit System.** Bulletin No. 2089, four-page 3½x6-in. folder, illustrated. Bulletin No. 2075, illustrating and describing their **New Service Entrance Condulets.**

Steel Cross Ties. Carnegie Steel Co., Pittsburgh, Pa. Ninth edition. Pp. 45; 5x8 in.; illustrated. Covers mine ties, ties for portable tracks and ties for steam and electric railroads.

Ernest E. Lee Co., Chicago, Ill., has issued catalog 26, illustrating and describing the power plant equipment of the concerns the company represents. The book has 15 pp., is 8½x11 in., illustrated.

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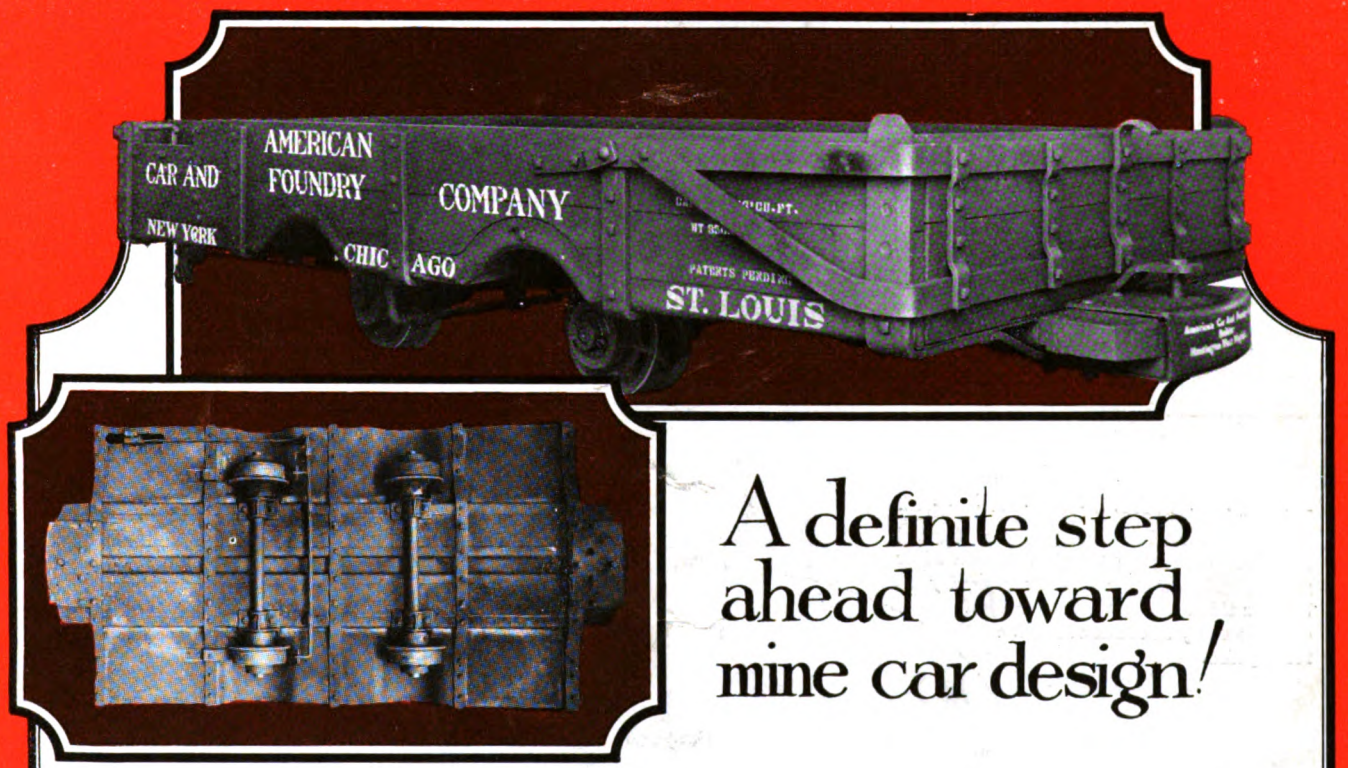
52 Low-Temperature Distillation Should Afford Anti-Knock Motor Fuel, p. 904

JUN 25

COAL AGE

The World's Accepted Authority on Coal Mining

McGraw-Hill Publishing Company, Inc. **June 24, 1926** Price Twenty Cents per Copy



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See also page 11

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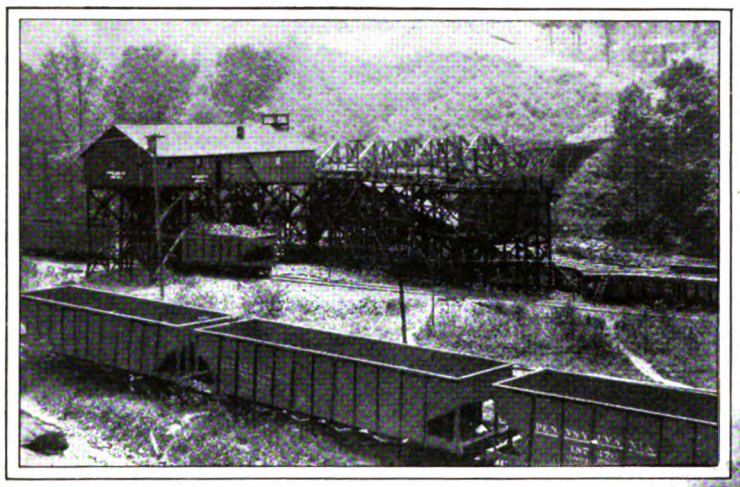

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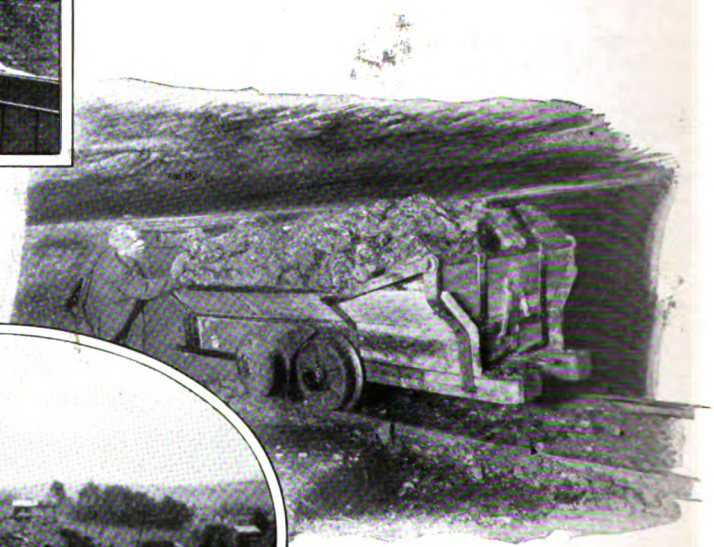



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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 29 New York, June 24, 1926 *Number 25*

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What Oils Can Be Obtained from Coal by Low Temperature Distillation, and What Will Be Their Commercial Uses 905
BY R. L. BROWN AND R. B. COOPER.

What Will It Cost to Purify Mine Water? 907
BY ANDREW CRICHTON.

Trace Sixty-Five Coal-Mine Disasters to Non-Permissible Powder 910

Three Cornered Freight-Rate Fight for Northeast Coal Markets Resumed as Hearings Open at Atlantic City 916

Direct Efforts to End British Strike Await Fate of Legislative Program 919

Coal Industry May Escape Legislation If Plan Is Devised Before December to Prevent Interruption of Supply 921
BY PAUL WOOTON.

Non-Interference of Government with Business Will Promote Continued Prosperity, Says Schwab 917
Southern Gem Stockholders Lose in Reorganization Plan Approved by District Court 917
Sells Ohio River Interests 917
Tentative Awards Made for N. Y. State Coal Needs 918
Active British Mine Hums with Brisk Demand 918
Demand Higher Rates on Coal-Mine Insurance 918
Mine Bureau Economic Plan Hinges on Funds 920
Gold Medal Is Bestowed on Champion Coal Loader 921

Editorials 899
Underground Operations 911
Practical Pointers 914
News Items from Field and Trade 922
Weekly Review and the Market 925
Foreign Market and Export News 930
New Equipment 931

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Devoted to the Operating, Technical and Business
Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 29 NEW YORK, JUNE 24, 1926 Number 25

Now, Mining Is Something Else Again

MANUFACTURING and mining have little in common. In one case the material to be wrought is brought to the worker, sometimes hundreds of miles; in the other the worker goes to the material. In the one case, therefore, the material is movable and the worker is stationary, and in the other the worker is transferred from place to place and attacks material in place. However, the working face changes, and there again is the rub. If it stayed where it was, the worker and his tools would not have to be moved.

This is what makes mining a difficult industry for mechanicalization. It is making marvelous progress wherever it can adopt mechanical methods. Compare it with the construction industry, one just as old and having similar difficulties and one which has progressed marvelously but nevertheless selectively. It still uses trowel, hod, bar, chisel, wheelbarrow, hammer and other like elementary tools. The equivalent of the hod is the basket. Some hundreds of years ago that adjunct of primitive transportation was discarded in mining. The wheelbarrow is rarely used in the coal mines beyond the first 25 ft. from the surface. Despite its advantages on a short run such as this, it has been quite generally discarded for the mine car even there.

Ask a manufacturer to move his tools from shop to shop several times daily; deny him the use of an overhead crane; demand that no tool shall be more than 6 ft. above the floor; give him a floor of clay instead of firm foundations and he will wonder if he can meet such difficult conditions. Yet the manufacturer of mining equipment is confronted with them, and he is preparing to meet conditions even more onerous with no small degree of probable success.

Worthy of Support

CREATED BY THE exigencies of war, the National Coal Association has quietly grown into an effective instrument of peace. The transitional days of costly floundering, during which the organization was trying to adjust itself to post-war conditions, are history. Despite the drawbacks of inadequate financial and numerical membership support, the association has succeeded in establishing a definite program responsive alike to present-day needs of the industry and flexible and forward-looking enough to meet the demands of the future.

Whether all the possibilities of this program will be fully realized rests with the industry itself. The officers and directors of the association give freely of their time, their judgment and their energies to the formulation and execution of constructive policies. But they can travel no farther than the financial resources of the organization will carry them. They can make the insignificant mill per ton paid by each member do its utmost—but no more. If more is to be done—and more should be done—there must be more mills per ton and more members to share the financial load.

Even the most implacable critic of the association must admit that organization is necessary in the contacts between the industry, the public at large and the federal government. The National Coal Association is that point of contact, which must be preserved. There is too much at stake, and individual operators are too big to let petty jealousies, old wounds, past mistakes or present grievances stand in the way of active affiliation with the constructive work of the association.

Goggles Lessen Eye Injuries

SAFETY IN MINES includes protection to both life and limb. In other words, it embraces not alone immunity from accidental death but also immunity from accidental injury as well. By far the greater part of the injuries sustained within the mines are of what might be termed a minor character—not really dangerous but truly inconvenient and frequently painful.

Of all his senses man depends most upon sight. Unfortunately the eye is one of the most delicate organs of the entire body, and because of this delicacy and its exposed position it is readily liable to injury if not protected by some artificial means. The more progressive companies have long made their employees wear goggles when performing certain kinds of operations, notably chipping and grinding on brittle or abrasive substances. Usually glass goggles either with or without wire reinforcement have been used. Non-breakable transparent substances, such as celluloid, have also been adopted to some extent.

Any goggle has its obvious shortcomings; all require the wearer to look through something which at best is not entirely transparent, and thus obstructs sight more or less. They put an added strain upon the eyes they protect. If made of glass they are frequently broken or shattered by pieces of flying material.

A somewhat recent type of goggle is one that employs no glass or other transparent substance that the vision of the wearer must penetrate. It consists simply of a netting of spring-steel wire of suitable mesh, formed to fit the face. This is held in place by a strap around the head. This netting effectively protects the eyes from flying particles of any appreciable size or those large enough to do harm. The netting is, of course, "out of focus" and has the effect of obscuring the object viewed to only a slight degree.

Some mining companies have made the wearing of goggles compulsory for all underground workers. At one group of operations a certain type of goggles has been adopted as standard, and no man allowed to go to work underground until he has procured a pair and

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knows how to wear them. The safety inspector at these works states emphatically that the number of eye injuries reported to him since the wearing of goggles has been made compulsory has been greatly reduced.

Test the Latch

ONE DIFFICULTY that purchasers of coal and other bulk materials sometimes encounter is the receipt of cars of the usual hopper-bottom type, the gates of which often are opened with difficulty. In such instances the ordinary wrench will not operate the ratchet, and only by a sledge and bar can it be released. When the door finally opens under such treatment, the ratchet spins and is liable to catch the bar with disastrous results to those nearby. Severe bruises, broken bones or fractured skulls sometimes result.

It would seem that no campaign for safety is adequate that is limited to putting safeguards around the placing of the mine product upon the car. Of course, cars should be in proper condition when placed on the mine sidetrack, but that this care is not always taken is eloquently attested by the piles of extra doors and the bales of excelsior that may be seen at many mines. A few minutes spent in putting the gate-latching mechanism of a car in workable condition before loading may be the means of averting a severe accident at destination. Next to protecting its own employees every coal producer should endeavor to protect those of its customers.

Preparation for Winter

WHAT OUR patient submission to the rigors of winter costs us we may never know. Some have thought it a preposterous notion to heat city streets and sidewalks, yet meantime the Illinois Central R.R. has been actually endeavoring to melt the snow on its railroad tracks. Three methods are used: Steam pipes laid *on* the ties, laid *between* them at switches and laid in melting pits between the tracks. The first method is new; the other two have been used on parts of the company's terminal lines.

A large development of the practice is being installed in Chicago. In one place where there are inclined tracks on a 3-per cent grade to pass under a right of way the incline is protected for 365 ft. by a steam radiator system with ample drains to carry off the melted snow in addition to ordinary surface drainage. The main steam pipe and its headers will remain in position permanently, but the radiator pipes and return headers will be placed early in the winter and removed in the spring.

It is needless to refer further to the pipes between ties at switches but something should be said as to snow-melting pits. Snow could be shoveled into cars by hand shovels, but frequently that is not practicable because traffic would be blocked while the snow was being removed. Only too often the snow has to be carried in shovels by hand and dumped at some convenient point. That practice is both dangerous and expensive.

Snow-melting pits, 3 x 6½ ft. wide and long respectively and 20 in. deep are placed between some of the tracks at intervals of 95 ft. In these are laid pipes with small holes drilled in them so that jets of live steam aid in melting the snow. The various pieces of heating equipment described receive steam from the boiler of a locomotive which is run onto a side track for that express purpose, whenever conditions demand it.

The large number of people traveling on urban and suburban roads justifies the taking of expensive means to assure that the tracks will be available at all times. Heating is timorously moving outside of buildings into the open air. It will involve too large an expenditure, however, if care be not taken to keep the convection and radiation from heating the air instead of the snow.

The heating of the air entering the shaft at Glen Rogers to prevent the freezing of the shaft is another example of this use of steam. In these days when skyscrapers are many times as high as the streets are wide, and when the people in the high buildings are so numerous that if there were a fire they could not all congregate on the sidewalks in front of the building, something must be done, and will be done, to make possible the elimination of snow. Some day a snowfall in a crowded city will be unthinkable.

On Probation

THE SEVEN-THIRTY morning whistle at the New Orient mine, Illinois, heralded, on the first day of this month, the resumption of operation at a plant which had been idle for several months previous. Old employees were notified of this even in advance, so that on the reopening day a nearly complete complement of men was available. News that the great operation had resumed, spread far and wide, and each day brought scores of men to the plant in search of work.

At noon on the fourth day the rush for jobs attained its greatest impetus. The New Orient shafts are sunk on the outskirts of West Frankfort on a hard road which makes easy travel to and from Benton (six miles away) and other nearby towns. The surface buildings and yards at the plant are fenced in and admission to the inclosure is through a gate on the road. Immediately within the gate is an employment office.

Scores of miners travel to work in automobiles. On the day noted the road-end of the inclosure was crowded with automobiles to the number of 198, by actual count, exclusive of those belonging to the employed miners who park their machines further within the gate. Many other machines were parked on the outside along the road. The owners of these automobiles and their companions formed in a line which extended through the gate and backed on to the highway. There were probably more than three hundred of them. These men represented one day's crop of idle miners of southern Illinois in search of work.

Unless the local chapter can enforce discipline within its ranks to the extent of securing an honest day's work from each of its members, in addition to those now idle, about eleven hundred more men, the approximate number now employed at New Orient mine, may also find themselves jobless. The daymen must earn their wages and the contract miners must load easily merchantable coal, if New Orient or any other mine under the Jacksonville scale is to compete successfuly with non-union mines.

These men are on probation and from now until the termination of the present contract will demonstrate to the point of finality the possibility of operating under the union system. Only by producing a larger tonnage per man than the non-union miners who receive less pay, and by meeting competitive conditions, can they show that their demands for a high-wage rate are reasonable.

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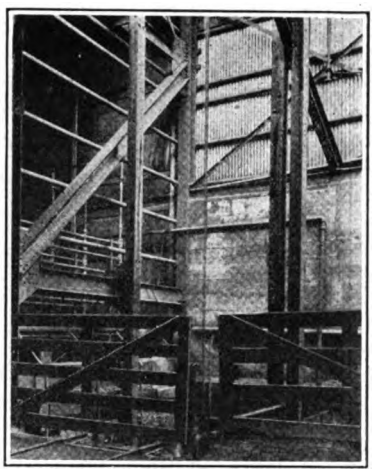
Pre-Heat Air at Glen Rogers Mine Chiefly to Prevent Ice Formation in Wet Shaft

Exhaust Steam from Fan Engine Passes Through Radiators and Is Then Discharged Into Intake—Pre-Heating Saves Concrete Lining by Eliminating Frost

By Alphonse F. Brosky
Assistant Editor, *Coal Age*, Pittsburgh, Pa.



The headpiece shows the collar of the shaft at Glen Rogers mine with some of the heating pipes which warm the air in winter thus preventing the formation of ice and the injurious effect of frost on the shaft lining.

AS A MEANS of humidification, the pre-heating of air by radiators and the introduction of the heated air and steam together into the mine after the steam has lost much of its heat, is an old scheme. But at the Glen Rogers mine in Wyoming County, W. Va., the practice was primarily adopted not for humidification but to prevent the formation of ice in the intake compartment of the hoisting shaft which is exceedingly wet and, concurrently, to avoid deterioration of the concrete lining in cold weather. Steam radiators were installed at the head of this shaft for this purpose last year when the mine was owned by the Raleigh-Wyoming Coal Co. Reports declare that by virtue of a recent deal this plant became the property of the Old Ben Coal Corporation, of Chicago, Ill.

The seam being worked at this mine is the Beckley, which lies at a depth of 640 ft. as measured in the hoisting shaft. The latter is of three compartments, two of which are equipped with skips. The third serves as an upcast to the fan. The lining is of concrete of a 1:2:3 mix, the inside measurements of which over-all are 14x28 ft. The skip compartments which measure in aggregate 14x18 ft., serve as a downcast.

From the surface to solid rock is 300 ft., this interval bearing water in such quantity and of such pressure that about 100 gal. per minute seep through the lining, though the latter is of rich concrete and has back of it drains of generous proportions which handle about 400 gal. per minute. Below the 300-ft. level the strata are devoid of water. Incidentally, it may be said that the water which is caught by the drainage at the back of the lining is pumped to the surface for domestic use and for power-plant purposes.

THE SCHEME WORKS

AT Glen Rogers it has been proved as a fact that exhaust steam can be used not only to humidify the air which passes into a mine during the winter months but also effectively to heat that air to the degree at which no ice will form on the sides of the shaft and other intake passages. The installation greatly increases the relative humidity of the air, and by eliminating the ice it also preserves the concrete lining and assures uniform ventilation by maintaining an intake of constant area on warm and cold days alike. The plan is successful even though a number of experts predicted that it would fail of its purpose.

The afore-mentioned shaft, though used at the present time as the main hoistway, is intended eventually to serve as the second opening. A 10x20-ft. shaft has been sunk and lined, which eventually will serve as the sole hoistway for coal. Both shafts made much water during the sinking operations and were extensively grouted before the linings were placed. The grouting in the shaft which will serve for hoisting in the final plan thus far is holding back the water; but that in the shaft now being utilized for hoisting has not acted so effectively. It served its purpose for a while, but gradually leaked under the hydrostatic pressure behind it to the extent already stated. The idle shaft is now serving as a downcast, assisting in this capacity the two skip compartments of the present hoisting shaft.

Glen Rogers lies high in the mountains of Wyoming County where in the winter months the thermometer registers many degrees lower than it does at places which are not far distant but lie at lower levels. The temperature often hovers around 10 deg. below zero for days at a time. Occasionally the mercury drops to —20 deg. Last winter the weather at this place was unusually severe. Prior to 1925 much difficulty was experienced in hoisting coal on very cold days, because some of the water which leaked through the lining into the downcast skip compartments froze on meeting the cold intake air. In consequence, much time was lost in ridding the shaft of ice, and in extremely cold weather the mine sometimes remained idle throughout the day so rapidly did the ice form in this shaft.

As a result not only was hoisting at a standstill part of the time, but, as might be expected, ventilation was impaired to the degree to which the intake was constricted by ice. Furthermore, the freezing action caused deterioration of the lining, particularly as the

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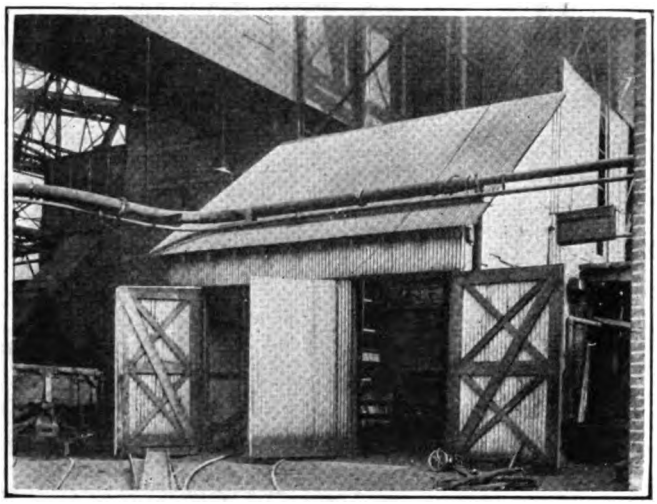

Fig. 1—Shelter in Which Air Is Pre-Heated

The sheet-iron structure and the box-like annex on the left inclose about 25,000 cu.ft. of space in which is installed the radiators or heaters. Air is drawn over these heaters through the skip opening in the roof of this housing. In the winter time the doors shown are kept closed. The chute over the contractors' side-dump car seen on the left is for rock. It is inclosed and heated so as to keep from freezing any water which might accompany the rock.

weather has proved to be changeable at this place. A cold day is frequently followed by comparatively warm weather.

These are the primary factors which compelled the management to install a combination system by which the intake air is both pre-heated and humidified before entering the hoisting shaft.

To this end a series of radiators are located in a housing over the mouth of the skip-hoisting shaft, and through them exhaust steam from the fan engine is conducted. After passing through these radiators this steam is exhausted into the shaft where it further assists in raising the temperature and also humidifies the intake air.

SHEET-METAL HOUSING PROTECTS SHAFT

As indicated in Fig. 1, a sheet-metal housing has been constructed over and around the mouth of the skip compartments of the shaft. This structure shelters about 15,000 cu.ft. of air and is provided with an opening at the top through which the skips travel, and with doors on the front through which men, cars and supplies are admitted.

A somewhat similarly inclosed shelter lies on one side of the shaft and connects with the main housing. It is covered by canvas and roofing paper in such a way as to shelter a rock chute leading from the tipple. This chute must be thus protected to render it operative on cold days because much of the rock which is deposited in the chute is wet. In addition to sheltering the rock chute, this wing or annex incloses 10,000 cu.ft. of space in which pipes can be installed clear of the shaft and its approach. The present covering of canvas and roofing paper is to be replaced with sheet iron.

In these two connecting shelters are installed the radiators which pre-heat the air as it enters through the top opening for the skips. The fan engine (see Fig. 2) which furnishes the exhaust steam is a 14x14-in. reciprocating unit which drives a 14x6-ft. fan. It has a speed of 120 strokes per minute and a working pressure of 170 lb. per square inch.

The exhaust steam from this engine is conducted through a 6-in. pipe which is run around three sides of the shaft. From this pipe is tapped a tier of eight 3-in. pipes, each 14 ft. long, on each of two sides and a tier of six 3-in. pipes, each 28 ft. long, on the third side. The general arrangement of these is shown in the headpiece.

On each side of the main housing, between the exit doors and the safety gates of the shaft, is a radiator which is made up of seven 2-in. pipes, each 10 ft. long. One of these tiers of radiators is shown in Fig. 3. In the annex housing which incloses the rock chute are three sets of heaters, each of which is composed of seven 1½-in. pipes, each 16 ft. long.

PIPES GO DOWN INTO SHAFT

These pipes are in a continuous circuit, from which the steam is exhausted through twenty 1-in. pipes which project vertically into the shaft in the manner shown in Fig. 4. The lines are connected so that live steam from the boilers may be turned into them on extremely cold days to assist the exhaust steam from the fan engine in heating and humidifying the air which enters the mine. As now arranged the heating system consists approximately of 56 ft. of 6-in. pipe, 392 ft. of 3-in. pipe, 336 ft. of 2-in. pipe and 140 ft. of 1½-in. pipe.

At the time of my visit the mine management expressed its intention of increasing the size of this heating plant to two to three times its present capacity. The additional heaters would be installed in the annex which incloses the rock chute. The proposed plans call for a 6-ft. slow-speed fan which would be installed in

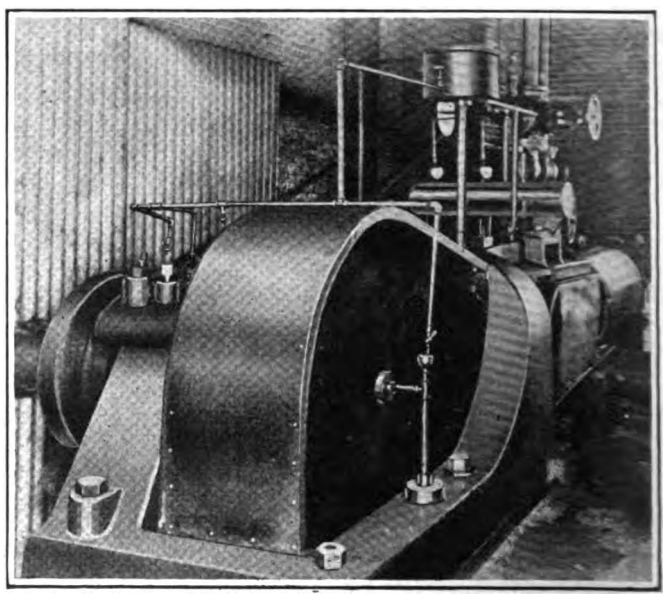

Fig. 2—This Fan Engine Supplies Exhaust Steam

This is a 14x14-in. reciprocating engine which operates at 120 strokes per minute under 170 lb. of steam. In extremely cold weather live steam is introduced with the exhaust from this engine into the radiators.

the far wall of this annex so as to draw air from the outside and blow it over the heaters and at the same time minimize the quantity of air which would find its way directly into the shaft through the skip openings in the roof of the main housing.

Each heater or radiator would be controlled by a valve so that any of them could be cut out should a leak occur. All of the exhaust from this enlarged unit would be discharged into the shaft where it would mix with, and be absorbed by, the warm air of low relative humidity which would enter the mine.

It is believed that some advantage would be derived by inclosing the headframe legs to a greater height.

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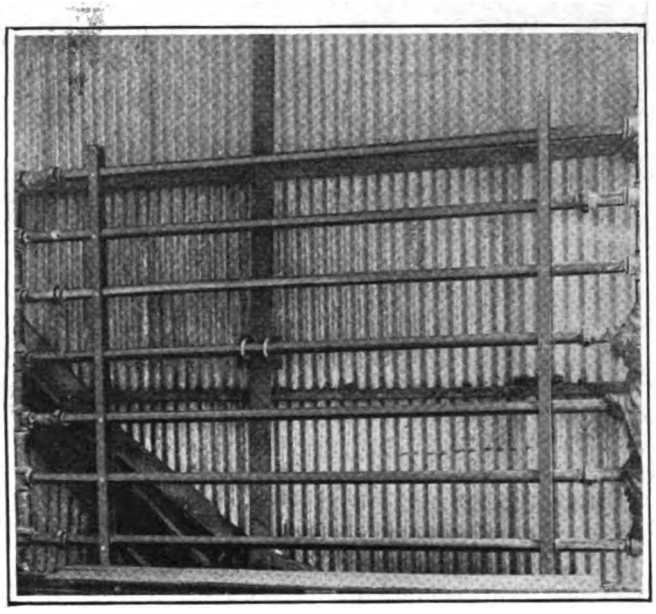


Fig. 3—One of the Radiators for Pre-Heating Air

This is one of two heaters which are installed on each side of the housing in the approach to the mouth of the shaft. The management expects to alter and enlarge this heating system. When this is done each of the radiators will be controlled by a valve so that any one of them can be cut out from the steam circuit should a pipe or fitting leak.

The proposed changes would be made more to increase the radiation surface and thereby boost the temperature of the intake air with a minimum discharge of steam into the shaft. The present heating system was found of sufficient size during the past winter to prevent the formation of ice in the shaft and to maintain a fairly comfortable temperature at the shaft bottom even when the outside temperature falls as low as 20 deg. below zero.

Glen Rogers is extremely gassy, and though rock dust is being applied to attenuate the coal dust, the maintaining of a high relative humidity in its atmosphere by this conditioning plant gives a further assurance of safety to the management and men. The plan not only keeps ice out of the shaft and preserves the concrete lining, but also tends to keep down the dust. It is said that when the thermometer registered 20 deg. below zero a relative humidity of 90 to 100 per cent was maintained in this mine.

This practice has not caused any noticeable slacking of the roof at the shaft bottom, as it is said to do in other like cases. The introduction of much steam into a shaft will cause a fog unless the air is sufficiently heated to maintain a fairly uniform and high temperature within comparatively wide limits as measured from the shaft bottom. The management at Glen Rogers expects to maintain this condition after the heating plan is increased in size.

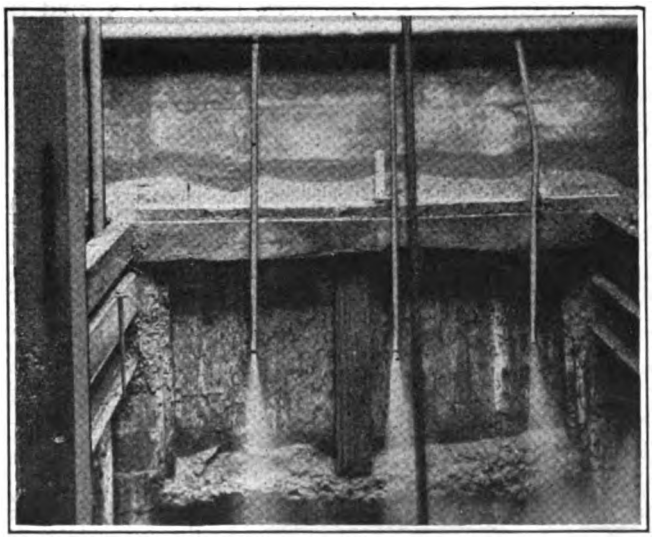
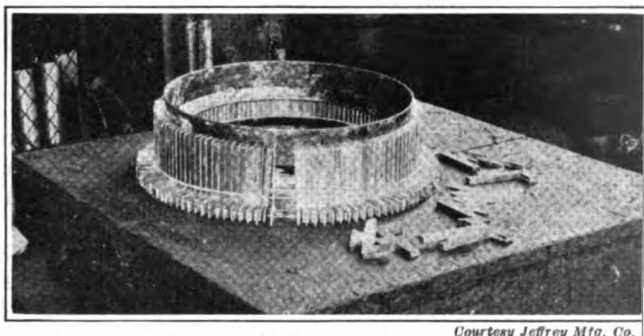


Fig. 4—Exhaust Steam Discharging Into Shaft

After passing through the radiators in a continuous circuit, the exhaust steam from the fan engine is discharged into the shaft. By this means, it is said, the relative humidity in this mine has been maintained between 90 and 100 per cent in the coldest weather. The heating system by eliminating ice in this extremely wet shaft is preserving the concrete lining. Note the deterioration of the lining which was caused by freezing prior to the installation of the heating plant.

Commutator Refilling Is Not a Mine Shop Job

Among the factors that have been responsible fo reducing the maintenance cost of direct-current motors "better commutators" holds an important place. N doubt the manufacturers of electrical equipment ar



Courtesy Jeffrey Mfg. Co.

Fig. 1—Refilling with New Mica in a Mine Shop

Ten to fifteen years ago work of this kind was common in mi repair sho s. Commutators rebuilt in this way seldom give servi comparable to that afforded by a factory job.

largely responsible for this improvement. Nevertheles the tendency of the users to do less commutator r pairing or rather, "patching," has resulted in a marke decrease in armature failures.

The commutator is more than simply "a link in th chain of parts," making up the complete motor. Fo example, a short circuit between two adjacent bars ha a more serious effect than to cause a shutdown of th motor for the purpose of removing the short. Usual such trouble is not detected until one or more armatu coils are damaged or completely burned out. Becau of the difficulty encountered in raising coils in windin that have been dipped and baked, any attempt to repa or renew one or two coils is likely to end in a comple rewinding of the entire armature.

It is significant that many of the large coal produce do their own rewinding but a number have practical abandoned all commutator repairs. They may in a emergency renew a few insulating segments or a mi V-ring, but as a rule, they either buy a new commutat or send the damaged or worn one back to the man facturer or to a commutator specialty company for r filling.

It is in the shops of the small to medium-sized co panies that commutator repairing is still the rule. however, those responsible for the work in such sho could see the special equipment used and the care tak in building up a commutator at the factory, they t would realize the shortcomings of their repair metho and would follow the lead of the larger coal compan in sending their commutators away for refilling.

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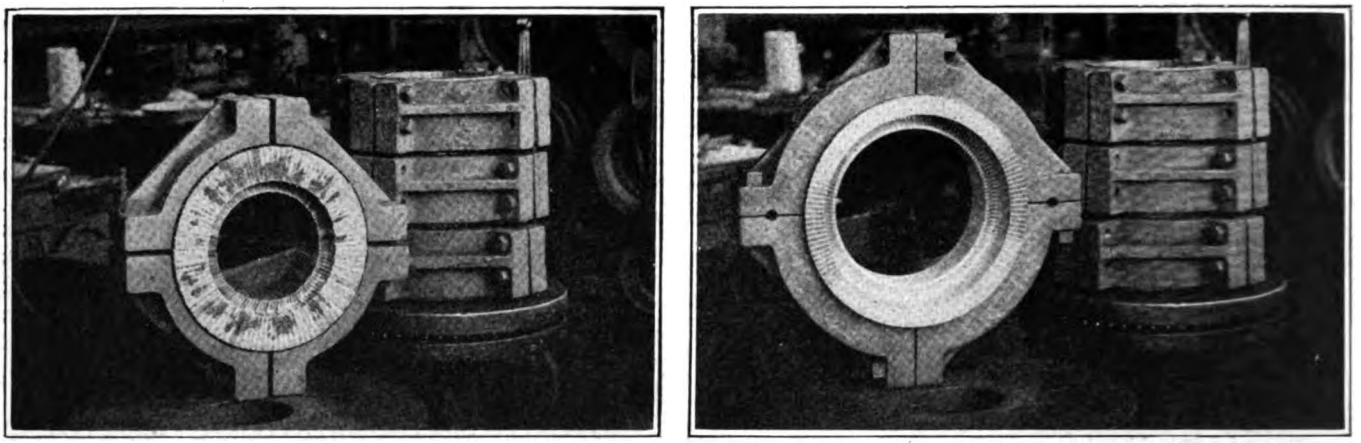


Courtesy Jeffrey Mfg. Co.

Fig. 2—Factory Views of Building a Mine Locomotive Commutator

At the left is a rough commutator after it has been built up, heated in the electric oven, and the clamping bolts drawn down tight. The combination of heat and pressure drives out all excess binder from the insulating segments. The three rough commutators, in clamps, piled on the ball bearing stand, are being given a few days to "set" during which time the clamping bolts are tightened at regular intervals. At the right is a commutator after it has been bored and the ends faced. The true inside surface assures a perfect seat for the bars on the mica V-rings and assures that all parts will be in proper position.

Fig. 1 is typical of commutator repairs in the ordinary mine shop. In this case a complete set of new mica segments is being installed. After the assembly is completed, the commutator will be tightened by drawing up the V-ring bolts while heat from a blow torch is applied to the bars.

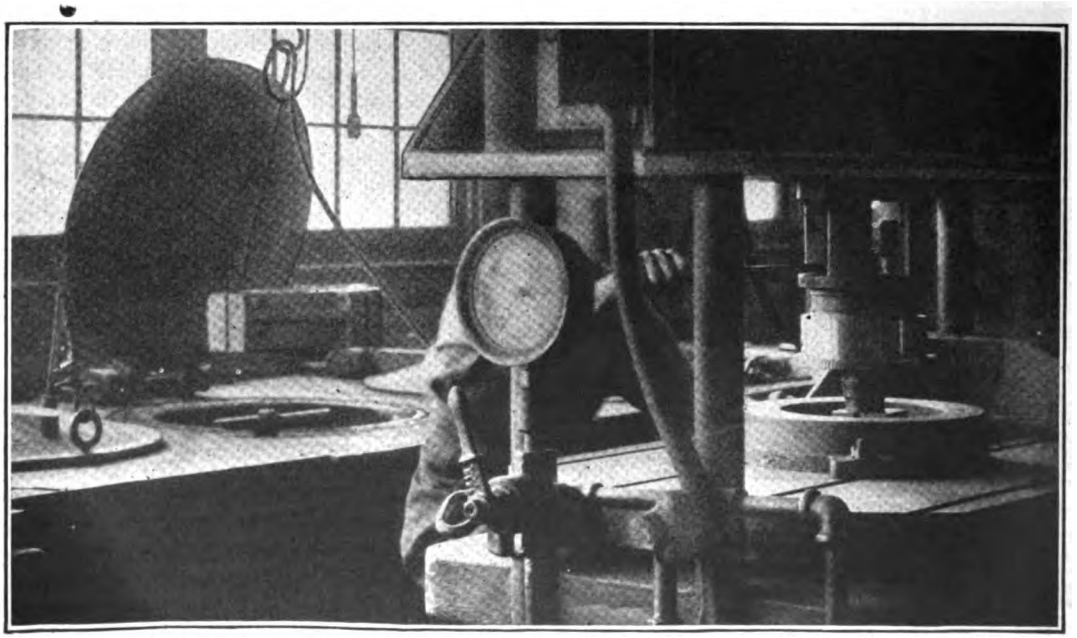
Common faults of this method include: (1) frequent use of mica of improper thickness or of mica that has been damaged by handling; (2) unbalanced armatures as the result of commutators being assembled slightly out-of-round or eccentric on the inside; (3) commutator bars not properly seated resulting in operating troubles from high or low segments; and (4) mica segments not sufficiently compressed to prevent oil or other foreign matter from working into the commutator, collecting dust or other impurity and eventually causing sparkover.

A marked contrast to the procedure depicted in Fig. 1 is presented by the typical factory method illustrated in Figs. 2 and 3. After the bars, which are in the rough so far as the edges are concerned, are assembled with the mica segments, the whole commutator is put into a four-section clamp, as shown in Fig. 2. Next the entire assembly, clamp and all is heated in an oven and the heavy bolts of the clamp tightened as much as possible. This compresses the mica segments so tightly that all superfluous binder is squeezed out.

After the initial heating and tightening, it is the usual practice to let the commutator stand several days during which time the bolts of the clamp are tightened at regular intervals. Next comes the boring and end-facing operation, which is done with the clamp in place. Fig. 2 (right) shows the appearance of the commutator after this machining has been completed. The inside is perfectly true, affording an opportunity for uniform seating of the bars against the V-ring.

Assembly of the commutator and V-rings on the shell is done in a hydraulic press. This results in imparting the same tightness to these insulating rings as was imparted to the segments. The clamp is not removed until after the final tightening of the V-ring bolts. Turning of the wearing surface and milling of the lead slots completes the job.

It is easy to see the difference that will likely exist between a commutator assembled by factory methods and one put together in a mine repair shop. The use of special clamps and the practice of boring the inside after assembly of the bars are prerequisites of a high-grade commutator. This work is not of a kind that can be handled economically in the mine shop.



Courtesy Jeffrey Mfg. Co.

Fig. 3—Press and Oven

Hydraulic pressure is applied in assembling the clamped commutator with the mica V-rings on the shell. After the V-ring bolts are tightened under pressure the clamp is removed and the wearing surface turned. In this photograph a completed commutator was placed in the press to illustrate how the bolts may be tightened while the commutator is under pressure. In the left background is a clamped commutator ready to be lowered into the electric oven.

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What Oils Can Be Obtained from Coal By Low-Temperature Distillation, and What Will Be Their Commercial Use

By R. L. Brown and R. B. Cooper

AS LOW-TEMPERATURE carbonization will furnish us with a smokeless household fuel, will broaden the use of the lower grades of coal and will reduce wastes, it is a subject well worthy of study. By low-temperature distillation a combustible can be made from bituminous coal that will replace our diminishing anthracite supplies, giving a fuel that is less difficult to fire than coke. In fact, responsible engineers have proposed distilling coal at a low temperature, recovering the oil and passing the resultant coke directly into the boiler furnaces of a power plant.

Low-temperature carbonization will convert coal into coke and gas and, with this process, coal could be used that was neither suited to the making of metallurgical coke nor particularly well fitted for gas making. However, for the manufacture of gas there seems to be no advantage in low-temperature carbonization. The high-temperature process gives 11,000 cu.ft. gross of 575 B.t.u. gas, whereas low-temperature carbonization gives about 4,000 cu.ft. of about 950 B.t.u. The volume of this latter gas could be increased if the price of gasoline and, therefore, motor fuel, became such as to make it profitable to crack the low-temperature tar under pressure, thus obtaining an increased yield of the latter.

The third product of low-temperature distillation is liquid or semi-liquid bodies, namely oils and tars. The value of any process of this kind depends largely on the profitable utilization of the products so obtained. In England and in Germany some progress has been made in ascertaining the composition of this class of material, but in this country the tars have had only limited study. Inquiries into the possibility of utilizing low-temperature oils and tars should include a study of their possible use as motor fuel and as fuel oils and as to their availability for use as creosoting material and in Diesel engines.

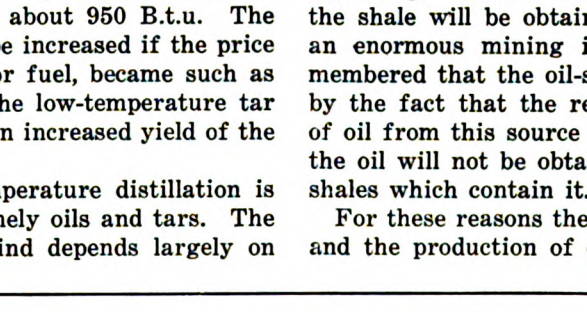
As a consequence of the creation of a Federal Oil Conservation Board, the Board of Directors of the American Petroleum Institute has investigated the quantity of oil in reserve has reported that there are 5,300,000,000 bbl. of pr reserve recoverable from existing petroleum wells fields by present methods, and that the annual p leum consumption is about 800,000,000 bbl. As cated by M. L. Requa, head of the Oil Division o U. S. Fuel Administration during the war, an others, it would appear that in a relatively short new sources of motor fuel must be found to re those rapidly becoming exhausted.

If the deficiency is to be met by oil from fields u American control outside the borders of this cou the cost must necessarily be higher than at pre and if the oil required is to come from outside under foreign control, the cost will be still greater

It must be remembered, however, that the depl of the oil supply from wells will possibly be para or followed by developments in the production of oil, though oil thus obtained may not be cheap be the shale will be obtained only by the developme an enormous mining industry. It must also b membered that the oil-shale industry will be ham by the fact that the residue left after the produ of oil from this source is practically worthless, so the oil will not be obtained without difficulty fro shales which contain it.

For these reasons the price of oil is likely to be and the production of oil from the distillation of will doubtless assum dimensions of a larg dustry. We shall pro have a greatly incr recovery of light oils coke-oven gas in the m facture of which high peratures are being Processes have been oped that yield about of motor fuel per which figure can be m doubled by subjectin tar fraction to cra under pressure. Coke easy burning domesti and, moreover, time probably show that well suited for us power plants.

During recent yea technology of the leum industry, and ticularly of petro refining, has made strides. Only a few ago gasoline wa straight-run. As th mand has increased industry has dev technically, cracking,



R. B. Cooper

Article entitled "Hunting for the Elements Produced by the Low-Temperature Distillation of Coal" presented by R. B. Cooper, at the ninth annual meting of the National Coal Association, Chicago, June 9. Mr. Brown is a chemist with the Bureau of Mines, and Mr. Cooper is the National Coal Association Graduate Research Fellow at the Carnegie Institute of Technology, Pittsburgh, Pa.

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breaking up of heavy oils into gasoline, has made so much progress that now it is reported that nearly 90 per cent of certain oils is converted into gasoline. A short time back, gasolines were being universally treated with concentrated sulphuric acid to remove the olefine hydrocarbons. Research has shown that these olefines are actually desirable as they give gasoline its anti-knock properties.

Other conditions being the same, the higher the temperature in the cracking process, the greater the production of lighter oils, and with still greater increases in temperature, there is a greater production of olefines and aromatic hydrocarbons. Both of these types of hydrocarbons are of an anti-knock quality. In general, the same principles hold in the distillation of coal.

The light oil from high-temperature carbonization is aromatic. The nature of the products obtained at various temperatures is well understood but the character of the products derivable from low-temperature distillation are only slowly being discovered.

Light Oils Recovered from Gas in Low-Temperature Distillation

	Per Cent
Pentane	2
Isopentane	8
Amylenes	30
Hexanes	10
Hexenes	17
Heptanes	7
Heptenes	5½
Cyclic olefines of seven carbon atoms	3½
Octanes and above	7½
Octenes and above	9½

Though our rich heritage of petroleum is rapidly being exhausted, we hold about 60 per cent of the world's supply of coal which will be adequate for the needs of many centuries; so coal will ultimately and inevitably be our principal source of motor fuel. It follows that before many years the United States must discover how best to convert its coal into motor fuel. At present there are three paths which research has blazed to that goal. These are being sedulously followed by investigators in the hope that a commercial process may be developed.

The first of these is the conversion of coal into water gas and the conversion of the water gas into liquid fuels. The second is the hydrogenation of coal to give heavy oils; and the third is based on the carbonization of coal at both high and low temperatures. The first of these three methods is under investigation, both in this country and abroad; inquiries into the second are being conducted solely in Europe. The third is certain to play an important part in augmenting our motor-fuel supply. One of the first two must come or we shall be, sooner or later, seriously short of such fuel. In looking for the valuable elements of coal, as released or generated by low-temperature distillation, the authors of this paper have looked, among other things, for motor fuel.

Research is always expensive, possibly because it can never be put on what is commonly called a production basis. It demands, and inherently must demand, individual brain and hand work, in fact, special piece work. In our investigation, we were able to take advantage of another inquiry in progress at the Bureau of Mines, and where, therefore, apparatus, retorts, cooling systems, coal and assistance were available. The miniature plant was such that the exact conditions existing in the distillation of coal could be duplicated. The distillation products from a weighed quantity of coal totalled 31 gal. and were stated as in the lower box.

A complete study has been made of the light oils recovered from the gas. Chemically, the oil boiling between 20 deg. and 200 deg. C., which is 68 deg. and 392 deg. F., was a mixture of the chemical compounds recorded in the upper box. This mixture has the same physical characteristics as casing-head gasoline, but has, in addition, the great advantage of containing over 50 per cent of olefine hydrocarbons. Consequently, if used as motor fuel it would possess in a high degree those anti-knock properties that are so much desired by motorists. It would, therefore, be exceptionally valuable for blending with other gasoline. It is a most interesting fact that in contrast to similar material from high-temperature distillation, it is relatively low in diolefines, which otherwise would have to be removed by a refining process; also, it is free from carbon bisulphide, a most objectionable constituent of gasoline, which is present to a considerable degree in similar material produced by high-temperature distillation. The increasing scarcity of casing-head gasoline for blending purposes puts particular emphasis upon these facts.

The presence of such a high percentage of anylene suggests a possible source of supply for the production of amyl alcohol and its esters by chemical synthesis. These compounds are extensively used in the fields of plastics, lacquers and smokeless powder. The oils and tars from low-temperature carbonization processes differ from high-temperature tars in having a greater resemblance to petroleum. They contain no benzol, toluol, naphthalene, anthracene or carbolic acid. However, instead of the ordinary carbolic acid, a low-temperature tar contains similar bodies of a much higher molecular weight.

We all know that high-temperature tar can be used not only as fuel but in timber preservation, the manufacture of tarred felt or tarred paper for building purposes, and as paint for stone, brick or ironwork. It is used extensively for road building, both as a binder and as impregnating material for wood blocks. It finds aplication as waterproofing and roof paints. It yields oils, benzol, toluol and carbolic acid, which are used for dyes, explosives and medicinals.

Whether low-temperature tar contains such a wealth of primary material can be discovered only by research or by further chemical investigation. It is probable that phenolic bodies are present, these being members of the carbolic-acid family. This suggests that, from coal, wood preservatives may be manufactured.

The physical properties of the neutral middle oils should be determined in order that these oils may be applied to uses for which they are fitted. The thought naturally occurs that, as the light oils are entirely aliphatic or petroleum-like in character, will not a lubricating grade of oil be present in the less volatile oils?

Low-Temperature Distillation
Yields per Ton of Coal

Resin condensate	100 lb.
Wax condensate	110 lb.
Medium oils	8 gal.
Light oils, recovered from gas	2 gal.

Of the medium oils slightly over 2 gallons were suitable for motor fuel.

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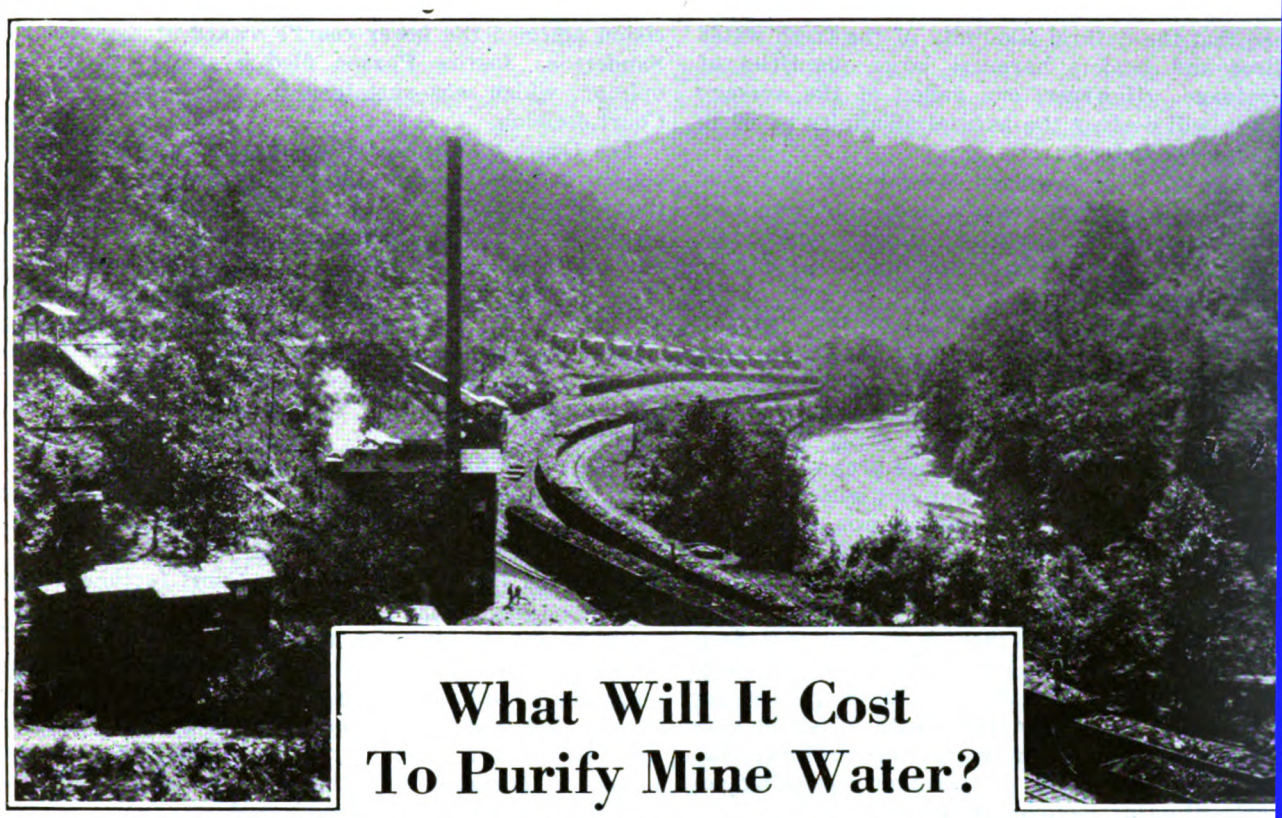

What Will It Cost To Purify Mine Water?

Acid Effluent from Mine Can Be Made Neutral at Expense of From 37 to 57 Cents per Ton Mined and River Water Made Soft at a Cost of Between 70 Cents and $1 per Ton of Product

By Andrew Crichton
Consulting Engineer, Johnstown, Pa.

STREAM POLLUTION by mine drainage has long been a local problem but pending legislation and important court decisions adverse to the coal-mining interests have recently made it of national importance.

The pollution of domestic water supplies with acid mine drainage has resulted in many coal-mining communities in the abandonment of water supplies, the water company being compelled to find new sources of supply. To obtain satisfactory supplies the water companies were obliged either to move higher up stream above the coal measures or other source of pollution or to seek at great expense a source of water remote from contamination.

No subject, to my knowledge, has been so misunderstood as that of the pollution of streams by mine drainage. Misleading statements regarding it have been published and broadcasted by radio, by prominent National and state officials. Officers of sportsmens' clubs, conservation leagues, Isaac Walton leagues, fish commissions and others have erroneously stated how simply and inexpensively this pollution can be remedied. Prominent mining officials and waterworks engineers have misunderstood the problem and have made statements which are bound to confuse the public and may result in ill-advised legislation if not corrected.

After several years' study of this problem, I feel safe in saying there is now no known satisfactory s of this problem and no method by which acid water can be satisfactorily treated. If the wate be made fit for use at a cost of a few cents p as some government officials claim, the coal in once it realized the effect of mine drainage fresh-water supplies, would certainly not oppose ment.

No Longer Serve for Domestic Supply

At present nearly all the important streams of and western Pennsylvania are seriously contam from acid mine water. Most of these streams years ago were used for domestic water suppli are now unfit for any use.

Pittsburgh, the center of one of the greatest and manufacturing districts of the world, depe its water supply almost entirely upon the Monon and Allegheny rivers. The water in these rive to mine drainage and manufacturing wastes, is n for certain periods of the year and is growin acid year by year.

In an article on this subject written in 1923, the statement, since widely quoted, that of th square miles of coal on the Monongahela River d area above Pittsburgh only 400 square miles ha mined out. If mining but 6 per cent of the c made the flow from that entire area acid during part of the year, it will be but a comparativel time until the stream is acid all the year, and eve its usefulness will be destroyed beyond recovery

At present the total quantity of mine drai small as compared with the total stream flow

Article entitled "Mine-Drainage Stream Pollution" read at the "Annual Convention of Coal-Operating Officials" held under the auspices of the American Mining Congress at Cincinnati, May 24-28. The headpiece shows the Tug River at Panther, W. Va. where are the mines of the Panther Creek Coal Co. The Tug which receives the waters of Elkhorn creek and Dry Fork as well as those of other streams has for a long time resisted the acidifying action of its tributary creeks but is gradually becoming acidulous.

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rivers, so that the natural alkalinity of the fresh water neutralizes and renders harmless large quantities of mine drainage. However, one gallon of the average mine water will destroy the natural alkalinity of 80 to 100 gal. of fresh water.

Practically all mine drainage is acid. Of over 300 mines examined in central Pennsylvania, only four were found to produce alkaline water. Dilution or contact with limestone would account for these exceptions. Rainfall is the source of all surface and underground waters. Of the total rainfall 40 to 50 per cent is run-off reaching the streams almost immediately and only about 25 per cent of the rest penetrates the ground, a portion of which becomes mine drainage. Only a small portion of the percolating waters reach great depth, so there is less water in deep mines than in shallow. Mine development is constantly increasing, producing more acid mine drainage, leaving less alkaline water in the streams with which to neutralize the mine water. The more mine drainage, the less fresh water, and with the constantly growing demands this situation requires attention.

On the Monongahela River drainage area are 7,000 miles of coal land and only 400 square miles have been mined out—just about 6 per cent. This has made the flow from the entire area acid part of the year. What will happen when sixteen times the area has been mined out, in view of the fact that the old abandoned mines still discharge acid water.

Our largest industries and public utilities have suffered most from the pollution of streams by mine drainage, because of their large and growing needs for pure water supplies. Nearly one hundred water companies in Pennsylvania have also similar problems, which are daily becoming more serious.

For years the interests of the mining industry have been considered paramount, but we are forced to admit that though coal is necessary, we must have water for our very existence, that one is dependent upon the other and that both are vital to the welfare and prosperity of our nation. The development of the coal industry has gradually progressed during most of the past century and cannot be said to have nearly reached its maximum. It has been a highly important industry to the welfare and security of our nation, as only the recent World War could demonstrate. Whatever ills have come with it have likewise been long in developing, so that good judgment and patient investigation, rather than drastic legislation, should govern us in handling this problem.

Sanderson's Water Supply Polluted

Mine drainage necessarily follows coal development, and any apparent disregard of the rights of others or the protection of water supplies may in a measure be attributed to the principle laid down by the Pennsylvania Supreme Court in the now famous Sanderson Case.

In 1886, Sanderson bought a property in the City of Scranton through which flowed Meadow Brook, a pure unpolluted stream. He built a dam and developed a water supply for his own use. The Pennsylvania Coal Co. at about the same time opened a coal mine, which soon produced acid mine drainage, destroying the use of this water. Sanderson brought suit for damage resulting from loss of the stream.

The case was twice tried in the courts of Lackawanna County, Pennsylvania and was twice before the Supreme Court of Pennsylvania. The first Supreme Court decision affirmed the lower court's award of damages to Sanderson; Justice Paxson filed a strong dissenting opinion, which was sustained in the second Supreme Court decision.

The Court took the position that if Sanderson could collect damages, every riparian owner thus affected could do likewise, and if they could collect damages they could also enjoin the pollution of streams by mine drainage, which would practically stop all mining operations, except by consent of the lower riparian owners; that trifling inconvenience to particular persons must sometimes give way to the necessities of a great community, especially where the leading industrial interest of the state is involved.

The Court further stated in its opinion that the coal company was making the natural and ordinary use of its property, and that Sanderson, with others, was then obtaining an abundant supply of pure water from other sources, but that it would not say that a case "may not arise in which a stream, from such pollution, may not become a nuisance, and that the *public interests* as involved in the general health and well-being of the community may not require the abatement of that nuisance."

The Pennsylvania R.R. forty years ago had to give up a water supply at Portage, Pa., due to mine-drainage pollution. It is one of the largest users of water in the state, and from time to time ever since has had to seek new sources of supply as older ones became unusable.

Reservoir Built to Escape Pollution

Shortly prior to 1905 the country suffered a severe drouth, old sources of supply had become polluted, attempted treatment of the water in large quantities was unsatisfactory, resulting in numerous engine failures, so that the railroad was compelled to haul water at great expense and with subsequent delays in operation.

Millions of dollars were appropriated to obtain an adequate supply for the present and future needs of the company, in the building of impounding reservoirs and in the laying of hundreds of miles of distribution lines. At that time it was not possible to find ample supplies of water reasonably convenient to points of consumption that were not being polluted or were not subject to pollution from mine drainage.

The Mountain Water Supply Co. was organized in 1905 and appropriated the waters of Indian Creek to supply the Pennsylvania R.R. system in southwestern Pennsylvania as far west as Pittsburgh, Pa. A large storage dam was built about four miles from the mouth of Indian Creek. The drainage area above this point is 110 square miles, of which 55 square miles is underlaid with the lower productive coal measures.

At the time, numerous small "country-banks" had been opened to supply coal to the farmers in the valley, but the coal lands had not been developed on a commercial scale. Several years later the Indian Creek Valley R.R. Co. constructed a standard-gage track from Indian Creek, a point on the Baltimore & Ohio R.R., up the valley to its head waters, but there was no material development of the coal resources until about 1917.

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The Mountain Water Supply Co. and the Pennsylvania R.R. Co. have been anxious that some mutually satisfactory solution of this difficult problem be found, and they have spent thousands of dollars in an effort to find some means that would permit the mining of the coal without the destruction of this valuable water supply. The operation of their entire system in western Pennsylvania is dependent upon this reservoir for its water, and the anxiety of the companies regarding the result of the litigation is understandable. They appealed to the courts for protection of their rights only after it was apparent that the supply was gradually being ruined by mine water and nothing else could be done. The Fayette County court decided there was no public use of the water and that preventing the mining companies from discharging their water into Indian Creek would deprive them of the use of their property. The court refused to grant an injunction restraining the mining companies from putting mine water into this stream.

THE sludge from mine water will purify gas and it may be used in the manufacture of paint, but the demand is small enough now. What would happen if every mine were manufacturing it? It would then not even pay the barreling charges. New uses would have to be discovered. Until they are the cost of treatment will have no offsetting return.

COURT DECLARES MINE WATER A NUISANCE

The Pennsylvania Supreme Court reversed the lower court, declaring that it was not a question of property rights, but that it was a nuisance to pollute the stream, and that the coal companies should not after a certain period discharge their mine water into Indian Creek or its tributaries above the dam of the water company. The United States Supreme Court concurred in this opinion.

It should be added that the water company not only supplied water to the railroad but also to several municipalities in western Pennsylvania, aggregating about 75,000 people.

The court's opinion states, "It is controlled by one fact and a single equitable principle: The fact that the stream has been polluted, and the principle that this creates an enjoinable nuisance, if the public uses the water." As a result of this decision, there has been much discussion as to what constitutes mine drainage or mine water. It was admitted by both sides that eventually this mine drainage would destroy this water supply for the purpose for which it was then and is now being used.

Some of the leading chemists, waterworks and mining experts of the United States were witnesses in that case, and there was no disagreement as to the facts; that continued pollution by mine drainage would eventually render the water of this stream unfit for any use.

Much testimony was introduced regarding the treatment of mine water, and there was no material disagreement on that point. When a water supply contains 4 grains of sulphates per gallon (sulphates being a product of sulphuric-acid pollution), it will require softening, and when the pollution exceeds 12 grains of sulphates per gallon, treatment is no longer effective, for it requires the use of so much soda-ash that the waters become so heavily charged with solids that they foam in the boiler. It would, therefore, be but a short time between the period when treatment is required and when treatment would no longer be effective.

The neutralization of acid mine water by the introduction of lime does not make the water fit for either domestic or industrial use. This matter was clearly before the court and was undoubtedly the reason for the decree that the mine waters be kept out of the stream.

The difference between the Sanderson and the Indian Creek decisions is that Sanderson, an individual who had access to another good supply of water, was not permitted to stand in the way of Pennsylvania's greatest industry, whereas in the Indian Creek case the public, also represented by the Commonwealth, is fighting to preserve one of the last available pure water supplies in the state. However, this decision important as it is should give much less concern to the mining industry than pending legislation, for the Mountain Supply Co. had a case with some unusual merits to justify the decision of the court. The value of the water company's property is several times that of the coal, equipment and development of the mining companies. The water company's dam was erected nearly ten years before any of the coal was developed, and the company notified each coal operator in writing prior to development that that company would be held responsible if by any act it polluted the stream.

I do not believe that, because of this decision, any water company can prevent a coal company from discharging mine water into a stream from which the water company gets its supply without supporting facts and conditions to warrant it. However, I feel the time has come when the few remaining unpolluted freshwater streams of the state should be protected; otherwise, where will we get good water for our growing needs? The policy of the Pennsylvania Sanitary Water Board, represented by W. L. Stevenson, to protect the present unpolluted streams, should have our support.

SHALL USE OR BEAUTY BE TEST?

Much has been said about the cost of treating mine water, and there is much more confusion as to what is meant by treatment. The Conservation League wants a water in which fish will live, which will not kill bird life or vegetation. Every one would like the oxide of iron (which colors the beds of streams yellow) kept out of the water, and the domestic and industrial user wants a water fit for human consumption and commercial use.

From numerous determinations the average total acidity of mine water in central and western Pennsylvania has been found, as already stated, to range from 80 to 100 grains per U. S. gallon. The cost to neutralize a thousand U. S. gallons of such water has been variously estimated by different chemists at from 15 to 25c.

This depends upon the cost of lime, the cost of gathering the water to one central plant, the capacity of plant, the labor involved, and the cost of handling the sludge which in itself is an exceedingly difficult and expensive, if not impossible, proposition. The cost to construct a plant for lime treatment would be about $100 per thousand gallons daily capacity, or for a 1,000,000-gal. plant $100,000.

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From measuring the flow of mine drainage and comparing it with the coal area exhausted in nearly 200 mines in Pennsylvania, we find the average yield to be 1,000 gallons per acre per day. A recent estimate of the acreage worked out in the bituminous mines of Pennsylvania, based on the total tonnage produced, would indicate a total daily production of mine drainage of 750,000,000 gal.

WOULD COST SEVENTY-FIVE MILLIONS

The cost to build lime treatment plants for this enormous quantity of water would be $75,000,000. The annual cost of treatment at 15c. per thousand gallons would be $41,062,500, and at 25c. per thousand gallons would be $68,437,500.

The estimate by Charles Dorrance of mine drainage reaching the streams from anthracite mines is 700,000,000 gallons daily, so that the above estimates for the entire state of Pennsylvania would be about doubled.

It must be understood the above cost is for neutralization only, and that even after this treatment, which is the one to which reference is most often made, the water is still unfit for either domestic or industrial use. To soften the water would cost more than double the above estimate for neutralization, and even with that the value of the product would be doubtful.

It will be seen that, with an annual production of 120,000,000 tons in the bituminous fields of Pennsylvania, the cost will be from 34 to 57c. per ton for neutralization and from 70c. to $1 per ton for softening.

In the bituminous fields of Pennsylvania alone from 4,500 to 5,000 tons of sludge would have to be handled daily, or 1,825,000 tons yearly. Even if dried and piled outside, it would be likely to reach the stream beds with every rainstorm. These beds eventually would be filled with this deposit. This iron oxide may be used for purifying gas and in the manufacture of paint, but it has a limited market, and with such quantities as would then be available it would be as common as dirt and without value. To mining men it would be nothing but slimy yellow mud, too thick to pump and too thin to shovel.

J. R. Campbell, formerly chief chemist for the H. C. Frick Coke Co., who built and operated the lime-treatment plant at the Calumet mine, has verified the above figures as to cost of treatment. Mr. Campbell has long been interested in this subject and probably knows more about it than any one else.

STAGGERING AND WITHOUT JUSTIFICATION

It is fair then to say that, with these tremendous costs in Pennsylvania alone, the cost of treatment for the coal industry throughout the nation would be staggering and without justification.

The Stephens Bill, H.R. 8310, introduced at this Session, is an amendment to the Rivers and Harbors act of March 3, 1899. It is similar to the Rosenbloom bill of the last session. It makes it unlawful within the limits prescribed by the Secretary of War to discharge any free acid into navigable waters or their tributaries. It places in the hands of the Chief of Army Engineers the power to require neutralization of acid water or wastes and provides a fine for each offense of $500 to $2,500 or imprisonment of not less than thirty days or more than one year.

The state and individuals have spent thousands of dollars in an attempt to solve this problem, but without success, so that the time has surely come for wise Governmental action—not the hasty passage of drastic laws as now proposed that would so greatly embarrass the mining and manufacturing industries but a sane public policy that will tend to preserve our water supplies at as little cost to the community as possible.

Secretary Hoover's suggestion of a careful investigation of the entire problem before the passage of legislation, is wise, and should not only have the approval but the hearty co-operation of the entire coal industry. Unless some mutually satisfactory solution of the problem is soon found, endless litigation may result between the waterworks and mining interests.

SHOULD RESTRICT NEW DEVELOPMENT

One thing seems certain, and that is that we cannot mine the coal without destroying the water in the mining regions. Therefore, I feel the only sure and practical method of conserving the water supply is to stop mining coal in some of the little-developed areas yet remaining. This cannot well be done as between individuals, and the Government or state would be justified in purchasing, if necessary, under some plan to be devised, the coal lands necessary for the protection of our few remaining water supplies in western Pennsylvania. That the state recognizes the importance of this problem is evidenced by its participation with the water companies in the Indian Creek case.

The coal industry is so greatly overdeveloped that an opportunity is afforded for a worth-while beginning of this policy. The coal industry is little to be censured for the pollution of the streams that its operations have caused. What it has saved thus far by its failure to take care of the water its mines have discharged has been passed to the public, as the industry for a long period of years has not been profitable.

Trace Sixty-Five Coal-Mine Disasters to Non-Permissible Powder

From 1909 to 1924 the quantity of permissible explosives used annually in the United States increased from less than 9,000,000 lb. to over 50,000,000 lb.

"Sixty-five of the explosion disasters occurring in American mines from 1908 to the early part of 1923, says D. A. Lyon, of the U. S. Bureau of Mines, were definitely found to have been caused by explosives igniting gas and dust. The total number of men killed in these 65 explosions was 758. All these explosions were found to be due to the use of non-permissible explosives. In fact, the bureau has no record of an explosion disaster having resulted anywhere, at anytime, in the United States from the use of permissible explosives.

"There is unquestioned evidence that undercut coal can be blasted by permissibles as cheaply as by non-permissible explosives. Under other conditions, where the direct cost of using permissibles may be greater, the indirect savings offset this, when the cost of compensation for killed or injured workmen, of interruption to work and of damage to property from explosions or fires caused by non-permissible explosives are taken into consideration."

THE WEST VIRGINIA COAL MINING INSTITUTE'S meeting which was to be held at Bluefield, W. Va., June 1 and 2, has been postponed until July 13 and 14 in order to avoid a conflict with other meetings.

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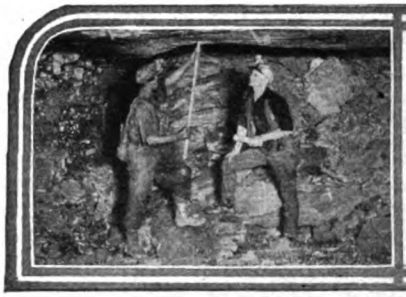
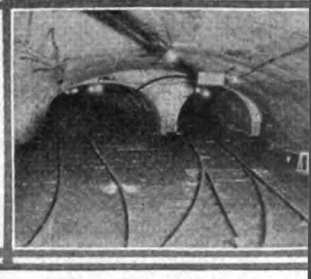


Underground Operation



With Mechanical Loading, Cars Can Be Manipulated if Face Be Well Shot and Trips Available

All Car-Spotting Difficulties Vanish Where Machine and Main Haulage Give Loaders and Spotters Opportunity to Develop a Happy Rivalry

By Charles Gottschalk
Consulting Engineer, Evansville, Ind.

Spotting empty mine cars at a rate which results in the minimum delay to a mechanical loader is a difficult problem, for the principal reason that the rate of loading is seldom uniform. For instance a loader upon first entering a room or working place will often load out the first few cars at the rate of a ton a minute or better, and yet will require five, ten or even fifteen minutes to load a car when the standing coal is being attacked.

I am referring to loading machines as now employed in the Indiana and Illinois fields. They average according to conditions from 125 to 175 tons per shift. It is apparent that if the machines could load uniformly at the average rate of one ton per minute and do useful work 60 per cent of the time, the output would be 288 tons per shift. This is the tonnage that I predict present machines will approximate when their handling is better understood.

If coal is to be loaded mechanically at a uniform rate, the first problem is to bring the coal down in a free state or to employ a loading machine which is designed to mine as well as load, with or without blasting, as the case may be.

Second, where mine cars are employed there should be a reservoir between the discharge of the loading machine and the car, so that car changes can be made without stopping the loading machine.

Third, as long a face should be prepared at each location as roof conditions will permit, so that the loader will have to make but few locations per shift.

Fourth, each working place should be well lighted and ventilated.

Fifth, the partings for accumulation of loads and supply of empty cars should be of adequate length, and sufficient extra cars should be on hand to provide a surplus to draw on when unavoidable delays occur in haulage or in tipple operation.

Many other suggestions might be made, but I consider these to be the fundamental needs. The success of any plan that may be devised is so dependent upon these five basal requirements, all contributing to loading at a uniform rate, that a program in which they are not mastered will not be properly balanced and cannot result in success.

It is true that all operators look lightly upon these feat loading, and the attention t giving them is being refle larger and larger output p chine.

I have referred to the desi of getting a uniform flow Until this is accomplished reasonable working limits, it possible to deal intelligently v mechanics of car manipulatio us examine in detail the fac volved.

IDLE LOCOMOTIVES COST

If half the time two loco are required to furnish ca loader and at other times o motive is sufficient, the result about 50 per cent of the t investment in one locomoti the pay of one operator is loss. Also, it becomes almost sible to work out a main- schedule which will be efficie out demanding more idle c sidings than are normally r When these problems have be sidered, and only then, w changing efficiency be the ma of production per loader.

Considering a case wher



Blasted and Double-Sheared Room Face at Kathleen Mine

This mine at Dowell, Jackson County, Illinois, is operated by the Union Coll The faces are sheared by a Joy shearing machine and loaded by Joy machines. is 9 ft. thick but 2 ft. is left in the roof for protection. Joy loaders are us entries, crosscuts and to the first crosscut in rooms. The cars hold 3.7 tons delivered to loaders in trips of four to six cars ahead of cable-reel locomotives machine trips of empties are not uncoupled until the end car has been loaded, w placed in the nearest crosscut neck and a new trip of empty cars returned to loa

Article entitled "Serving the Mechanical Loaders with Mine Cars" presented at the Coal-Operating Officials Convention of American Mining Congress, May 26, 1926.

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problems have been worked out with due regard to their importance, the problem of car changes becomes comparatively simple. In fact it almost vanishes. Under good conditions with no bad luck about 290 tons have been loaded repeatedly. This would represent an average flow of coal of one ton per minute for approximately 60 per cent of an 8-hr. period. This leaves 192 min. for car changes, for machine moves and for other delays. Provided the work is in rooms and pillars and in 6-ft. coal, and crosscuts are loaded out by machine, probably six moves per shift would be required. The time lost in moving should be well within 10 min. per move, leaving 132 min. Allowing another half hour for attention to the loader would leave 102 min. for car changes. Using a 5-ton car, fifty-eight car changes would be required. This would necessitate making a shift in 1¾ min.

If switches are kept within 150 ft. of the loader, the changes during an entire shift can be made well within that time limit. The arrangements of switches in rooms depends upon conditions which vary not only in different mines, but sometimes in the same mine. It depends also upon whether mules or locomotives are employed or a combination of both.

MULE SLOW FOR SHORT MOVES

Where the cars do not hold over 3½ tons of machine-loaded coal and grades are not severe, changes by mule have the advantage that by the use of a small parting in the room the mule can hook onto either end of the car, and the storage and switching space can be maintained at a minimum length. The big disadvantage of using a mule, however, is the clumsiness with which it will shift a car the short distances that are needed during process of loading if the car is to be filled to maximum capacity.

The loading machine can be moved while loading so as to maintain the proper relation of discharge to mine car, but that cannot be done without delaying the work. In rolling seams, the mule is at a much greater disadvantage than in moderately level beds. Under some conditions a mule and motor would work to good advantage, but the exact system of tracks and combination of equipment for making car changes must remain in many respects a problem varying with the conditions.

A pioneer operator in machine loading recently remarked that mechanical loading was 10 per cent equipment and 90 per cent organization. Certainly, organization does play a most important part. To obtain this organization, requires men with ability to lead and inject the spirit of friendly competition among the different loader sections.

Many skilful and loyal men utterly lack the power to give orders. Each machine operator should have this ability so as to be able to direct the little gang backing up the machine and keep them "pepped up" to the performance of their duties.

My theory is that if you keep the coal coming off the end of the machine conveyor, at a regular rate, the average organization will somehow contrive to take it away as opportunity immediately begets competition between the haulage gang and the loader crew. If, on the other hand, the coal is loaded in a dilatory manner, because of an irregular delivery of cars or imperfect preparation of the coal for loading, no possible arrangement for car manipulation will make up for this deficiency.

Nemacolin Finds Fire-Fighting Equipment Essential in Electrical Mine

By W. Z. Price
Assistant Superintendent, Buckeye Coal Co., Nemacolin, Pa.

Mine fires originate from many causes and are a serious and formidable menace to operation regardless of their extent. Danger is ever present because of the evolution of noxious gases. A slight back-draft from the fire will preclude the workers from doing anything unless they are amply protected with smoke or gas masks.

The purpose of this article is to describe what the Nemacolin mine of the Buckeye Coal Co., a subsidiary of the Youngstown Sheet & Tube Co., is doing to prevent fires from assuming serious proportions. It must not be infered, of course, that the precautions it is taking are the last word in fire protection, but they represent the best means that they have been able to devise against this ever-present danger.

The first fire-fighting equipment on a large scale at Nemacolin was the so-called "tank-car." Two of these cars were built several years ago and have been extensively used for fire extinguishment.

This car is a cylindrical tank with curved ends, 11 ft. long and 4 ft. in diameter. It rides on two platform trucks, being suspended horizontally between 5-in. H-beams. Its overall length is 18 ft. 6-in., its height 4 ft. 6-in. The width of the trucks is 4 ft. 9-in., yet the car will round with ease a curve of 16-ft. radius. It holds 700 gal. of water when slightly over two-thirds full, the remaining space being occupied by compressed air under a pressure of 100 lb. per square inch.

At one end, mounted on the same carriage is a reel holding 200 ft. of standard 2½-in. fire hose. This reel has a tank connection along its axis and is directly connected to the hose, so that in case of fire, the operative after extending the hose and opening the valve has a stream of water under pressure that bears favorable comparison to that available in most surface fire fighting.

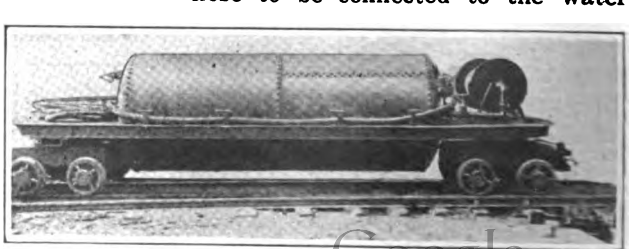
As the tank will completely discharge the water in from 3 to 5 min., a second tank is necessary, the first being recharged meanwhile. The two cars have 400 ft. of hose. This will undoubtedly suffice to reach the fire in most places, certainly until additional lengths can be forwarded from the surface. Government-approved portable air compressors are provided throughout the mine, and these are used for charging the tanks after the water is discharged and the connections are closed.

On each car is a set of hose adapters which will enable the fire hose to be connected to the water

Article entitled "Fire Protection Underground" presented at the Annual Convention of Coal-Operating Officials held by the American Mining Congress at Cincinnati, Ohio, May 27.

Tank Car

Two of these are used at Nemacolin. They hold 700 gal. of water and are evacuated by compressed air.



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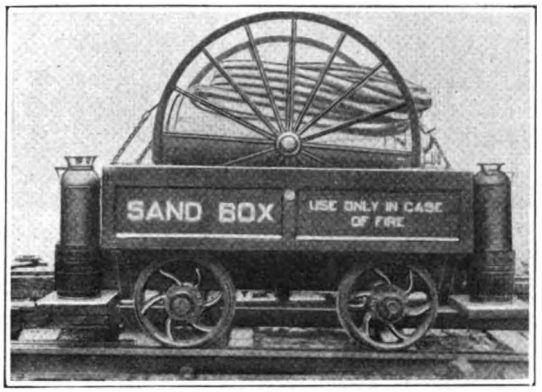


Foamite Truck

This tank holds 40 gal. of liquid extinguisher. The truck, it will be noted, is mounted on a car, so that it can go on the track as far as the track extends and then can be dismounted and run on its own wheels to the fire.

lines which are standard. The hose couplings have threads conforming to the rules established by the Underwriters.

It is frequently necessary to get close to the fire and in such cases a Hayward nozzle is used. This is capable of throwing four separate streams simultaneously: A lateral spray at right angles to the nozzle with a working radius of 35 ft., a diagonal lateral spray just ahead of the first, another diagonal spray at the end and a direct stream.

The nozzle has several detachable rings which vary the flow so that twelve different combinations of streams may be obtained. It is kept in a glass box in the lamphouse so that it can be seen and its availability known to all employees. Its great advantage is apparent for the three sheets of water will drive smoke ahead of the hoseman, thus enabling him to reach the scene of the fire with comparative ease and safety.

In addition, each working face has a 1-in. water line and a 2-in. line close behind. Thus water for refilling the tanks is always available. This sprinkling system is under a constant head maintained by a tank on the surface. The pressure is at least 100 lb. per square inch at all times. Each working face has a ½-in. sprinkling hose, so that in most cases a fire can be extinguished without bringing in the tanks. The main sprinkling line is a 6-in. pipe subdividing into fours and twos.

In passing, it may be said that the opposite end of the tank car from the reel can be equipped with a horizontal perforated pipe, so that the roof and ribs may be sprayed as by a street sprinkler. This was regularly used in Nemacolin until rock-dusting began. One tank load was found to sprinkle adequately 2,000 ft. of heading.

Other methods, however, are used at Nemacolin for fire fighting when the use of water, for any reason, is impractical. Each electric locomotive whether it be of trolley, cable-reel, or storage-battery type—and there are thirty-four in all—is equipped with a carbon-tetrachloride extinguisher. In each section of the mine are several 2½-gal. carbonated-solution sulphuric-acid extinguishers. This equipment has already prevented several serious fires. Defective blasting caps may ignite the explosive and hence the coal; a fall of rock on a battery locomotive may "short" the cells and another on a trolley wire may make "a short" on the rail thus igniting the loose roof coal thereabout. These are samples of potential mine fires which these 2½-gal. extinguishers have successfully smothered. The extinguishers are distributed in the ratio of one to every 100 tons of production. They have been found invaluable.

Lastly the mine is equipped with 40-gal. Foamite tanks. These are necessary adjuncts to the tank cars, as fires are likely to occur in places, such as aircourses, where no track is laid. Were the fire-fighters to wait, before acting, until sufficient hose was rushed in from the surface, the blaze might assume tremendous proportions.

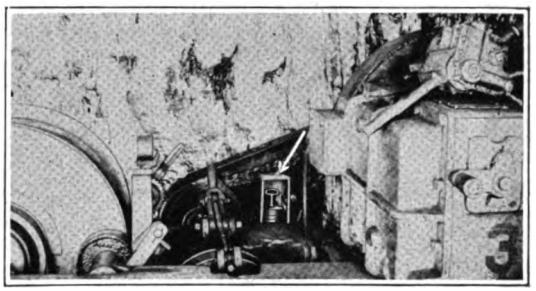
These Firefoam engines are endorsed by the Underwriters. They are mounted on wooden carriage wheels and placed on small flat cars built especially for them and by which they can be transported over the rails as close as possible to the scene of the fire. They can then be pulled off the truck and pushed to any point desired like any two-wheeled cart.

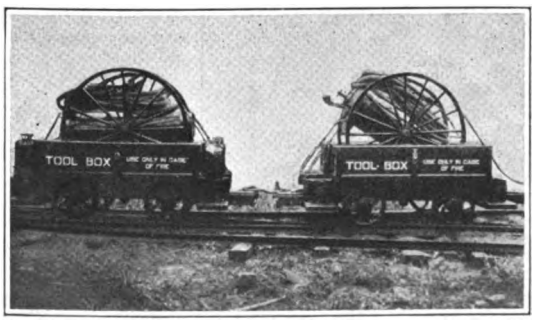
On each flat car, in addition to the Foamite engine, are four 2½-gal. extinguishers like those previously described, a box of sand and another containing shovels, picks, axes, saws, hatchets, a bar, nails and a sledge hammer. These boxes are kept locked and sealed but are easily broken open if necessary.

This equipment, the management at Nemacolin believes, is needed at any electrically operated mine. Some thirty or more automatic reclosing section circuit breakers, and several hundred sectional line switches are helpful in handling fires, but these, of course, cannot be classed as fire-fighting equipment.

Extinguisher on Portable Air Compressor

Arrow indicates extinguisher.





Two Fire-Fighting Trucks

These have a Foamite engine, four carbonated-solution sulphuric-acid extinguishers, a box of sand, shovels, picks, axes, saws, hatchets, nails, a bar and a sledge.

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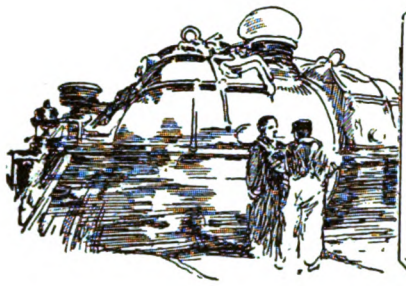
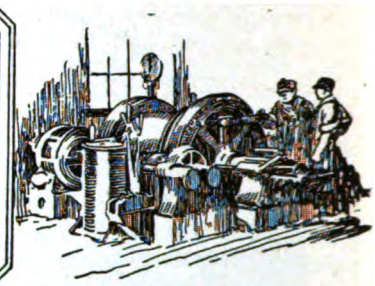


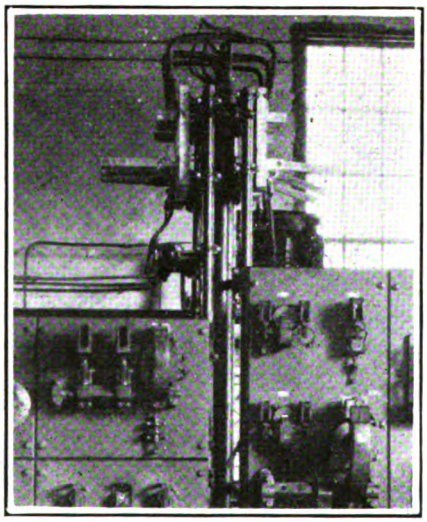
Practical Pointers For Electrical And Mechanical Men



Control Power Taken Ahead Of Main Disconnects

Testing to determine the continuity of circuits and their freedom from grounds and from shorts to other wires usually afford the quickest way to locate trouble. A visual inspection seldom reveals the point of failure unless it is aggravated and has damaged the equipment.

In order to facilitate testing of the automatic control boards of substations and mine fans, J. F. MacWilliams, electrical engineer of the Pennsylvania Coal & Coke Corp., has not followed the manufacturer's diagram but instead has connected the operating transformers on the line side of the machine disconnecting switches. A close-up of the connection at Ehrenfeld No. 1 substation is shown in the above illustration.



Arrangement at Ehrenfeld Station

Connecting the control transformer on the line side of the disconnecting switches allows the automatic boards to be tested without starting the motors or opening the leads to prevent starting. In the substations of the Pennsylvania Coal & Coke Corporation all bare high-voltage parts are kept above ordinary reach.

The conduit, through which the 2,200-volt line enters, terminates between the two disconnect switches. One switch feeds the fan motor and the other the motor-generator. At the top where the wires branch to the switches, the smaller leads which feed the control transformer, can be seen. This transformer is mounted on the wall in front of the lower left corner of the window.

Porcelain fused cutouts serve as disconnecting switches for the transformer. Many engineers object to the connection outlined above, believing that the function of a disconnecting switch is to "disconnect," and that therefore but one such switch should be used and that this switch should be in the main line so as to "kill" all wiring and apparatus when it is opened.

With the connection used by the Pennsylvania Coal & Coke Corporation, the only wiring left alive after opening of the two disconnect switches is the short run to the operating transformer. The other live lines are the low-voltage circuits on the control board. The arrangement permits making a complete sequence test of the control board without actually starting the motor or opening the leads.

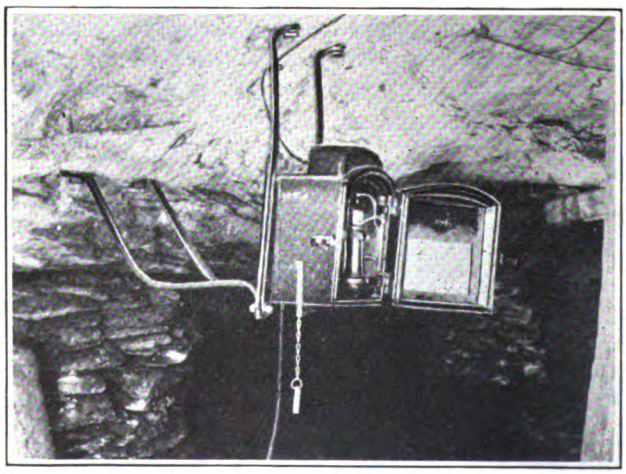
Hung From Roof Telephones Give Less Trouble

Nothing is certain in a mine. Falls of roof and wrecks frequently disturb any stationary equipment that is installed in an exposed place along the roadway. Wrecks can be reduced to a minimum if sufficient money is expended in maintaining rolling stock and tracks. In most mines, however, derailments are common rather than rare, and this fact must be taken into account when installing certain equipment.

The usual method of hanging a mine telephone not located in an underground office or waiting room is to fasten the instrument to a post. But if a wreck knocks out the post the telephone is rendered useless or perhaps destroyed.

To overcome this trouble the Edgewater Coal Co., of eastern Kentucky suspends the telephone from the roof as shown in the accompanying illustration made from a photograph taken in No. 3 mine at Coaldale. The mine electrician claims that this method has the added advantage that it affords better air circulation around the instrument thus minimizing possible trouble from moisture.

Whenever equipment is to be operated under vacuum, says *Power*, none of the exteriors of the parts likely to be subjected to that vacuum should be painted before the equipment has been erected, started and the vacuum established. When thus painted any pores or cracks are thoroughly filled, and a visible improvement in the vacuum will be observed. If the painting is done before that time, the small openings will be covered over by a thin coat and paint will not penetrate them.



Telephone on Roof Bracket

Cars when derailed often knock down posts. If mine telephones are suspended from the roof their maintenance cost is reduced and more continuous service is obtained from them.

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Current in Bearings May Cause Rapid Wear

Excessive bearing wear without noticeable overheating puzzled the chief electrician of a mine in central Pennsylvania. The troublesome bearing was on a 2,300-volt induction motor of the wound-rotor type. When a worn lining of the bearing was being renewed it was noticed that the shaft had a peculiar appearance instead of the usual polish.

From this the chief electrician concluded that stray current flowing through the bearing was the cause of the wear, and he proceeded to clear up grounds found in the rotor and control circuits.

How to Detect Current

This cause of excessive bearing wear is so unusual that it is liable to be overlooked. Whether an appreciable current is flowing through the bearing can be determined by connecting an ammeter of low resistance, or a millivoltmeter, from the shaft to the bearing.

Another way which in some cases can be used to indicate a current is to connect a short piece of small copper wire from a rubbing contact on the shaft to the bearing. Heating of the wire by the shunted current is the indication, but it should be ascertained that the heat is not generated by friction of the one end of the wire on the shaft.

If the trouble is not due to grounded circuits then it can probably be blamed to faulty design. Correction of this fault is of course difficult. A possible remedy is to insulate the bearing shells from the frame or base of the machine.

Barbed Wire Protects Line From Lightning

Every summer lightning causes much damage to mine substation, especially to those equipped with motor-generator sets. Puncturing of the motor insulation occurs in many instances even though the installation is protected, apparently, by approved arresters.

J. F. MacWilliams, electrical engineer of the Pennsylvania Coal & Coke Corp., Cresson, Pa., had such a case, but judging from last summer's experience he has practically eliminated, or at least greatly lessened, the chance of further trouble.

One of the Moss Creek substations, is fed by a 2,300-volt line passing over two high hills. Two arresters of approved type were used, and much care was taken to obtain a good ground. Nevertheless the insulation of the motor-generator set was punctured several times each summer.

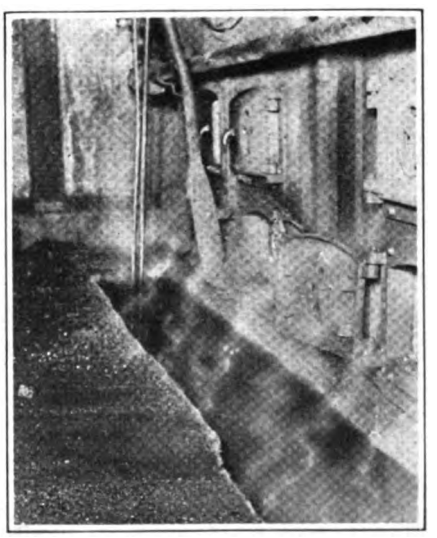
Electric Storms Harmless

The step which seems to have eliminated the trouble was taken somewhat over a year ago. Mr. MacWilliams ordered 2,000 ft. of galvanized barbed wire and strung this on the pole line over the tops of the two hills. Extensions were added to the pole tops to support the wire.

Grounds were made at every fifth pole by a ground rod with a pancake coil at the bottom. During the succeeding summer months no trouble was experienced in the substation even though many severe electrical storms occurred.

Mine Water Carries Ashes From Boiler to Dump

At small boiler plants, of capacity, say under 400-hp., ashes are usually carried to the dump by wheelbarrow. Though the quantity of material handled may seem large to the fireman, it is hardly enough to justify the installation of expensive ash-handling apparatus. But these are days when men do not "appreciate" work which can be done satisfactorily by mechanical means.



Trench in Front of Boilers

The only cost of this ash-disposal scheme was the digging and concreting of the trench which diverts the discharge from the mine pumps through the boiler room on its way to the creek.

The fireman of the two 150-hp. boilers at the Exeter mine of the Kingston - Pocahontas Coal Co., Hemphill, W. Va., is relieved of any work connected with carrying the ashes away from in front of the boilers. He simply rakes them out from under the grates and they drop into a trench in front of the ashpit door. A stream of water flowing through the trench carries the material into the nearby creek.

The trench and boiler fronts are shown in the accompanying illustration. In this case the water passing through the trench is part of that pumped out of the mine. The scheme proved so satisfactory that one or two other plants of the company have been arranged in the same way. The plant at Exeter is used to supplement purchased power and to act as a standby should the purchased power fail.

How Far Can a Single Belt Transport Coal?

Single-belt conveyors a mile long between head and tail pulleys are not outside of the realm of possibility, according to C. H. Adamson, engineer for the Stephens-Adamson Manufacturing Co.

Probably the main factor limiting the distance between centers is the working stress of the conveyor belt. Reduced frictional resistance in drive, idler, take-up mechanism and carriers has lowered belt stresses, with a corresponding increase in allowable conveyor lengths.

In nearly every instalation of belt conveyors the belt itself costs from 30 to 50 per cent of the entire installation. Long belt conveyors require high tensile strength, and the cost of the belt per foot of length is correspondingly increased. The belt depreciates more rapidly than the machinery; therefore conditions which increase the life of the belt, such as ball-bearing carriers, lower the unit cost per ton of material handled. Single-belt conveyor installations will rarely be made in greater lengths than are now standard, concludes the same authority. Probably long-distance belt-conveyor transportation will, therefore, continue to be of the multiple-unit type.

In reaching this conclusion, Mr. Adamson does not consider the degradation consequent on the use of the multiple unit, nor the difficulties due to the creation of dust, including when coal is transported, the danger that the material conveyed may, in being chuted, from unit to unit, introduce an explosion hazard. Furthermore the question of headroom may have to be considered.

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News Of the Industry



Three-Cornered Freight-Rate Fight For Northeast Coal Markets Resumed As Hearings Open at Atlantic City

The three-cornered rate fight for the coal markets of New England and the Middle Atlantic states was resumed at Atlantic City, N. J., on Monday of this week, when the Interstate Commerce Commission reopened hearings in its so-called *Anthracite Coal Investigation* at the Marlborough-Blenheim before Commissioner Johnston B. Campbell and Special Examiners Irving L. Koch and Joseph Esselman.

This proceeding, Docket No. 15006, was undertaken in the first instance on the recommendation of the U. S. Coal Commission, which thought the time was ripe for a re-examination of the rate structure on hard coal. A number of desultory hearings on that question were held in 1923 and 1924. The case was subsequently broadened to cover the transportation charges on bituminous coal and coke. Except for certain adjustment in tariffs applicable to central New York destinations, the anthracite rates have passed out of the picture.

The original order issued in this case, 101 I.C.C. 363, establishing joint all-rail rates on prepared coal from low-volatile districts in southern West Virginia to certain points in Trunk Line and New England territory, however, gave the anthracite industry and the anthracite carriers an interest that the earlier perfunctory hearings did not win. Subsequent emergency extensions and expansions of that order, made during the recent anthracite strike, added materially to that interest.

Three Interests Make Demands

The present line-up of the contestants, therefore, shows:

(1) The low-volatile producers of southern West Virginia demanding a further extension and broadening of the routes opened up by the original order and a lower rate basis;

(2) The northern producing fields, particularly central Pennsylvania, opposing this all-rail invasion of the Northeast by their southern West Virginia rivals and demanding that the adjustment of rates to tidewater also receive the scrutiny of the Commission;

(3) The anthracite industry and the anthracite carriers watching to protect their own interests in this rich coal-consuming territory. Incidentally the anthracite operators are complaining of the rate relationships between bituminous coal and the steam sizes of anthracite. It is unlikely, however, that that point will be raised in the present proceedings.

The high-volatile interests of southern West Virginia, who were denied a new rate adjustment in the original decision, but later were accorded emergency rates, which expired April 30, trail along with the low-volatile producers. They have made a point that their rates westbound and to southeastern points are differentially related to the rates on low-volatile coal and insist that equal consideration should be given them in the establishment of rates on low-volatile to the Northeast. Eastern Kentucky and the low-volatile districts of Virginia, as well as the semi-anthracite field in the Old Dominion State, likewise insist that the benefits which may be won by southern West Virginia should also accrue to them.

Trunk Lines Oppose New Routes

Trunk line railroads, notably the Pennsylvania and the Baltimore & Ohio, object to the establishment of new all-rail routes. They base this objection on the ground that the facilities for handling business through the Hagerstown and Potomac Yard gateways were not designed for this traffic and that to burden such gateways with this movement would threaten the standards of their service.

In the original order the Commission directed the establishment, effective Oct. 15, 1925, of rates on low-volatile lump, egg and nut from mines in C. & O. group 1, as specified in C. &. O. tariff I.C.C. No. 9834; mines in Virginian Ry. group 1, as specified in Virginian Ry. tariff I.C.C. No. 1685, and mines in N. & W. group 3, as specified in N. & W. tariff I.C.C. No. 3006-B, which should not exceed the following:

(1) To Pennsylvania R.R. stations, Tuxedo to Edgewood, Md., $3.45 per gross ton; to Perryman and Iron Hill, Md., and points intermediate, $3.70; to Newark Center, Del., and Brooklyn, N. Y., and points between said stations, rates not exceeding rates from the Clearfield district by more than $1.10.

(2) To Baltimore & Ohio stations, Alexandria Junction to Van Biber, $3.45; Sewall to Barksdale, Md., $3.70; Newark, Del., to Philadelphia, Pa., $3.94.

(3) To New Haven railroad stations, Portland to Chestnut Hill, Conn., Talcottville to Willimantic, Conn., North Windham, Conn., to Forest Hills, Mass., South Windham, Conn., to Oak Lawn, R. I., Attleboro, Mass., to Boston, Mass., $5.58; to other New Haven stations named in Pennsylvania R.R. tariff AA-I.C.C. No. 1800, rates not more than $1.10 per ton above Clearfield rates.

(4) To Boston & Maine stations, Farley to Boston, Mass., $6.70; to other Boston & Maine points specified in Baltimore & Ohio R.R. Co. Coal & Coke Series Tariff I.C.C. No. 2523, rates not more than $1.35 in excess of those maintained by the Baltimore & Ohio from the Cumberland-Piedmont field.

Emergency Rates Granted

Later, following a hearing in New York City, the Commission broadened its original order by establishing the following emergency rates on prepared coals:

(1) From all mines in the New River, Tug River, Pocahontas and Clinch Valley District No. 1 fields to all points in New Jersey and the New England states, other than destinations covered by original orders, rates $1.10 over Clearfield.

(2) Clinch Valley District No. 2 to Baltimore & Ohio, Pennsylvania and Long Island R.R. stations and to destinations covered under paragraph (1) the same basis as applicable from Pocahontas and Tug River.

(3) From all mines in the Kanawha, Coal River, Logan, Kenova and Thacker districts to all points on B. & O., P. R. R. and Long Island railroads covered by original order of July 22, 1925, and to all points in New Jersey and the New England states, rates not more than 25c. over New River-Pocahontas.

(4) From all mines on the Big Sandy division of the Chesapeake & Ohio Ry. in Kentucky to destinations described in preceding paragraph, rates not more than 40c. above the New River-Pocahontas basis.

(5) Semi-anthracite from McCoy and Merrimac, Va., on Virginian Ry., and Pulaski to Vicker, Va., inclusive, on Norfolk & Western Ry., rates not exceeding rates on Pocahontas coal to destinations in paragraph (2).

The Commission, however, declined to extend the application of these rates to the movement of mine-run all-rail and ignored the pleas of western Pennsylvania and northern Ohio for consideration.

These rates became effective Dec. 31, 1925, and expired April 30, 1926. The

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Commission refused to extend their life. In denying applications for such extension it announced that further hearings would be held to consider the question of the establishment of such rates on a permanent basis. These rates, therefore, will be among those considered in the present hearings.

Broadening of the issues to include the rates on coal to tidewater for transshipment followed an appeal of the Central Pennsylvania Coal Producers' Association. This appeal, the granting of which puts into issue the relationship of rates to the northern and southern tidewater piers, was bitterly opposed by the southern interests. The latter charged the northern producers with attempting to evade the responsibility of filing a formal complaint challenging the relative adjustment. Another appeal brought in all of the Upper Potomac field.

In effect, therefore, the investigation now covers the relationship of rates from practically the entire Appalachian Region, other than Alabama and Tennessee, to the Middle Atlantic and New England states via all-rail and rail-and-water routes via all ports of transshipment from New York on the north to Hampton Roads on the south. One of the recent supplemental orders in the case specifically brings in the question of the reasonableness and prejudicial character of the rates, charges, regulations and practices, "including tidewater and transshipment rates, charges, regulations and practices," on bituminous and semi-bituminous coal and coke from all mines in Pennsylvania, Ohio, Maryland, Virginia, West Virginia and eastern Kentucky to all points in Virginia, the District of Columbia and in the Middle Atlantic and New England states; and of semi-bituminous coal from mines in Virginia to all points in Virginia, the District of Columbia and in the Middle Atlantic and New England states.

The Commission has announced that evidence on the all-rail situation must be completed at the Atlantic City hearings, which may last three weeks. "If it develops," says George B. McGinty, secretary of the Commission, "that adjournment is needed in respect to the tidewater situation in order to do substantial justice, a further hearing upon that phase of the investigation will be held later."



Photo Moffett Studio.

G. H. Merryweather

"Bert" Merryweather, the new president of the American Wholesale Coal Association, has been actively identified with that organization and its predecessor, the National Coal Jobbers' Association, since the launching of the last-named body in the fall of 1917. For a number of years he served as secretary-treasurer and last year he was vice-president. Mr. Merryweather is associated with the Waubun Coal Co., Chicago.

Non-Interference of Government with Business Will Promote Continued Prosperity, Says Schwab

Continued prosperity is foreseen by Charles M. Schwab, chairman of the Bethlehem Steel Corporation, who surveyed the business situation in a recent address before the Syracuse (N. Y.) Chamber of Commerce. "With the government seeking to conduct its affairs in the most economical manner, arranging the tax laws upon the sound principles advocated by Secretary Mellon, and pursuing a policy of non-interference with the legitimate activities of business, and with the American people working together as they are now doing, we can have confidence that permanent prosperity shall have every opportunity to flourish," he said.

"I am an optimist on the business outlook," declared Mr. Schwab, "for the following reasons:

"(1) The American people are hard at work producing new wealth at an amazing speed. That means purchasing power, new savings, new opportunities for expansion of production.

"(2) Nature promises a year of bountiful crops on top of the enormous agricultural production last year.

"(3) Wage earners are working with their employers in a spirit of greater peace than I have seen for 25 years.

"(4) Business men have been carrying on their work carefully in recent years and not indulging in speculative expansion.

"(5) Railroads are providing a transportation service of greater efficiency than the people of the country have ever enjoyed.

"(6) Through the operation of our banking laws and by reason of the prudence of those in charge of our banks, credit facilities have not been taxed and the business of the country is generally sound.

"(7) The government, under the leadership of the President, stands for a policy of sanity, conservation and progress."

Southern Gem Stockholders Lose in Reorganization Plan Approved by District Court

Stockholders owning approximately $1,021,054 of the capital stock of the Southern Gem Coal Corporation, which was thrown into a receivership in January, 1924, apparently will be the only losers when the affairs of the company are finally liquidated by the receivers, providing the company that is taking over the mining properties is able to operate on a paying basis.

Under the terms of sale approved by Judge Lindley in the U. S. District at Danville, Ill., on June 17, the purchaser, the Brewerton Coal Co., of Chicago, has agreed to issue stock to holders of $440,000 in bonds of the Southern Gem Coal Corporation and to creditors having $400,000 in claims against that company. Stockholders of the Southern Gem company, however, will receive nothing.

In approving the sale of the property Judge Lindley said that he regarded it as "the best possible settlement" that could be effected for bondholders and creditors. He set July 1 as the final date for hearing on the receivership and it is believed that at that time he will order the receivers, W. S. Wilson, of Pinckneyville, Ill., and N. S. McLean, East St. Louis, Ill., to file their final reports. Following the receipt of the reports the receivership will be terminated.

In addition to issuing stock to the bondholders and general creditors the Brewerton company agreed to assume delinquent payrolls and back taxes on the mining property in Perry County. It is estimated that the total purchase price was more than $1,000,000. The Brewerton company some time ago purchased the Southern Gem mines in Franklin and Jefferson counties under terms similar to the sale at public action in Pinckneyville, Ill., in June 8.

W. A. Brewerton, head of the Brewerton Coal Co., is said to contemplate including the Southern Gem mines in a merger of 43 coal mines in Illinois and Indiana recently reported to be under way.

Sells Ohio River Interests

The West Virginia Coal & Coke Co., with headquarters at Fairmont, W. Va., has purchased the river interests of the Philadelphia & Cleveland Coal Co., which included docks at Huntington, W. Va., a boat line on the Ohio River and a large unloading plant at Cincinnati, Ohio. A. C. Ingersoll, president of the Philadelphia & Cleveland Coal Co., has been made manager of the river interests which were taken over. It is announced that the deal does not affect the remainder of the activities of the Philadelphia & Cleveland Coal Co., which consists of offices at Cleveland, Columbus, Akron, Indianapolis, Wheeling and Cincinnati. At Groveport, near Columbus, the company has an immense coal storage plant from which the Columbus Railway, Power & Light Co. is supplied

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Tentative Awards Made for N. Y. State Coal Needs

Tentative awards have been announced by the Department of Purchase, State of New York, at Albany, for supplying anthracite and bituminous coal for many of the state institutions. The awards included the following:

The Lehigh Valley Coal Sales Co. was awarded the contract for furnishing 1,400 tons chestnut, 1,300 tons egg, 500 tons stove, 1,000 tons buckwheat No. 1, and 3,100 tons pea coal at regular company schedule of prices.

The D. L. & W. Coal Co. obtained the contract for furnishing to six institutions 4,500 tons barley, 800 tons stove, 250 tons chestnut, 450 tons egg and 650 tons pea at the regular schedule.

Weston Dodson Coal Co., Inc., was successful in its bid for furnishing 2,160 tons of stove coal at $9.70 per ton f.o.b. mines; 200 tons chestnut at $9.15; 1,450 tons pea at $6.25 and 8,700 tons buckwheat No. 1 at $2.04@$2.24 per ton, depending upon delivery points. For 4,000 tons barley to Randall's Island the price was $3.89 f.a.s.

Other bids accepted included that of Martin F. Shea, of New York City, for furnishing 35,400 tons of buckwheat No. 1 to three institutions at $2.19 per gross ton, f.o.b. mine. Mr. Shea also captured contracts for furnishing 7,600 tons stove coal at $9.60 per ton; 2,195 tons egg at $9; 1,920 tons chestnut at $9; 150 tons grate at $8.50, and 150 tons pea coal at $6.50.

Pattison & Bowns were granted the contract for sending 15,000 tons of barley coal to the Binghamton institutions at $1.50 per ton. They will also deliver to various other institutions 3,250 tons stove coal, 1,019 tons egg, 561 tons chestnut and 1,550 tons pea coal at $9.50, $9, $9 and $6.50 respectively.

The successful soft coal bids were:

Simpson Mining Co., Rochester, 10,700 net tons, mine-run, to Albion, Batavia and Gowanda, $1.60 per ton; 19,000 tons mine-run, to Middletown and Thielle, $1.55 per ton; 2,675 tons ¾ lump and 700 tons 1¼ lump to five delivery points, $1.80 per ton; 13,000 tons mine-run to St. Lawrence, $1.55 per ton.

Pittsburgh & Shawmut Coal Co., Pittsburgh, Pa., 18,000 tons slack at $1.30.

Northern Coal Mining Co., St. Mary's, Pa., 4,000 tons nut and slack to Newark, N. Y., $1.40.

Active British Mine Hums With Brisk Demand

Contrary to general belief, not all the British coal pits are idle. Dean Moor colliery is very much in action and unable to meet the demands. No pickets of trade unionists or Communists interfere with its operatives.

Dean Moor colliery lies in the moors of a remote district of the Cumberland Mountains—the nearest railroad station is more than twenty miles away. Its daily output before the strike was about 75 to 80 tons of coal per day. Neither the company owning the pit nor the 65 to 75 men working it are affiliated with the owners' or the miners' associations.

The men, in addition to free houses and firing and medical benefits, obtain a quarterly bonus on their output as well as their wages. And, since this mine was opened early in the century, it has had neither labor nor financial troubles. Its coal is sold in the surrounding agricultural and iron-ore districts, and in ordinary times the purchasers usually cart or otherwise convey it themselves. During the strike, however, a fleet of motor and steam wagons and lorries have been distributing orders within a vastly increased area.

Barnett Coal Co., Latrobe, Pa., 44,640 tons mine-run to seven delivery points, $1.45 per ton.

Steamship Fuel Corp., New York City, 25,350 tons mine-run to eight delivery points, $1.45 per ton.

George D. Harris Coal Co., New York City, 22,000 gross tons mine-run to Brooklyn and Manhattan, $4.44 per ton f.a.s.; 50 tons smokeless coal at $1.78 per ton and 400 tons at $1.64.

Whitney & Kemmerer, New York City, 670 gross tons slack for Randall's Island, $4.54 per ton, f.a.s., and 56,400 net tons mine-run to five institutions at $1.295 per ton.

Kaiser-Barnett Coal & Coke Corp., Buffalo, 12,000 net tons mine-run to two institutions, $1.68 per ton.

Demand Higher Rates on Coal-Mine Insurance

Compensation-insurance experience on coal-mine risks throughout the country has been so unprofitable that the company members of the Associated Companies at a meeting on June 16 decided to discontinue writing such risks except at a substantial increase in rates. In any states which will not approve of an adequate rate basis the business will be discontinued entirely so far as the members of the Associated Companies are concerned.

Coal-mine business written through the Associated Companies during the past five years shows an underwriting loss of $4,500,000. It is estimated that rates are about 50 per cent less than they should be to make possible an even break on the underwriting. On the other hand, the acquisition cost of the business has been kept as low as possible, only 10 per cent commission being allowed, as compared with 17½ per cent paid on other classes of compensation insurance. A considerable proportion of the expense of conducting the business goes into the inspection costs, without which the risks could not be written at any rate.

The Associated Companies is already withdrawing from Kansas as the laws of that state are such that coal-mine compensation risks cannot be written at any rate. The United States Fidelity & Guaranty Co., of Baltimore, recently announced that it had discontinued writing coal-mine risks, and the Integrity Mutual Casualty Co., which recently failed for several millions, charged that the bulk of its troubles was due to coal-mine loss experience.

The Associated Companies is composed of the Hartford Accident & Indemnity Co. of Hartford, the Maryland Casualty Co., of Baltimore; the Standard Accident Insurance Co., of Detroit, and the United States Casualty Co. of New York. These companies have aggregate assets of about $95,000,000.

Senator Fred M. Sackett, of Louisville, is behind a bill introduced in the U. S. Senate on June 15 to establish a mine-rescue station and equipment at Madisonville to serve the western Kentucky field.

Bituminous Coal Loaded Into Vessels at Lake Erie Ports During Season to End of May

(In Net Tons)

Ports	Railroads	1926 Cargo	1926 Fuel	1926 Total	1925 Cargo	1925 Fuel	1925 Total	1924 Cargo	1924 Fuel	1924 Total
Toledo	Hocking Valley	1,650,366	46,881	1,697,247	1,867,930	56,230	1,924,160	1,422,987	40,881	1,463,868
	Big Four	303,911	1,377	305,288	310,425	330	310,755	.....	.....	.....
	N. Y. C.-Ohio Central Lines	371,958	18,461	390,419	138,659	12,991	151,650	4,505	227	4,732
	Baltimore & Ohio	519,927	13,848	533,775	536,564	17,385	553,949	234,923	7,975	242,898
Sandusky	Pennsylvania	1,071,060	30,065	1,101,125	920,309	28,507	948,816	276,743	7,832	284,575
Huron	Wheeling & Lake Erie	188,461	7,980	196,441	200,977	9,763	210,740	179,392	8,426	187,818
Lorain	Baltimore & Ohio	244,386	22,274	266,660	41,645	25,588	67,233	252,415	24,885	277,300
Cleveland	Pennsylvania	62,301	17,475	79,776	13,261	27,501	40,762	158,254	29,146	187,400
	Erie	.....	.....	.....	18,138	1,252	19,390	56,556	1,917	58,473
Fairport	Baltimore & Ohio	48,668	10,917	59,585	44,497	18,239	62,736	53,407	20,234	73,641
Ashtabula	New York Central	21,946	8,313	30,259	89,583	22,899	112,482	191,531	22,488	214,019
	Pennsylvania	183,192	10,922	194,114	85,704	10,773	96,477	131,412	14,398	145,810
Conneaut	Bessemer & Lake Erie	233,597	29,117	262,714	202,381	47,569	249,950	294,959	43,446	338,405
Erie	Pennsylvania	32,441	9,561	42,002	23,554	12,187	35,741	66,026	14,089	80,115
Totals		4,932,214	227,191	5,159,405	4,493,627	291,214	4,784,841	3,323,110	235,944	3,559,054
Storage Loading		*60,142	774	60,916	*33,017	1,048	34,065	*182,060	4,940	187,000

* Coal loaded into vessels in December of previous year, after close of navigation, and forwarded from Lake Erie ports during year indicated.
Compiled by Ore & Coal Exchange, Cleveland, Ohio; H. M. Griggs, manager.

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Direct Efforts to End British Strike Await Fate of Legislative Program; Labor Scores 8-Hour-Day Proposal

Attempts at direct negotiation to end the British coal strike, now in its eighth week, apparently have been abandoned while both parties wait to see what fate overtakes the legislative program laid down by the British Government.

The first plank in the platform advocated by Premier Baldwin is the return to the eight-hour day. Commitment of the government to this proposal already has provoked a storm of disapproval from the Laborites and the Liberals. The Baldwin party, however, has given no indication that it intends to retreat from its position.

The Premier outlined his plan in an address to the House of Commons on June 15. In general it was based upon the recommendations of the Royal Coal Commission, which rendered its report several weeks ago. In his speech the Premier made specific reference to recommendations for the amalgamation of existing undertakings and the enactment of enabling legislation. He indicated, however, a reasonable time would be allowed the operators to effect such consolidations voluntarily.

Nothing was said with respect to the nationalization of mineral rights. Mr. Baldwin intimated, however, that the recommendations of the commission dealing with selling agencies, profit-sharing, family allowances, housing and re-absorption of workers displaced by mergers would be taken up later.

Although the subsidy offer of the government expired on June 1, the hope was he'd out that government aid would be made available to tide over an emergency if owners and miners composed their differences.

Baldwin Defends Longer Day

The proposal to lengthen the working day, which runs counter to the recommendation of the commission, was put forward as the necessary first step in resumption of operations. Mr. Baldwin defended the suggestion as one which gave the workers a chance to maintain their present standards of living. His failure to advocate the eight-hour day earlier, he explained, had been due to the fear that some of the owners might abuse the concession. He had since been assured that "as to 50 per cent of the coal produced, there would be no fall in wages at all, and as to 25 per cent, a fall of less than 10 per cent during the period of July, August and September. Everywhere thereafter the 1921 minimum would be guaranteed."

Nothing was to be gained, he continued, by prolonging the struggle. On the contrary, "it will leave every one worse off at the end than they were at the beginning. The commissioners declared that disaster was impending over the industry unless certain things were done. Instead of co-operating wholeheartedly to do these things, the parties to the dispute have preferred to fight. Had they agreed with the government on March 24 to stand firmly on the report we might today have made some advance with laying the foundations of a new prosperity, the men would have been back at work and our foreign competitors would not have been capturing our markets."

A. J. Cook, secretary of the Miners' Federation, was one of the most caustic critics of the Baldwin program. Lloyd George also assailed the longer working day and the Labor Party went on record in opposition.

"The Prime Minister," said "Emperor" Cook, "has confirmed the opinion already held by the miners and their leaders that he is nothing more or less in this dispute but the advocate of the coal owners. A reduction of hours has always been bitterly opposed by the mine owners. The miners have been absolutely solid on this question. There is no more prospect of their giving way than of the railwaymen, the transport workers or others agreeing to longer hours of work.

"The debate in the House of Commons has done nothing to bring a settlement nearer. Every one must see how the Prime Minister tries to act in a dual and deceptive rôle by informing the nation in a speech that was broadcast that he was not out to reduce the standard of living of the miners, and yet, in his speech in the House of Commons yesterday, he made no secret of the fact that the only proposals he has put before them are longer hours and lower wages.

"Instead of bringing forth the olive branch, he has unsheathed the sword. The miners will never voluntarily accept reductions of wages. No attempt to enforce longer hours by legislation will succeed. It is tragic that the British Prime Minister uses his position as chief officer of the Crown to defend the coal owners' interests against those who invest their lives in the mines."

The resolution adopted by the Laborites at a meeting on June 16 read:

"The declaration of policy made by the government yesterday on the mining crisis as regards hours and wages is in violation of the recommendations of the Royal Commission report, is inadequate to meet the problems of the industry; is a surrender to the demands of the owners and calculated to prolong and embitter the struggle.

"The party, therefore, resolves to offer to these proposals its most strenuous resistance."

Says Government Blunders

"It seems to me the government is blundering very badly," said Lloyd George. "When I had news last night of what had been said, I could hardly believe it. It seemed to me to be so incredible that I thought I had better wait for a full report. I was very much surprised that the summary I had last night was completely confirmed by the full report."

A meeting of a committee of the miners' international organization was scheduled for London yesterday. It was announced that this meeting would consider what steps could be taken to further aid the British miners. British members were reported to be ready to ask for more drastic measures to prevent the exportation of coal from other countries to the United Kingdom.

Tomorrow (June 25) the executives of the unions affiliated with the Trades Union Congress are to meet. Interest centers in what will happen if Mr. Cook repeats his attacks upon the labor leaders responsible for calling off the general strike last month.

Unemployment outside of the coal industry increased only 5.3 per cent last month, but June figures will undoubtedly be much more unfavorable. A mid-month review of the situation shows the iron and steel industry at a standstill, Sheffield cutlery plants hard hit, many pottery kilns closed down, cotton spinning mills phalanxing workers and the automotive industry seriously embarrassed by a shortage of supplies.



Reserves of Coal at Hornsey (North London) Station of London Northeastern Ry.

Though the British railroads are curtailing their services, they are well provided with stocks of coal. Where in this country the coal would be pitched into a pile and removed by a steam shovel with perhaps some of the earth foundation, in England the lumps are arranged on the outside as carefully as if a masonry wall was being constructed.

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Mine Bureau Economic Plan Hinges on Funds

With the approach of the new fiscal year plans of the Bureau of Mines for the organization of its economic work are beginning to take form. Director Scott Turner and Assistant Director C. P. White up to the present have made no secret of the fact that they have been marking time in the economic end of the Bureau's activities awaiting the availability of funds carried by the 1926-1927 appropriation act.

Although the broad features of the Reynders committee's report recommending the centralization in the Bureau of Mines of the work on the economics of mining have been carried out in part, the details for handling the work inside the Bureau have not been worked out finally. Mr. White's hands have been tied by the complexities of regulations covering the handling of appropriations.

Another uncertainty has been removed in the decision of Congress not to pass coal legislation.

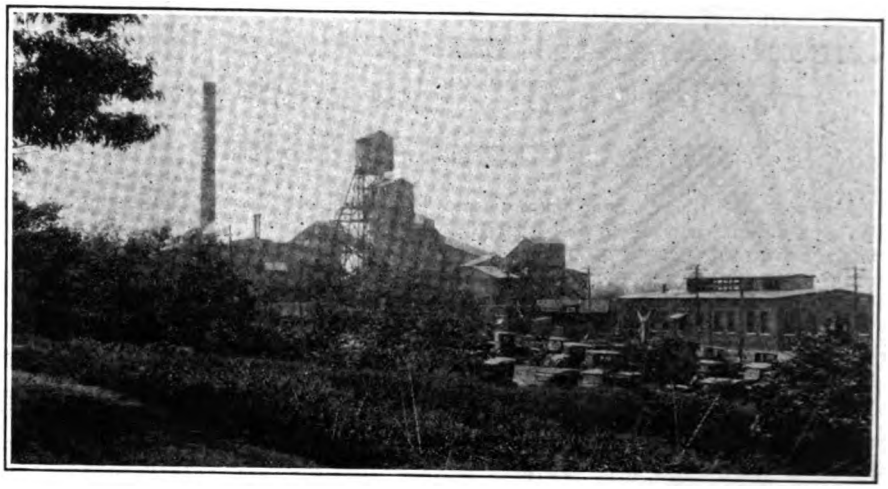
Though the organization plan is still under discussion the underlying principles are becoming clear. Mr. White hopes that his branch can become a great center of information concerning the mining and refining industries. With the economic and technical branches working together he hopes that the Bureau may become the handmaiden of mining in much the same way that the Department of Agriculture is the servant of the agricultural industry.

The problems of organization in reaching the objective include the linking of the economic studies of mining with the engineering studies in such a way as to give the engineers the benefit of the economic viewpoint and give the commodity specialists the advantage of engineering assistance. This can be done by detailing engineers from the technical branch to act, part time, in the economic branch and in some instances by consolidating the economic and technical work under a single commodity chief.

There also is the question of teaming the studies of production and marketing with the studies of the Geological Survey with regard to reserves.

A further need is to tie the statistics of a given commodity with the other economic and engineering studies of that commodity and at the same time provide for the necessary uniformity of statistics on all commodities. This may be done, it is believed, by decentralizing the work. It would be possible to detail the statistical personnel to the commodity divisions and provide for the general co-ordination by some person responsible for the statistical program as a whole.

The report of the U. S. Engineers of the Pittsburgh district shows that in May there were moved on the Monongahela River 1,618,474 tons of coal and 26,582 tons of coke; on the Ohio River in this district, 468,513 tons of coal and 26,582 tons of coke, and on the Allegheny River, 89,550 tons of coal.



Orient No. 1 is Still a Large Mine

While New Orient's production was curtailed for a few months by confining the work to development and repairs, the output of "Old" Orient was boosted from the usual 6,000 tons per day to 8,000 tons. This is raised in mine cars by a huge steam hoist through a shaft approximately 500 ft. deep. The older mine is 3 miles from New Orient.

Ban on Ohio Co-operatives Receives Scant Notice

Word received from all sections of the southern Ohio field indicates that little attention was given to the recent order of the officials of the United Mine Workers in that state relative to union men working on a co-operative basis. This practice had become widespread in the field and following a mass meeting of idle miners at Nelsonville recently, the order was issued.

It was announced that union men would not be allowed to work where their wages would not equal the Jacksonville scale. But outside of a few of the smaller mines which ceased operations, little effect resulted from the order. The larger co-operative concerns continued work and are selling their product at the current market quotations, which seldom if ever net the miners full union wages. It was announced that some of the co-operative concerns made slight changes in their manner of operation and will continue unmolested.

Railroads Using More Coal; Cost Declines

Class 1 railroads of the United States consumed 9,024,910 net tons of coal in locomotives in freight and passenger service during March, 1926, according to the Interstate Commerce Commission. Consumption by districts was as follows: Eastern, 4,389,628; Southern, 2,185,000; Western, 2,450,282 tons. During the corresponding month of 1925 the totals were: Eastern district, 3,917,560 tons; Southern, 1,935,515; Western, 2,296,505; United States, 8,149,580 tons.

The average cost per ton in the Eastern district in March, 1926, was $2.72; Southern, $2.22; Western, $2.93; United States, $2.66. These figures, when compared with those for March, 1925, represent decreases in all districts, as follows: Eastern, 14c.; Southern, 19c.; Western, 17c., and for the country as a whole, 16c.

Teton Coal Co. Asks Lower Rates in Idaho

Backed by the Idaho State Grange, the Teton Coal Co. has filed with the Public Utilities Commission of Idaho a petition requesting that freight rates on coal from the mines of this company to points in Idaho be ordered reduced approximately $1 per ton. The petition sets forth that the present freight rates charged for the hauling of coal in this state are excessively high. This charge is laid at the door of the Union Pacific.

"The defendant's road from Talbot to Pocatello, a distance of 140 miles, follows a water grade and is comparatively straight and easily maintained," recites the petition, "passing, as it does, practically all that distance down the Snake River valley over level ground. The rate in effect from Talbot to Pocatello is $2.20 per ton on lump and $2 on slack, while the Union Pacific R.R. system, of which the Oregon Short Line is part, hauls coal from Boise to Kellogg and Wallace, 547 miles, over three mountain ranges and up the fourth grade, for 55c. per ton in excess of the rate charged from Utah and Wyoming coal fields to Boise."

Plan Naval Coaling Station

The Navy Department is reported from Washington as negotiating to take over from the War Department all or a portion of a tract of 273 acres formerly a part of the army base reservation in Norfolk, Va., for a naval coaling station. The land sought adjoins the coal station of the naval operating base.

Commerce Bodies Study Rates

The Pennsylvania State Chamber of Commerce has notified the Philadelphia Chamber of Commerce that it has set under way a study on a state-wide scale of soft-coal rates. Representatives of the two organizations will be present at a hearing on the problem this week.

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Coal Industry May Escape Legislation If Plan Is Devised Before December To Prevent Interruption of Supply

By Paul Wooton
Washington Correspondent of *Coal Age*

After six ballots had demonstrated that the House committee on interstate and foreign commerce is deadlocked on whether or not any coal legislation should be recommended, the committee on June 16 voted to make the matter the first order of business at the December session.

On the motion to report the Parker bill favorably the vote was 9 to 9. A motion to bring out an unfavorable report also was a tie. An effort then was made to obtain a majority vote on the bill after some of its provisions had been eliminated, but the nine members opposed to the legislation were not satisfied. Another proposed amendment whittled away more of the bill, but the vote still was 9 to 9. In all, four amendments were proposed, but the members opposed to any legislation were unmoved.

There was opposition to the agreement to make coal legislation the first order of business at the December session. It is contended that this is a sort of suspended sentence held over the coal producers. Some members of the committee feel that this will stimulate the industry during the next five months to devise some plan of its own which will make less likely an interruption of coal supply.

Wyant Reiterates Opposition

Representative Wyant, of Pennsylvania, a member of the committee, interprets the action of the committee as follows:

"This means that the committee at this session will not take action on the several socialistic measures designed to strangle the coal industry. Furthermore, as one who has led the fight against political interference with private business, I can assure the public that any attempt to single out this industry for the yoke of bureaucratic control will be fought stubbornly and, I believe, successfully, in the next session of the Congress.

"We are convinced that we are fighting for a supreme public interest when we oppose a movement that would inevitably lead this country into the stormy and thorny path through which Great Britain is now plowing. This nation is a business nation. Insurance against stifling of private initiative on which our prosperity rests means continuing prosperity. And my continued aim and effort, in the interests of the public and of industry, will be to keep the dead hand of government off the coal business.

"In closing, I would say that if we ever do have regulation in this country we will have it with a vengeance. It will not be confined to coal, but will embrace oil and many so-called necessaries of life. In my sober judment such regulation would spell the beginning of the end of a great republic. The importance of this issue, involving bureaucracy and supergovernment of business, cannot be overemphasized. The very foundations of our republic would be imperiled. Having faith in the future, I am confident this hysteria has reached its peak."

The feeling among some, at least, of the advocates of coal legislation is that a cross-section of the interstate and foreign commerce committee would show it to be much more opposed to legislation than the House as a whole and that the membership as a whole would show a substantial majority for the Parker bill, or even more drastic legislation. There are no evidences, however, that many members, other than a few in the anthracite-consuming region, are at all exercised over the failure of the committee to bring out legislation.

This legislative effort was one of the results of the anthracite strike. When the strike began it was predicted freely that its political results would be serious in that it would arouse a demand for regulation that could not be resisted. Despite the fact that the strike established a record in its duration, the expected political pressure was slow in materializing. When it did arrive it was not strong enough to get even the mildest bill on the calendar. Coal legislation at this session of Congress has been given more careful consideration than at any previous session, yet on the final vote it could not command a majority of the committee on interstate and foreign commerce.

Those opposing coal legislation emphasized as their strongest argument that coal should not be singled out for regulation or even near-regulation. Whatever is prescribed for coal should be extended to oil, clothing, food and other necessities of life. This point was used with telling effect and is quite strong enough to convince any ordinary member of Congress unless there are strong countervailing reasons.

Sentiment for Legislation Grows

On the other hand, the result shows that Congress has moved much nearer legislation than it was five years ago. Then with the war prices and the panic of 1920 prices freshly in mind the rather innocuous Frelinghuysen seasonal rate bill was voted down by a large margin in the Senate. At that time there was not even a rumble of legislation in the House. There is little doubt that the present House would have passed any coal bill which the interstate and foreign commerce committee might have reported. In the present Senate more than a majority voted to take up the Copeland bill. It happened that the proposal on which that vote was taken was to make the bill a special order, which requires a two-thirds vote.

Thus it is seen that the slow growth of opinion is in favor of some public supervision of any industry that does not give reliable service or does not prevent the recurrence of abnormal prices. There is no move to regulate oil or clothing or shoes or potatoes because the producers of those articles somehow manage to keep the supply going.

To the mind of the ordinary consumer the fact that he cannot get coal when he wants it, but can get gasoline, makes a great difference. The test of strength shows that the sentiment for coal legislation has not reached the point to carry Congress but that the margin is a narrow one. If the industry can keep the public supplied with coal and prevent unreasonable increases in prices the sentiment will subside, but strike talk next winter is likely to furnish the slight additional pressure which will be needed to put coal legislation on the statute books.

Gold Medal Is Bestowed on Champion Coal Loader

Paul Dobele, a coal loader employed by the Bethlehem Mines Corporation, a subsidiary of the Bethlehem Steel Corporation, has just been given a gold medal by the company for loading 538 tons of coal in 12 working days. The coal was loaded with a hand shovel in the Dakota mine, in West Virginia. Dobele's average daily loading of 45 tons was nearly equal to the amount of coal carried in a full sized railroad coal car.

In France, Dobele's native country, the average yearly production per miner in 150 tons. In Germany and the United Kingdom the average output of coal is 225 tons per year. The average output in the United States is 700 tons. Dobele thus loaded in 12 days almost a year's production of an American miner, more than two years' production of a British or German miner, and over three years' production of a French miner.

Another gold medal has been awarded to Will Miller, the champion coal loader of another Bethlehem mine nearby. Miller loaded 413 tons in 14 days. This was during the first half of October last year. During the entire month of October, consisting of 27 working days, Miller loaded 722 tons of coal.

The medals were presented at the annual first-aid meet, at Barrackville, W. Va., by N. A. Elmslie, division superintendent, Marion Division, of the Bethlehem Mines Corporation.

Accept Less Than 1917 Scale

Employees of the Lincoln Coal & Coke Co., at Keisten, in Fayette County, Pa., have accepted a reduction in wages somewhat below the 1917 scale, at which they were working, in order to enable the company to take a contract which will insure work for several months. The company's plant is in the Connellsville coke region.

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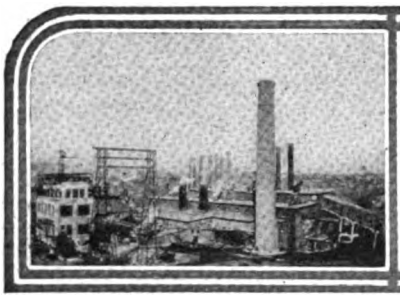

News Items From Field and Trade



ALABAMA

Montevallo Electrifies.—The Montevallo Coal Co. recently spent $60,000 for electric motors to take the place of the old steam equipment. The capacity of the mines has been increased 150 tons daily, now giving a daily output of 600 tons of coal, according to T. A. Thomas. The present officers of the company are T. A. Thomas, president and treasurer; V. J. Nesbit, vice-president, and J. M. Chapman, secretary and sales manager.

ARKANSAS

Spadra Mines to Resume.—Coal mines in the Spadra district are expected to resume operations between June 25 and July 6. The anthracite mines in the Spadra field probably will start work about July 6. J. E. Nichols, district manager for the Midland Coal Co., declared that indications point to a full run of nine months. All disagreements between operators and miners apparently have been settled, W. T. Perkins, local manager, said.

COLORADO

Coal Company to Cut Wages.—The Vickers Coal Co., of Trinidad, operators of a number of mines in Las Animas County, has filed notice with the State Industrial Commission of its intention to put a 10 per cent wage reduction into effect on June 24. The reductions, according to announcement filed with the commission, is effective among all of the employees of the company.

ILLINOIS

To Extend Coal Road.—The St. Louis, Troy & Eastern R.R., a Madison County coal road controlled by the Illinois Power & Light Corp., has been authorized by the Interstate Commerce Commission to build a 1.53 mile elevated extension to connect with the eastern end of the McKinley Bridge, in Venice. The improvement will give the railroad an important connection with the North St. Louis industrial district. The work will cost $863,000, it has been estimated.

The new National mine, at Belleville, reopened June 5, giving employment to 150 miners.

Chicago Firm Bankrupt.—D. E. McMillan & Brothers, 37 W. Van Buren Street, Chicago, has filed a petition in bankruptcy in U. S. District Court, listing liabilities as $194,140.69 and assets as $124,394.15. Failure to meet payrolls was given as the cause. The company was interested in the Sincerity Mining Co., operating in the southern Illinois field. The petition was filed by David E. and John P. McMillan, as D. E. McMillan & Brothers, a partnership. The petition has been referred to a referee and a receiver or trustee is expected to be appointed soon.

The new Edgewood-Metropolis cut-off of the Illinois Central R.R. will be hauling coal from Franklin and Williamson counties by November, according to announcements in those counties. Track has been laid complete for about twenty-two miles south from Edgewood and it is expected that further extensions of the new roadbed will allow shipments into the northwestern industrial fields by early fall or winter.

INDIANA

Air Cleaning Plant for Ayrshire.—The Ayrshire Coal Co. is installing a new coal cleaner at Mine No. 8, at Arthur, Pike County. Work started a few days ago and will be rushed to completion. The coal will be cleaned by air instead of water. The new plant will cost about $100,000 and will be modern in every respect.

Walkout Ended. — More than 100 miners who walked out at Francisco mine No. 2, Princeton, Ind., several days ago following a dispute over division of mine cars have returned to work. It was reported that the district No. 11 mine board, at Terre Haute, advised the men to return to work. The men walked out when the mine management refused to grant their demand that the output of a mine loading machine be limited to the number of cars the machine of four men could load if working by hand. This would have cut the machine's output to one-fourth its capacity.

The Twin Oaks Coal Co., at Linton, has filed a preliminary certificate of dissolution with the Secretary of State.

KENTUCKY

The Hopkins County Mineral & Mining Co., Madisonville, has leased 3,000 acres in Hopkins County for development of coal mining in the near future.

The White Cross will hold a first-aid contest at Pikeville July 5 for the coal mine teams of the Pike Sandy Valley. Many teams have already registered and many others are expected.

The Cameo Coal Mining Co., Mayking, has 900 acres of land under development. The company has a daily output of 400 tons.

The old plant of the Mayking Coal Co., in southeastern Kentucky, idle for a long time, is being placed in running shape, and will be operated by A. B. Ewen, manager of the Ace Coal Co., Caudill, for the Houser Coal Co. A bridge connecting the Mayking spur with the main line of the Louisville & Nashville R.R. is being rebuilt.

MISSOURI

Strip Mine Nearly Ready. — Actual operation by the Howard County Mining Co. on its strip mine project near Higbee will begin soon. A contour map of the entire field has been made by the engineers, showing the location of the coal, the proposed situation of the tipple and other buildings.

The Coil Coal & Mining Co., with headquarters at Madisonville, Ky., has opened a branch office in the Syndicate Trust Building, St. Louis. J. C. Mahen is in charge.

NEW MEXICO

The state may tax coal produced on land leased from the United States, Assistant Attorney General Robert C. Dow ruled in an opinion announced recently. His opinion is in reply to an inquiry from the state Tax Commission.

NORTH DAKOTA

R. M. Stee, of Minot, and others have obtained an option on the John Coffin farm near Velva, with a view to developing the coal which is known to underlie it.

OHIO

Elkhorn City Company Quits.—Contracts with producing companies having expired the Elkhorn City Coal Co., with offices in the Dixie Terminal Building, Cincinnati, has gone out of business. In its place comes the Hatcher-Elkhorn Coal Co., of Big Shoal, Ky., its chief source of supply, which has taken over the offices. A. P. Knedler, former sales manager for the Elkhorn City company, has taken a similar position with the Hatcher-Elkhorn company.

Hughes Paying His Debts.—John Glaser, of the Midland Coal Co., of Cincinnati, who was appointed trustee for the Hughes Coal Co. last autumn, when financial disaster faced the latter company, reports that 80 per cent of the indebtedness has been paid off and prospects are favorable for all debts being paid dollar for dollar. Charles Hughes, head of his company, has worked assiduously to accomplish this and seems well on the way of fulfilling the faith which his creditors placed in him.

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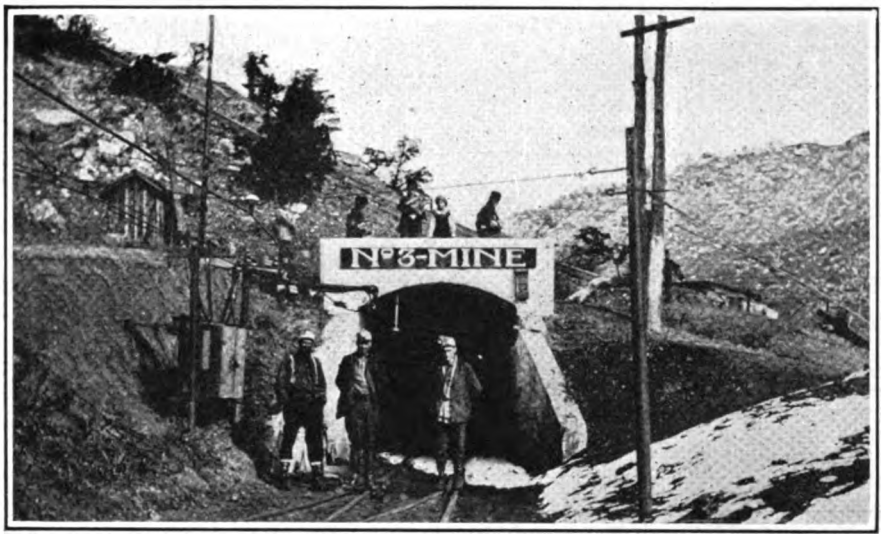

Portal of Main Entry of No. 3 Mine, Phelps Dodge Corporation

Substantial construction marks the modern work of this company. The foliage on the hills, stunted and scattered, marks the semi-arid character of the climate, as well as the height of Dawson above sea-level.

Johnston Mine Closes.—The Johnston mine at Dilles Bottom notified the miners to remove their tools by June 15, as the mine is to be temporarily dismantled. The duration of the shutdown is uncertain.

Chauncey Mine to Close.—The New York Coal Co., with headquarters in Columbus, has announced that mine No. 26, at Chauncey, will be closed down indefinitely. This is due to the fact that the company cannot compete with West Virginia coal as long as compelled to pay the Jacksonville scale. About 400 men were on the payroll and the mine has been operated intermittently for the past four months, averaging about half time. Mine No. 26 of the same company, located at Floodwood, has been closed since January.

Uncover 10 Ft. Seam.—While drilling a test well on the Mills farm, near Mills Station, Gallia County, the drill pierced a 10-ft. seam of coal 350 ft. from the surface. The discovery of this seam has aroused much interest among the land owners of that section.

Toledo Dumpings Heavy.—Dumpings at the Hocking Valley docks at Toledo during the week ended June 9 totaled 340,698 tons as compared with 321,957 tons the previous week. The total dumpings up to that date were 2,106,760 tons as compared with 2,304,825 tons for the corresponding period last season. Dumpings at the New York Central docks during the week ended June 9 were 171,221 tons as compared with 208,989 tons the previous week. Total loadings at these docks to date have been 890,796 tons against 561,295 tons during the same period last season.

PENNSYLVANIA

Limits Medical Allowance.—The Attorney General's Department, in an opinion written by Deputy Attorney General James O. Campbell to Richard H. Lansburg, Secretary of Labor and Industry, holds that the State Workmen's Insurance Board has no authority to authorize payment of more than $100 for medical services, medicines and supplies for employees of policyholders of the state fund entitled, because of injuries received, to have such services and supplies furnished by their employer under the provisions of the Workmen's Compensation act. It also is held that the board has no authority to pay for such services and supplies for a greater period than the first thirty days after disability begins.

Wider Market for Lehigh Field?—The Lehigh & New England R.R. has been leased for 999 years by the Lehigh Coal & Navigation Co. to the Reading Company. In anthracite circles it is believed that this may open the way for a heavier tonnage of Lehigh coal being marketed in Philadelphia.

Coal Fall Kills Two.—Two anthracite mine workers were killed by a fall of coal in the No. 8 colliery of the Lehigh Coal & Navigation Co., at Coaldale, June 17.

New Open-Shop Record.—The Pittsburgh Coal Co. reports a new high record for open-shop tonnage during the week ended June 12. Eleven mines of the company in the Pittsburgh district produced 62,235 tons during that week. There are nearly 3,000 men now working in these mines. The average for the week was 2,772 men at work.

WEST VIRGINIA

To Build Two Big Tipples.—Contracts have been awarded for the construction of two large, modern steel tipples for the Pemberton Coal & Coke Co. in the Winding Gulf field. One will be installed at Big Stick and the other at the Watwise mine. The cost will be about $100,000. The structures will be equipped with shaker screens, picking tables, loading booms, refuse-disposal equipment as well as with resizing conveyors. Each tipple will have a capacity of 300 tons an hour.

New Equipment for Koppers.—A three-track shaker screen and rope-and-button conveyor is being installed at the Koppers Co.'s mine in Boone County.

At the annual commencement exercises of the University of West Virginia, at Morgantown on June 15, nine men were graduated from the school of mining engineering: Those who will be connected with the coal industry in the immediate future are as follows: C. F. Farmer will join the force of the Crab Orchard Improvement Co. at Eccles, Raleigh County; P. H. Gillie will become a safety director of the West Virginia state Department of Mines; H. G. Kennedy and I. A. Given will make a study of mining methods in West Virginia, and G. E. Fish will join the Island Creek Coal Co., at Holden, Logan County.

James M. Thompson, an employee of the Amherst Coal Co., Logan, was fined $10 recently for failing to timber his working place. Fred Maxwell, an employee of the Chafin-Jones-Heather Coal Co. at Peach Creek, Logan County, was fined $50 for shooting six holes before cleaning up the bugdust, thereby increasing the hazard of a dust explosion.

The Fall River Pocahontas Collieries Co., a New York corporation, has reduced its capital stock from $90,000 to $30,000, according to a certificate filed in the office of the Secretary of State in Charleston.

Air Locks at Bethlehem Mines—Success is said to have followed the installation of a double air-door lock recently installed as an experiment by the Bethlehem Mines Corporation in its mines No. 41 at Barrackville and No. 42 at Dakota. The lock is designed to prevent short-circuits in aircourses. A latch, operated by a cable and spring, prevents more than one of the two doors being opened at a time. When door No. 1 is closed, a cable connecting with the latch on door No. 2 tightens, drawing the latch away and releasing door No. 2. When door No. 2 is then opened the same principle is reversed, releasing a cable attached to the latch on door No. 1. A spring, behind the latch, forces it into place so as to lock the door until No. 2 is closed again.

The Bethlehem Mines Corporation has thoroughly rock-dusted both No. 41 and No. 42 mines here, No. 41 having received five treatments and No. 42 four treatments.

Baxter Falls in Line—With three of its largest mines, Nos. 261, 251 at Coalwood and No. 86 at Carolina, using only permissible equipment, the Consolidation Coal Co. is now installing permissible equipment in its No. 96 mine at Baxter.

Opens Old Mine—Idle for several years, the old Ehlen mine of the Consolidation Coal Co., near Shinnston, will be reopened within the next few weeks. Workmen are now busy cleaning up in preparation for the opening. This mine formerly loaded some of the best coal mined in the Fairmont region, the bed being thick and containing a good grade of Pittsburgh coal.

Short-Circuit Fire—A small fire, believed to have started from a short-circuit in the electrical wiring, occurring in the First street mine of the Glendale Gas Coal Co. at Moundsville recently, was extinguished before much damage

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had been done by firemen from the Moundsville city fire department. The only loss was to a little timbering in the mine.

Reopen Mines to 600.—With the resumption of operations at the Wendel and Galloway mines during the first week of June, employment was given to 600 miners in northern West Virginia. The Wendel mine, located in Taylor County, is owned by the Maryland Coal Co. It had not been in operation for about two years. The Simpson Creek Collieries Co. owns and operates the Galloway mine, which is located in Barbour County, midway between Clarksburg and Grafton. The Galloway mine is being operated at capacity. This mine had been idle since Sept. 1. Both mines are on a non-union basis although formerly operated under an agreement with the United Mine Workers.

Another Non-Union Mine — Operations were resumed at the Golden mine of the By-Product Coal Co. in the Scotts Run section of Monongalia County on the morning of June 4. The mine will be run on an open-shop basis. It is owned by the Watson interests of Fairmont, but it has been leased, it is understood to several people in that city. The company has no agreement with the union. With the Golden mine resuming operations there are now 25 non-union plants operating on Scotts run, with no mines operating under agreement with the union. The non-union tonnage totals about 200 cars daily.

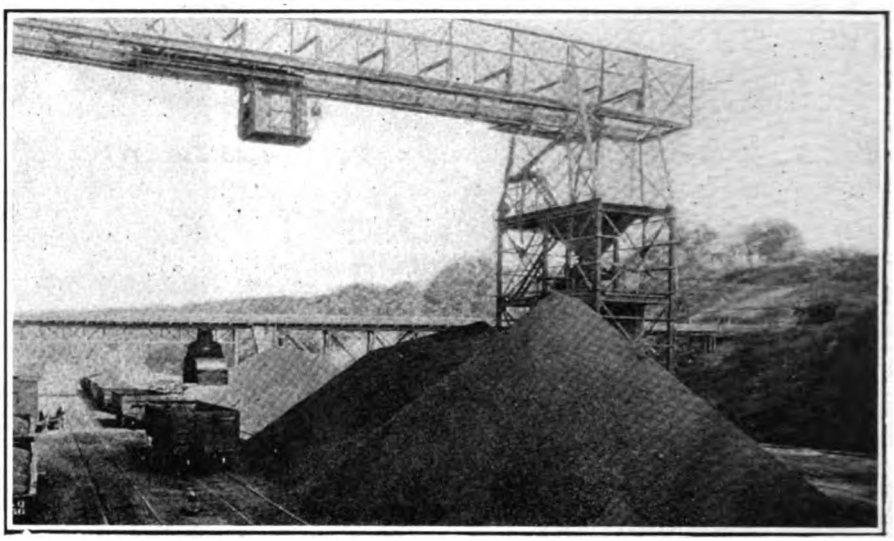
Testing New System—The American Rolling Mill Co., is trying out a four-room system in operating its mines Nos. 1 and 2 at Nellis, Boone County. The idea is to eliminate waste of time in furnishing the cars to the miner at the working face. Instead of one car being placed, four are furnished. The haulage is double-tracked in order to work out the plan.

The Melcraft Coal Co., with offices at 800 Union Trust Bank Building, Pittsburgh, Pa., has been granted permission to hold property and do business in this state. It is planned to operate a coal mine at Coalmont. The officers of the company include J. P. Williams, Jr., vice-president; John S. Briikes, Jr., secretary; L. R. Martin, E. C. Hugh, R. T. Rossell, F. Y. Young and F. J. Holub, all of Pittsburgh. A. W. Mellon is mentioned as a stockholder.

The Wilsondale Coal Co., Huntington, filed a certificate at the office of the secretary of state on June 2, which shows that it has been dissolved.

Improvements completed recently at Montcoal mine No. 1 of the Colcord Coal Co., in Raleigh County, include the installation of a rotary dump, 50 new steel mine cars and the replacement of one mile of track in the yard, 50-lb. rail being put down instead of 30-lb. A storage bin to place nut coal also was erected.

Arrest Law Violators — Eleven arrests were made in May for violations of the state mining laws, according to Robert M. Lambie, chief of the state department of mines. Reports show that $625 was assessed in fines. Infractions consisted of tamping holes with fine coal, shooting black powder without tamping, firing more shots than one at the same time, non-employees entering a mine and operating locomotives without authority and while under the influence of liquor, careless handling of a trip in the main haulage and other violations. The heaviest fines were for $100 which was assessed against two men, jail sentences were imposed in some instances.



Fine Coal Being Stocked at a Cement Works

Plants of the cement industry are the biggest users of pulverized coal. This is used for drying the ingredients and for burning the clinker. Joseph Harrington at the American Wholesale Coal Association's meeting in Toledo, June 8, said that 8,000,000 tons of powdered coal was used annually in cement works and only 5,000,000 tons at steam plants.

Fire Creek Coal Co., at Fire Creek, Fayette County, has let a contract to erect a new steel tipple to replace the one destroyed by fire several weeks ago. This is the oldest mine on New River, having been opened up about 1874. The Fire Creek seam of coal took its name from this concern. The tipple will have a capacity of 500 tons a day and will span three tracks. Shaker screens and loading booms are included.

The Consolidation Coal Co., Fairmont, has made arrangements with the State Department of Health to obtain filtered water from Shinnston for its mining town at Owings, Harrison County. Effort is being made also to have the mining town provided with a proper sewage system. This is among the larger mining towns of the company.

The Buckhannon Fuel Co., Buchannon, W. Va., filed a certificate at the office of the secretary of state on June 5, showing that it has been dissolved.

The Index Mining Co., Parkersburg, W. Va., has reduced its capital stock from $100,000 to $10,000.

The Winfield Coal Co., which has been operating in the vicinity of Meadow Bridge for the last fourteen or fifteen years, is dismantling its plant and removing equipment to Boncar. It is stated that the lease at Meadow Bridge has been practically exhausted.

Davy-Realty Co., Welsh, W. Va., was chartered in the office of the Secretary of State in Charleston, W. Va., on June 12, to develop coal and other minerals. The capital stock is $10,000. The incorporators are : J. H. Barker, Gary; B. O. Swope, G. A. Swope, H. H. Riley and J. N. Harman, Jr., all of Welsh.

Randall Coal Co., Morgantown, has filed a certificate of dissolution at the office of the Secretary of State.

Adamston Mine Resumes.—After being shut down since April 1, the Adamston mine of the Baltimore Coal & Coke Co. has resumed operations and is expected to run continuously. The mine will operate under the open-shop system. It has a capacity of approximately 450 tons daily.

CANADA

Canadian Roads Buy Alberta Coal.—R. C. Vaughan, vice-president of the Canadian National Rys., has announced that his company is placing orders for approximately 1,300,000 tons of coal with Alberta mine operators. The Canadian Pacific Ry. also has placed large orders for coal in that field.

The British Empire Steel Corporation have contracts which will require an output of more than 100,000 tons per week to the close of navigation. The collieries of Cape Breton will shortly be in full operation.

Begin Development Work — Equipment for the development of the McCarthy coal property, at Long Rapids, on the Mattagami River in northern Ontario, has arrived at the property after considerable delay, owing to the breaking up of the winter roads. A force of thirty men will be engaged and development actively carried on. Many claims are being staked out to the east, west and north of the original discovery.

Justice Murphy, in Supreme Court Chambers, appointed the Canadian Credit Mens' Association interim receiver for the Nanoose-Wellington Collieries, Ltd., which has been operating a colliery at Lantzville, near Nanaimo, on Vancouver Island, B. C. The company's total liabilities are placed at $115,000, of which approximately $65,000 are secured.

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Among the Coal Men

R. D. Flippen has been appointed mine supply purchasing agent for the Norfolk & Western Ry., a position recently created. Mr. Flippen was formerly with the Williamson Supply Co. He will have his offices at the Pond Creek Collieries in South Williamson, W. Va. His duties will be to purchase all supplies for the Norfolk & Western operations, including the Vulcan Collieries, at Vulcan; Howard Collieries, at Chattaroy, and the Pond Creek Collieres, all in West Virginia.

C. B. Hotchkiss, assistant general manager of the Utah Fuel Co. of Salt Lake City, Utah, will take over the duties of general sales manager which have been performed by J. S. Critchlow for the past two or three years, but who now becomes general sales representative for the company in California. Mr. Hotchkiss will add Mr. Critchlow's duties to his present office.

Will Huffman, of Stone, Ky., who has been acting general manager of the Fordson Coal Co., has gone west for his health. He has been given a leave of absence of three months. For a time he had been in Richmond, Va.

John Dunn, who was mine foreman of the Fordson Coal Co. (Henry Ford interests) in Kentucky, has accepted a position as superintendent of the Turner Coal Co. at Ragland, Mingo County, W. Va.

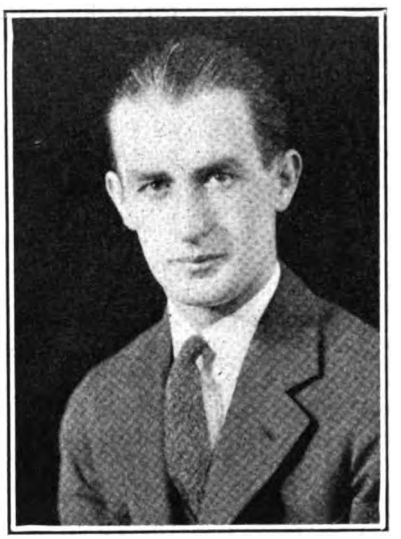
T. A. D. Jones, of New Haven, Conn., coach of the Yale football team and representative of the Wyatt Coal Sales Co. in Connecticut, was one of the guests of the Kanawha Country Club opening on June 12 and 13 in Charleston, W. Va. Other coal tradesmen among the invited guests were: S. D. Fobes, of New York City, Eastern manager of the Wyatt Coal Sales Co.; Homer C. Gill of Columbus, Ohio, and Fred Lagg and W. I. Donnelly, both of Cincinnati, Ohio.

Marshall J. H. Jones, assistant to the president and general superintendent of mines, and M. D. Gibson, chief engineer, of the Bertha-Consumers Co., are at the company's Eureka mine, near Morgantown, W. Va., superintending the installation of a river tipple. When this work has been completed and the federal government has finished Lock No. 7, the mine, it is expected, will be operated at capacity.

M. R. Barrios, of Havana, Cuba, president of the American Coals Co., was a recent visitor to the southern West Virginia coal field. He called on officials of the Wyatt Coal Sales Co. in Charleston, W. Va.

Fred S. Lamb, of Pittsburgh, Pa., has been named receiver of the Short Creek Coal Co., an Ohio corporation. The receiver was appointed on the petition of William W. Keefer, of Pittsburgh, who alleges that the company owes him $86,000 on two promissory notes in addition to having other liabilities totaling $2,500,000. Mr. Keefer admits that the company is solvent, but says it is unable to meet its obligations due to the condition of the coal market. The value of the company is placed at $4,000,000, and it is said to have a capacity of 900,000 tons per year.

Dr. T. D. Scales, owner of the John Bull and Erie Canal coal mines, near Boonville, Ind., has been re-elected a director in the Hoosier State Automobile Association, which position he has held since the death of former U. S. Senator James A. Hemenway, of Boonville, about four years ago.



Jerome C. White

Jerome C. White, research engineer, Davis Coal & Coke Co., Thomas, W. Va., has accepted an editorial position on the *Coal Age* staff. Mr. White was born at Sonman, Cambria County, Pennsylvania, in 1896, graduated at Allegany College, Allegany, N. Y., and gained his early experience in engineering at the operations of the Rochester & Pittsburgh Coal & Iron Co. and the Buffalo, Rochester & Pittsburgh R.R. In his first year out of college he worked in mines in Colorado and British Columbia. He became mine foreman for the Penker Mining Co., Portage, Pa., later enlisting in the U. S. Navy. After the war he returned to the Penker Co. In 1922 he was associated with the purchasing department of the Lorain Steel Co., at Johnstown, Pa. He assisted in the planning and development of the Lindsey Coal Mining Co., of Corinth, W. Va. In 1924 he attended the Graduate School of Business Administration at Harvard University and at the end of the year joined the staff of R. P. Maloney, vice-president and general manager, Davis Coal & Coke Co.

Capt. James O'Boyle, president of the Pittston Coal Mining Co., of Pittston, Pa., received an honorary degree at the recent commencement exercises held at Holy Cross College, at Worcester, Mass.

Erskine Hewett, William P. Gest and Walter C. Janney have been named to represent the board of managers of the Lehigh Coal & Navigation Co. on a committee of six which will review the capital structure of the company and report back to the managers. The representatives of the stockholders on the committee are Samuel S. Walker, Walter L. Haehnlen and Thomas S. Gates.

Obituary

Thomas F. Farrell Killed In Train Wreck

Thomas F. Farrell, vice-president of the Pocahontas Fuel Co., New York City, was killed in a collision of trains on the Pennsylvania R.R. near Blairsville, Pa., on June 17. He was returning from the convention of the National Coal Association, at Chicago, having been re-elected a director from West Virginia. His company has operations in Mercer and McDowell counties, in the southern West Virginia field. Mr. Farrell was a native of Sandusky, Ohio, and as a young man entered the employ of the Big Four railroad, later becoming connected with the traffic department of the Chesapeake & Ohio Ry. in Cincinnati. Probably 25 years ago he joined the old New River Coal & Coke Co. at Thurmond, W. Va., and became general manager of the western sales office in Cincinnati. After being with that firm about 12 years he joined the Pocahontas Coke Co., with headquarters at Bramwell, W. Va., and still later joined the Pocahontas Fuel Co. At the time of his death he was a director of the Smokeless Coal Operators' Association of West Virginia. During the World War he was a member of the committee from the Smokeless Coal Operators' Association to co-operate with the U. S. Fuel Administration.

After the National Coal Association meeting Mr. Farrell went to Notre Dame, Ind., to attend the commencement exercises, where one of his sons was graduated. This son was with him at the time of the accident, although he was not seriously injured, accordingly to reports.

Otto Michaelis, one of the best known operators of modern mines in the Standard field of Illinois, died suddenly June 8, at his home in Belleville, Ill., after a short illness. Born Dec. 17, 1875, in Belleville of a father who was at that time a coal-mine operator in the Standard field, he became a miner when old enough to work in the mines and retained his connection with the industry until his death. He and his brother up until two years ago operated from one to four mines at different times. The Superior mine at Belleville under his supervision was for many years noted for its economical management.

Louis T. Krebs, of Morgantown, W. Va., 50 years old, in charge of the Morgantown offices of the W. A. Marshall Co., coal brokers, of Philadelphia, Pa., died at his home June 15. Mr. Krebs had been associated with the W. A. Marshall Co. for several years and lived in Morgantown for 25 years. He was a member of the staff of the late Governor William E. Glasscock from 1909 to 1913.

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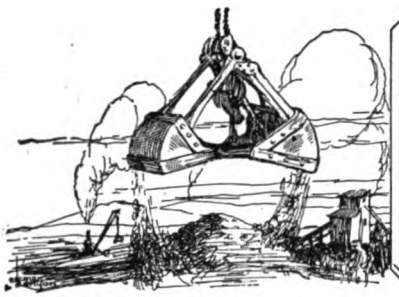
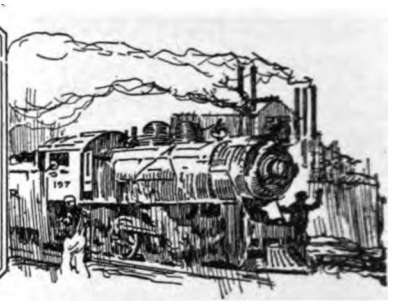


Production And the Market



First Visible Effect of British Strike Seen in American Market; Price Change Slight

Development of a stronger demand for West Virginia high-volatile coal was the outstanding feature in the bituminous markets of the country the past week. This demand is directly attributable to the British strike and marks the first time that the cessation of British production has left a visible impress upon the market. At the outset of that strike there was a brief flurry, which disappeared as quickly as it came. Since then there has been some quiet, intermittent buying, but the volume did not become noticeable until a few days ago.

During the past week there were about sixty vessels waiting for cargoes at the southern loading piers. A number of boats also cleared from Baltimore. It was reported that British interests were in the market for 1,000,000 tons to be used on the railroads and in the gas plants of the United Kingdom. As a result of this demand, pier prices on pools 5, 6 and 7 increased 45 to 50c. per gross ton. Inland prices, while firmer, advanced only a fraction of that range.

Little Change in Price Levels

These increases, however, had little effect upon the general level of spot prices throughout the country. Pool prices at Baltimore were slightly higher. Boston prices also were higher. The general run of pool quotations at New York and Philadelphia were unchanged. Inland prices, other than those directly in the sweep of the buying movement, either remained stationary or declined. *Coal Age* Index of spot bituminous prices as of June 21 stood at 158 and the corresponding price was $1.92. This was an increase of two points and 3c. over the preceding week.

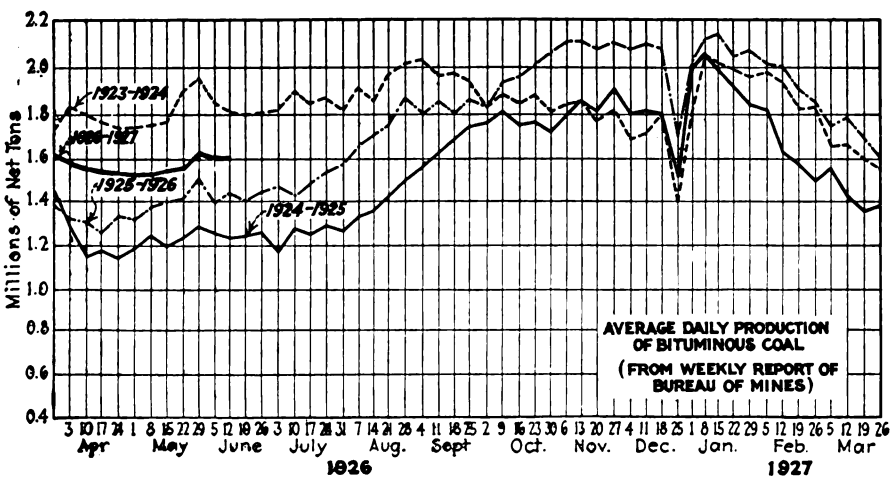
Production of bituminous coal is slowly contracting. Although the output for the week ended June 12, estimated by the Bureau of Mines at 9,600,000 tons, was 940,000 tons greater than the week preceding, that increase merely represented the recovery from the holiday depression. The actual daily rate of output showed a slight decrease. It does not appear at the present time that there will be an early substantial change in the current rate of production. More can be looked for, perhaps, in the shifts of centers of output.

Lake Movement Well Maintained

The lake trade is one of the strongest sources of support for present production. During the week ended June 20 lake dumpings totaled 998,341 tons of cargo and 46,178 tons of vessel fuel. This brings the total for the season to date to 8,299,150 tons, as compared with 7,113,347 tons for the corresponding period a year ago. 5,687,865 tons in 1924 and 9,096,840 tons in 1923. Anthracite dumpings the preceding week ended were 113,711 tons.

The recovery in anthracite production during the week ended June 12, when output was estimated at 2,083,000 net tons, hardly reflects the market situation. As a matter of fact, the principal consuming centers report a diminishing demand for domestic sizes. In sympathy with this decline several of the independent producers have adopted a policy of voluntary suspension of operations for two days a week. In no other way does it seem possible to check the downward movement of spot prices on independent domestic tonnage and the collapse of quotations on steam sizes.

The Connellsville coke market is a humdrum affair. Prices have shown no change because the spot demand has been so light. Production, however, is declining and there is little surplus tonnage offered—so little in fact, that substantial orders probably would mean an advance in furnace quotations.



Estimates of Production

(Net Tons)

		1925	1926
BITUMINOUS			
May 29		8,141,000	9,683,000
June 5 (a)		8,375,000	8,660,000
June 12 (b)		8,622,000	9,600,000
Daily average		1,437,000	1,600,000
Cal. yr. to date	(c)	212,592,000	243,004,000
Daily av. to date		1,539,000	1,757,000
ANTHRACITE			
May. 29		1,681,000	2,089,000
June 5 (a)		1,634,000	1,678,000
June 12		1,825,000	2,083,000
Cal. yr. to date	(c)	39,706,000	31,063,000
BEEHIVE COKE			
June 5 (a)		130,000	195,000
June 12 (b)		136,000	196,000
Cal. yr. to date	(c)	4,931,000	6,169,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

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Middle Western Coals Sluggish

Neither steam nor domestic coals are active in the Illinois and Indiana producing fields. Large industrial consumers are withholding orders in spite of the fact that production of fine coal has been curtailed because demand for the larger sizes is so small. A number of Chicago plants claim that current stocks must be reduced before any large-scale purchasing is resumed. St. Louis, too, is backward. Standard prices, except on central Illinois lump and screenings, continue firm.

There is, however, enough regular business moving to keep Illinois output up to 1925 levels, but Indiana is slipping. Much of this tonnage is for industrial consumption. All fields are loaded down with "no bills" of domestic sizes. Strip mines have the edge on competitive business in southern Illinois. The Duquoin district just limps along. Railroad tonnage is the support of the Mt. Olive field. The Standard district is still selling at a loss.

In the domestic market, Eastern coals command the trade. There is a steady demand for smokeless mine-run in the Chicago district and a fair movement of lump, egg and nut to country yards. Retailers have found the Eastern high-volatiles an attractive buy. Anthracite demand is slow. Coke is seasonably active. There is very little storage business being booked in the St. Louis market.

Kentucky Continues Improvement

Improvement, both in all-rail shipments and in the tonnage moving to the lakes, characterizes the eastern Kentucky trade. In the western part of the state, however, complaint is made that the demand from markets north of the Ohio River is not living up to the rosy hopes expressed when the new sales arrangements were made several weeks ago. Nevertheless, recent production figures show weekly outputs considerably in excess of the totals for 1924 and 1925.

The heavier rate of shipment to the lakes has weakened the prices on slack coal from the eastern fields and western screenings have reacted in sympathy. The general range in both fields now is $1@$1.15. Some eastern producers also have sold block at $1.75@$1.80. Most operators, however, ask $2@$2.35. Aside from these defections and a little quiet shading here and there on specific orders, the general level of spot quotations is unchanged.

The market at the Head of the Lakes is still in a state of flux. Dock operators, however, are consoling themselves with the thought that prices will become stabilized on the basis of the recent reductions. One dock officially has reduced its price on Elkhorn lump and stove 75c.; splint, 75c.@$1; Hocking, 35@50c. Screenings are weak. Kentucky and Pocahontas screenings are offered at $4 and other grades are $3.75.

No further reductions are expected. Most of the large steam contracts have

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	June 22 1925	June 7 1926	June 14 1926	June 21 1926†
Smokeless lump	Columbus	$2.85	$3.10	$3.10	$3.00@$3.25
Smokeless mine run	Columbus	1.85	2.05	2.05	**2.00@ 2.20**
Smokeless screenings	Columbus	1.30	1.25	1.25	1.20@ 1.35
Smokeless lump	Chicago	3.10	3.00	3.00	2.75@ 3.25
Smokeless mine run	Chicago	1.95	1.90	1.90	1.85@ 2.00
Smokeless lump	Cincinnati	2.85	3.10	3.00	3.00
Smokeless mine run	Cincinnati	1.85	2.00	2.00	2.00
Smokeless screenings	Cincinnati	1.20	1.35	1.30	1.25@ 1.35
*Smokeless mine run	Boston	4.25	4.50	4.30	**4.35@ 4.50**
Clearfield mine run	Boston	1.75	1.80	1.75	**1.65@ 2.00**
Cambria mine run	Boston	2.10	2.05	2.00	**2.00@ 2.25**
Somerset mine run	Boston	1.95	1.90	1.85	**1.75@ 2.10**
Pool 1 (Navy Standard)	New York	2.55	2.60	2.60	2.50@ 2.75
Pool 1 (Navy Standard)	Philadelphia	2.60	2.65	2.65	2.50@ 2.80
Pool 1 (Navy Standard)	Baltimore	1.85	2.00	2.00	**2.05@ 2.15**
Pool 9 (Super. Low Vol.)	New York	2.00	2.05	2.10	2.00@ 2.25
Pool 9 (Super. Low Vol.)	Philadelphia	2.00	2.10	2.10	2.00@ 2.25
Pool 9 (Super. Low Vol.)	Baltimore	1.75	1.80	1.80	**1.00@ 1.90**
Pool 10 (H.Gr.Low Vol.)	New York	1.85	1.85	1.85	1.75@ 2.00
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.70	1.85	1.85	1.75@ 2.00
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.60	1.65	1.65	**1.70@ 1.85**
Pool 11 (Low Vol.)	New York	1.55	1.65	1.70	1.60@ 1.80
Pool 11 (Low Vol.)	Philadelphia	1.55	1.55	1.55	1.45@ 1.70
Pool 11 (Low Vol.)	Baltimore	1.40	1.60	1.60	**1.00@ 1.65**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.50	1.40	1.40	*1.30@ 1.50*
Pool 54-64 (Gas and St.)	Philadelphia	1.50	1.45	1.45	1.35@ 1.55
Pool 54-64 (Gas and St.)	Baltimore	1.45	1.40	1.40	**1.45@ 1.50**
Pittsburgh sc'd gas	Pittsburgh	2.40	2.25	2.25	2.20@ 2.30
Pittsburgh gas mine run	Pittsburgh	2.15	2.00	2.00	1.90@ 2.10
Pittsburgh mine run (St.)	Pittsburgh	1.95	1.80	1.75	1.60@ 1.90
Pittsburgh slack (Gas)	Pittsburgh	1.50	1.35	1.20	**1.20@ 1.30**
Kanawha lump	Columbus	1.85	2.05	2.05	1.85@ 2.25
Kanawha mine run	Columbus	1.40	1.55	1.55	1.40@ 1.75
Kanawha screenings	Columbus	1.05	1.05	1.05	.95@ 1.15
W. Va. lump	Cincinnati	2.30	2.25	2.10	**2.00@ 2.50**
W. Va. gas mine run	Cincinnati	1.50	1.50	1.50	**1.50@ 1.75**
W. Va. steam mine run	Cincinnati	1.40	1.35	1.35	**1.35@ 1.50**
W. Va. screenings	Cincinnati	1.15	1.15	1.05	**1.00@ 1.25**
Hocking lump	Columbus	2.15	2.35	2.35	2.25@ 2.50
Hocking mine run	Columbus	1.50	1.55	1.55	1.40@ 1.70
Hocking screenings	Columbus	1.30	1.10	1.10	1.00@ 1.20
Pitts. No. 8 lump	Cleveland	2.20	2.15	2.15	*1.80@ 2.50*
Pitts. No. 8 mine run	Cleveland	1.85	1.70	1.80	*1.70@ 1.80*
Pitts. No. 8 screenings	Cleveland	1.45	1.25	1.30	*1.20@ 1.30*

Midwest	Market Quoted	June 22 1925	June 7 1926	June 14 1926	June 21 1926†
Franklin, Ill. lump	Chicago	$2.60	$2.60	$2.60	$2.60
Franklin, Ill. mine run	Chicago	2.35	2.25	2.25	2.25
Franklin, Ill. screenings	Chicago	2.10	1.65	1.80	1.60@ 2.00
Central, Ill. lump	Chicago	2.35	2.30	2.30	*2.25*
Central, Ill. mine run	Chicago	2.10	2.05	2.05	2.00@ 2.15
Central, Ill. screenings	Chicago	1.75	1.75	1.75	*1.40@ 1.75*
Ind. 4th Vein lump	Chicago	2.60	2.40	2.40	2.25@ 2.60
Ind. 4th Vein mine run	Chicago	2.35	2.15	2.15	2.10@ 2.25
Ind. 4th Vein screenings	Chicago	1.85	1.80	1.85	1.75@ 2.00
Ind. 5th Vein lump	Chicago	2.25	2.15	2.15	2.00@ 2.35
Ind. 5th Vein mine run	Chicago	1.95	1.95	1.95	1.85@ 2.10
Ind. 5th Vein screenings	Chicago	1.50	1.40	1.45	1.40@ 1.50
Mt Olive lump	St. Louis	2.50	2.35	2.35	2.25@ 2.50
Mt. Olive mine run	St. Louis	2.25	2.15	2.15	2.15
Mt. Olive screenings	St. Louis	1.75	1.55	1.55	1.50@ 1.60
Standard lump	St. Louis	2.25	2.25	2.25	2.25
Standard mine run	St. Louis	1.80	1.80	1.80	1.75@ 1.85
Standard screenings	St. Louis	1.70	1.30	1.35	1.25@ 1.50
West Ky. block	Louisville	1.50	1.75	1.80	1.75@ 1.85
West Ky. mine run	Louisville	1.25	1.20	1.25	1.10@ 1.40
West Ky. screenings	Louisville	1.05	1.10	1.10	*1.00@ 1.15*
West Ky. block	Chicago	2.00	1.75	1.75	1.65@ 1.85
West Ky. mine run	Chicago	1.35	1.15	1.15	.95@ 1.35
South and Southwest					
Big Seam lump	Birmingham	2.10	2.30	2.30	2.05@ 2.55
Big Seam mine run	Birmingham	1.75	1.85	1.85	1.75@ 2.00
Big Seam (washed)	Birmingham	1.85	1.85	2.00	**2.00@ 2.25**
S. E. Ky. block	Chicago	2.25	2.40	2.40	2.10@ 2.75
S. E. Ky. mine run	Chicago	1.70	1.65	1.65	1.50@ 1.85
S. E. Ky. block	Louisville	2.25	2.00	2.15	*1.75@ 2.35*
S. E. Ky. mine run	Louisville	1.55	1.35	1.45	**1.35@ 1.65**
S. E. Ky. screenings	Louisville	1.10	1.15	1.15	*1.00@ 1.15*
S. E. Ky. block	Cincinnati	2.40	2.15	2.15	2.00@ 2.30
S. E. Ky. mine run	Cincinnati	1.55	1.50	1.55	*1.25@ 1.75*
S. E. Ky. screenings	Cincinnati	1.10	1.10	1.10	1.00@ 1.25
Kansas lump	Kansas City	4.00	4.00	4.00	4.00
Kansas mine run	Kansas City	2.85	3.00	3.00	3.00
Kansas screenings	Kansas City	2.60	2.50	2.40	2.35@ 2.50

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**; declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	June 22, 1925 Independent	June 22, 1925 Company	June 14, 1926 Independent	June 14, 1926 Company	June 21, 1926† Independent	June 21, 1926† Company
Broken	New York	$2.34	.....	$8.10@$8.70	.....	$8.25@$9.25	.....	$8.25@$9.25
Broken	Philadelphia	2.39		8.60		$9.25		$9.25
Egg	New York	2.34	$8.50@$8.75	8.45@ 8.70	8.50@ 9.25	8.50@ 9.15	8.50@ 9.15	8.50@ 9.15
Egg	Philadelphia	2.39	8.70@ 9.30	8.50@ 8.70	9.00@ 9.85	8.75@ 9.25	*8.50@ 8.75*	8.75@ 9.25
Egg	Chicago*	5.06	7.86@ 8.50	7.44@ 8.18	8.48	9.00@ 9.15	9.00@ 9.85	9.00@ 9.15
Stove	New York	2.34	8.90@ 9.25	8.95@ 9.20	9.25@ 9.75	8.13	8.48	8.13
Stove	Philadelphia	2.39	9.30@ 9.65	8.95@ 9.10	9.15@10.30	9.25@ 9.50	*9.00@ 9.50*	9.25@ 9.50
Stove	Chicago*	5.06	8.22@ 8.70	7.92@ 8.10	8.84	9.35@ 9.50	9.15@10.30	9.35@ 9.50
Chestnut	New York	2.34	8.35@ 8.65	8.45@ 8.70	8.50@ 9.25	8.33@ 8.58	8.84	8.33@ 8.58
Chestnut	Philadelphia	2.39	8.70@ 9.55	8.60@ 8.70	8.75@ 9.15	8.75@ 9.15	*8.00@ 8.75*	8.75@ 9.15
Chestnut	Chicago*	5.06	8.14@ 8.35	7.69@ 8.00	8.75@10.05	9.00@ 9.15	8.75@10.05	9.00@ 9.15
Pea	New York	2.22	4.75@ 5.50	5.00@ 5.70	8.71	8.38@ 8.53	8.71	8.38@ 8.53
Pea	Philadelphia	2.14	5.50@ 5.75	5.00@ 5.40	6.50@ 7.00	6.00@ 6.25	*6.00@ 6.50*	6.00@ 6.25
Pea	Chicago*	4.79	4.91@ 5.36	4.69@ 5.00	6.25@ 6.75	6.00@ 6.35	6.25@ 6.75	6.00@ 6.35
Buckwheat No. 1	New York	2.22	2.00@ 2.40	2.50	6.03	5.65@ 5.80	6 03	5.65@ 5.80
Buckwheat No. 1	Philadelphia	2.14	2.15@ 2 75	2.50	1.75@ 2.25	3.00@ 3.50	1.75@ 2.25	3.00@ 3.50
Rice	New York	2.22	1.75@ 2.00	2.00	2.15@ 2.50	2.25@ 2.75	2.15@ 2.50	2.25@ 2.75
Rice	Philadelphia	2.14	1.85@ 2.00	2.00	1.40@ 1.85	2.00@ 2.25	1.40@ 1.85	2.00@ 2.25
Barley	New York	2.22	1.40@ 1.50	1.50	1.65@ 2.00	1.75@ 2.25	1.65@ 2.00	1.75@ 2.25
Barley	Philadelphia	2.14	1.40@ 1.50	1.50	1.10@ 1.40	1.50@ 1.75	*1.00@ 1.40*	1.50@ 1.75
Birdseye	New York	2.22	.....	1.60	1.50@ 1.75	1.50@ 1.75	1.50@ 1.75	1.50@ 1.75
					1.30@ 1.60	2.00	1.30@ 1.60	2.00

* Net tons, f.o.b. mines. † Advances over previous week shown in **heavy type**; declines in *italics*.

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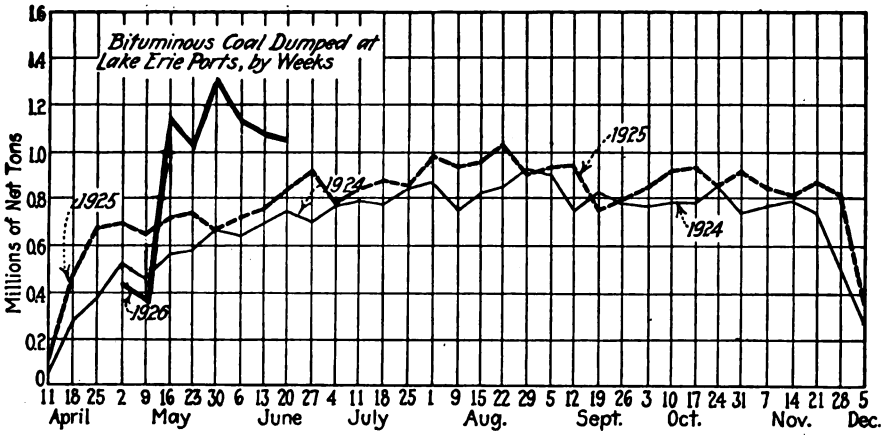


been signed. Retail buying is on a hand-to-mouth basis because of the price demoralization and unfavorable credit situations. Demand for industrial coal over the iron ranges also is light because mining operations have been curtailed and heavy stocks were accumulated earlier in the season. Receipts from the lower lake ports are substantial. The latest report shows 57 cargoes, including seven of anthracite, unloaded in a week.

Northwestern Trade Marks Time

A better industrial outlook is foreseen in the Northwest with more favorable crop prospects. Coal buying at the Twin Cities, however, is quiet. The price war at the docks put all-rail coal out of the running for the time being, as Illinois and Indiana shippers showed no inclination to follow the lead of the docks in price slashing. A steady movement is reported from Milwaukee. Up to June 17 receipts of lake coal at that port totaled 1,045,372 tons, as against 959,073 tons a year ago.

Conditions in the Southwest are steadily improving, but few shaft mines are operating in the Kansas fields. Increasing demand, however, probably will bring these mines into production within a few weeks. There is a brisk storage demand for Arkansas semi-anthracite. Prices generally are unchanged.

Retailers show little interest in storage coal prices made by the Colorado mines. Activity in the steel industry and at the sugar refineries holds up the demand for industrial coals. Colorado prices are firm. Kemmerer-Rock Springs domestic grades are $3.60; steam sizes, $1.10@$1.50. Utah retailers are keeping up their storage stocks, but the public displays less eagerness to take advantage of the low prices which have been made on summer deliveries.

High-Volatile Takes Lead

The tidewater demand for high-volatile coal held the center of the stage in the Cincinnati market last week. Heavy buying for foreign shipment put a number of Kanawha operations on a full-time basis. Logan County, too, enjoyed some of the benefits of the increased demand. All grades of West Virginia high-volatile have advanced in price, but eastern Kentucky did not share in the increase. Low-volatile coals, on the other hand, are sluggish and slack is selling at the same range as that prevailing in the high-volatile fields.

Movement through the Cincinnati gateways last week totaled 13,875 loads, an increase of 704 cars over the preceding week and 896 over a year ago. Louisville & Nashville interchange increased 841 cars; Norfolk & Western 71 cars. Chesapeake & Ohio interchange decreased 213 cars. The total interchange included 4,049 cars destined to the lakes. There were 12,845 empties en route to the mines.

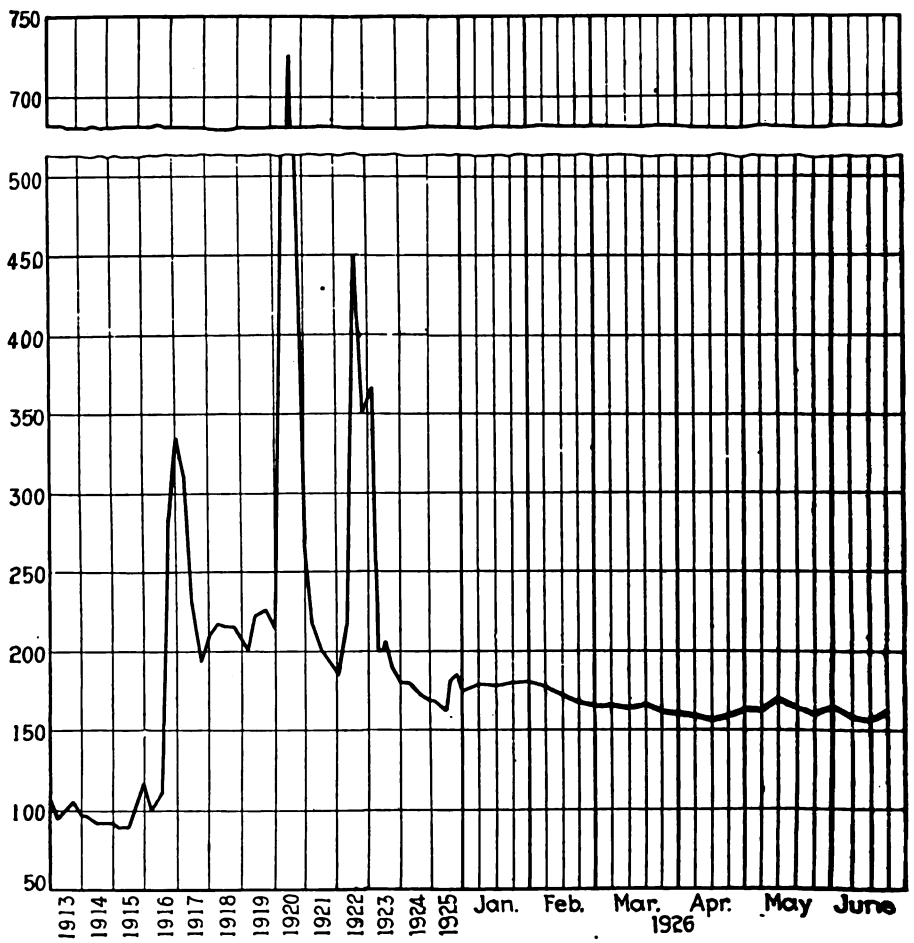
The Cincinnati retail market is so quiet that trade observers are convinced that it could not be revived by price reductions.

A broader demand for domestic grades featured the central Ohio market the past week. Urban dealers were more willing to stock splint and smokeless coals. School contracts also helped the situation. Distress offerings have disappeared and prices generally are steadier. Country buying, however, is backward. Steam demand still is sluggish. A few contracts are renewed from time to time. Spot business is slow. Public utilities and railroads are the largest buyers. Southern Ohio production does not exceed 15 per cent of capacity.

Northern Ohio Prices Weaken

Prices in northern Ohio are erratic. All grades of No. 8 coal were weaker last week. Further declines, particularly on slack, are forecast as the pressure of accumulations from the non-union fields shipping to the lakes increases. There is little life to spot trading at Cleveland. During the week ended June 12 the eastern Ohio district produced approximately 203,000 tons, or 29 per cent of capacity, as compared with 161,000 tons the preceding week and 232,000 tons a year ago.

A nickel gain in the spot prices on gas slack marks the change in the Pittsburgh district market the past



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926				1925	1924
	June 21	June 14	June 7	May 31	June 22	June 23
Index	158	156	157	160	161	166
Weighted average price	$1.92	$1.89	$1.90	$1.94	$1.95	$2.01

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.

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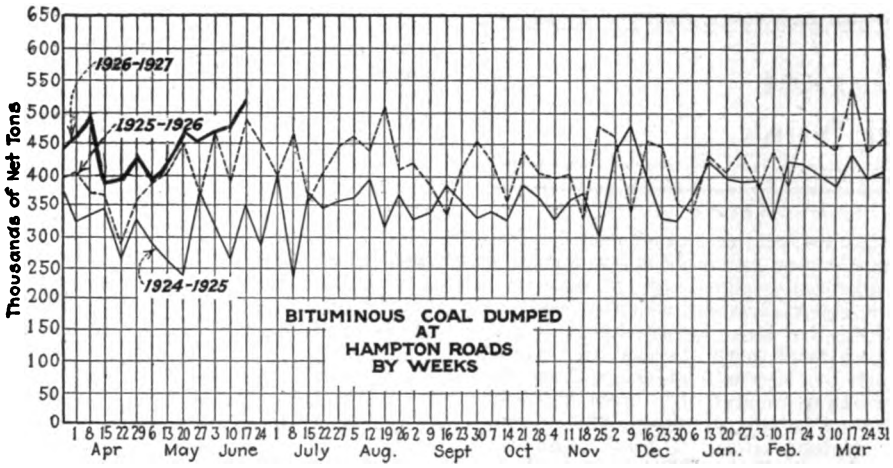


week. There is little storage buying and no real increase in the movement for current consumption. Central Pennsylvania, on the other hand, wears a brighter aspect than the western part of the state because production is slowly forging ahead of May figures. Retail buying is the explanation advanced for the gain. Prices are unchanged.

The Buffalo bituminous market remains a haven of pessimism. There has been a slight increase in gas slack prices, due more to lack of lump orders than to a bigger demand. Nominal quotations are: Pocahontas lump, $2.75@$3; mine-run, $2@$2.25; slack, $1.50@$1.75; Somerset County lump, $2.75@$3; mine-run, $2.50; Westmoreland gas lump or mine-run, $2.50; slack, $1.50; Cambria mine-run, $2@$2.25; Indiana County lump, $2.85; mine-run, $2.10; Fairmont lump, $1.50@$1.65; mine-run, $1.40@$1.45; slack, $1.10@$1.25; Youghiogheny lump, $2.15@$2.35; slack, $1.35@$1.55; Pittsburgh and No. 8 steam lump, $1.65@$1.85; slack, $1.30@$1.50.

Stronger Undertone in New England

In New England the steam coal market seems a shade firmer, due more to curtailed production and increased export inquiry than to any improvement in domestic demand. Navy Standard is up to $4.35@$4.50 at Hampton Roads, although little tonnage is changing hands at the top figure. On cars at Providence or Boston, some interests are asking $5.40@$5.50 per gross ton, but there are others who will make concessions to clean up tonnage.

Outside of inquiries for exports and contracts for the rest of the coal year, the bituminous situation at New York is moribund. The export demand is favoring Kanawha coals. It would not be surprising, however, if low-volatiles also gained. The latter are enjoying a larger movement for bunker fuel. On the contract side of the market, negotiations are impeded by the refusal of Pennsylvania producers to sign up at ruinous prices.

At the present time, factors in the Philadelphia market see nothing to lift the bituminous trade at that point out of the doldrums. Current buying shows no unusual features. Contracts are more or less of a dead issue. Baltimore centers its attention upon the export and bunker movements, both of which are more active. Although local demand has not broadened, the spot market is somewhat stronger in all pools.

Spot steam trade in the Birmingham district is slow. Deliveries against industrial contracts are well maintained, but railroads are taking only minimum allotments. The contract movement of domestic grades is steady. There is little inquiry in the spot market, however, for the medium and lower grades of coal. Spot demand for coke is more active and third and fourth quarter contracting is encouraging. The base contract price on foundry coke is $5.50; spot moves at $6@$6.50. There is some stocking of domestic coke by western dealers.

Anthracite Demand Diminishes

A diminishing demand for domestic sizes of anthracite is reported from the Atlantic seaboard markets. The point has been reached where some of the independents are compelled to shut down two days a week. The adoption of this policy has upset the plans of buyers who had hoped to pick up blocks of independent tonnage at further price concessions. Stove coal leads in demand at both New York and Philadelphia. Pea is easier, but there is no surplus tonnage to be had.

Chestnut is the weakest of the larger sizes. Many retailers are loaded up with this size and will take additional tonnages only in mixed orders. Egg, too, is somewhat sluggish, but not to the same extent as nut. Straight lots of stove, on the other hand, command a premium of 25c. in the New York spot market.

Barley alone of the steam sizes reveals indications of activity—and the signs are none too strong. Buckwheat and rice are a problem to most shippers and price concessions are the order of the day. With the policy of curtailing production adopted by the independents and storage of steam sizes by the larger companies, hopes are entertained that further declines may be checked.

Car Loadings and Supply

	Cars Loaded—All Cars	Cars Loaded—Coal Cars
Week ended June 5, 1926	945,964	155,094
Preceding week	1,081,164	177,600
Week ended June 6, 1925	998,243	153,217

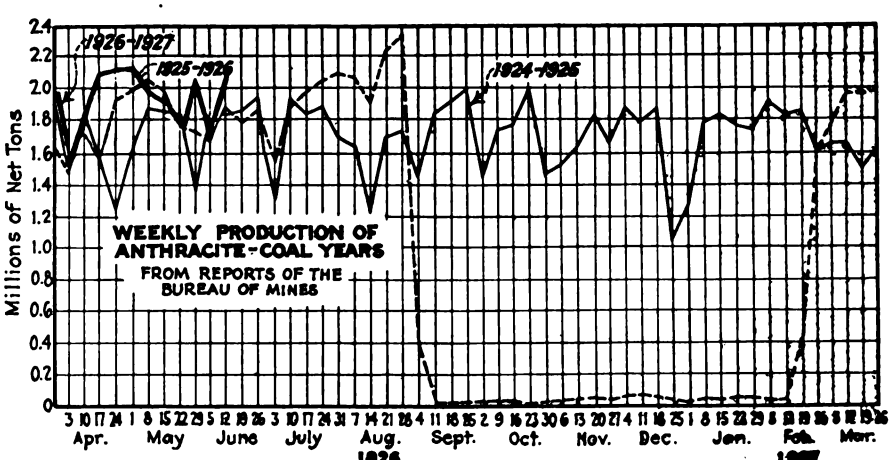
	Surplus Cars—All Cars	Surplus Cars—Coal Cars	Car Shortages—All Cars	Car Shortages—Coal Cars
June 7, 1926	270,841	79,013	.....	.....
May 31, 1926	257,926	75,253	.....	.....
June 8, 1925	318,805	125,785	.....	.....

Lake shipments from Buffalo during the week ended June 17 totaled 77,300 net tons, of which 35,500 tons cleared for Milwaukee, 24,600 tons for Sheboygan, 14,400 tons for Duluth and Superior and 2,800 tons for Sault Ste. Marie.

Spot Connellsville furnace coke is $2.75@$2.90, but there is little tonnage moving. Any real demand probably would send the price to $3. Contracting for third quarter deliveries is proceeding very slowly. There is practically no contract demand for the second half foundry coke as the majority of the foundries seem content to buy on the open market, which holds at $4@$4.50.

Coke production in the Connellsville and Lower Connellsville regions during the week ended June 12 totaled 138,610 tons, according to the Connellsville *Courier*. Furnace oven output was 78,100 tons, a decrease of 2,300 tons when compared with the week preceding. Merchant oven output—60,510 tons—decreased 1,080 tons.

Utility May Use Lignite.—Officials of the Northern States Power Co., from Minneapolis, held a conference at Fargo, N. D., last week to consider the use of lignite coal in their plants. The company has a number of water-power developments with steam auxiliaries, as well as many steam plants. Two immense plants are located in the Twin Cities besides a number of lesser plants in and around the cities. The activities include several street-car systems as well as electric light and power plants.



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Foreign Market And Export News

British Suspension Boon to German Foreign Coal Trade; Restrict Prices and Output

Berlin, Germany, June 5.—The British strike has opened the way to a recovery of some of the export trade lost by Germany during the Ruhr occupation. Slight gains also have been made in the local markets. No attempt, however, has been made to exploit the fuel resources of the country by pushing up production. Prices, too, have been held down to prevent a domestic labor crisis.

The policy being pursued by the German trade is that laid down by the Ruhr syndicate at the beginning of the strike. At that time many operators were inclined to pick up profits where they could and let business drift in the current of events, but wiser counsels prevailed. It was feared that a boom of transient character would be seized upon by labor to further its own interests. German operators did not want a boom at the expense of domestic labor troubles. They refused to be mere stopgaps and accepted only contracts of some duration.

This policy was strengthened by the fact that the capacity of the German coal-mining organization does not lend itself to a sudden large increase of output. At the beginning of the strike the Ruhr syndicate was producing 312,000 tons of bituminous coal per day. This output was pushed up to 352,000 tons the third week of the strike. As the consumption of British coal in Germany amounts to about 12,000 tons per day, the surplus was only 28,000 tons.

It is possible to raise the daily output to 400,000 tons per day. The other fields hardly come into consideration as their combined output is less than half of the Ruhr production and their margin of capacity, not more than about 25,000 tons per day. The total surplus tonnage which Germany could add to normal output, therefore, does not exceed 2,500,000 tons per month, which, of course, is only a fraction of the British output and requires careful husbanding.

On May 1 the Ruhr syndicate had about 9,000,000 tons stored at pits and 400,000 tons loaded in lighters and railway cars. The reserves in all other fields aggregated 700,000 tons. This reserve, however, included a fair percentage of coke, for which during the first month of the strike no visible increase of demand has become noticeable, and of bituminous coal—chiefly lean coal which is of secondary consideration in the export trade. The German reserves are therefore chiefly for domestic consumption and that such is the case has been proved by events. After a full month of the British strike it was stated that the 9,000,000 tons of the Ruhr syndicate had not diminished and only the 400,000 tons in transit were cleared to some extent.

In view of the situation it is clear that German coal mining can profit by the British strike only by recovering such export markets as have been lost during the Ruhr occupation and possibly a small percentage of the market which British coal has had in Germany. A certain amount of success has been achieved in this direction, and a number of long contracts from public institutions in France, Belgium, Finland, Sweden and Denmark have been obtained. This number will increase according to the duration of the British strike and in the same proportion as the coal shortage in Europe grows.

The conditions under which the Ruhr syndicate is booking orders are rather strenuous and nothing less than pressing need is causing foreign buyers to accept them. Such orders are drafts on long sight and there is no doubt that German coal mining will emerge from the situation created by the British strike in a stronger position.

A considerable increase of the German coal export in the months to come is already assured and every week of the British strike is adding to it, but the sudden boom which the German public, including the stock exchange, had expected will be studiously avoided no matter how long the strike lasts.

Alexandria Coal Market Quiet

The May coal market of Alexandria, Egypt, closed quietly with sales 44,000 tons, arrivals 38,000 tons and stocks 90,000 tons, according to a cable to the Department of Commerce from Trade Commissioner Richard A. May, Alexandria. Imports from Germany were 7,000 tons. Arrivals are now negligible. Prices: Cardiff, 260 piastres; Newcastle, 200 piastres.

Franco-Belgian Trade Stronger

Paris, France, June 10.—Each week the British tie-up continues adds to the strength of the coal markets here and in Belgium. Thrown back upon her own resources, France finds it necessary to husband her supplies and the French mines are limiting contract shipments to 70 per cent of contract order.

In view of the instability of exchange, some of the French government bureaus are inserting clauses in coal contracts placed with foreign suppliers fixing payment in francs on a pre-determined rate of exchange for the pound sterling, American dollar, Belgian franc or the reichmark.

Increases in mining rates are the order of the day. Effective June 1, wages in the Loire have been increased 2.25 to 2.75 fr. per day for underground workers, 1.80 to 2.25 fr. for surface adult laborers and 1.25 fr. for girls and boys.

Prices at the pitheads in the Sarre have been advanced 3@8 fr.

April output of coal and lignite in France totaled 4,200,222 metric tons, as compared with 4,566,021 tons in March.

Since May 1 prices on Belgian coals have been raised 9@44 fr. Coking smalls are scarce at 115@117.50 fr. Lean duffs are almost out of the market. Offers of 220@240 fr. bring out little anthracite sorts.

Export Clearances Week Ended June 17

FROM HAMPTON ROADS

	Tons
For Italy:	
Ital. Str. Ada O, for Naples	6,589
Ital. Str. Monbaldo, for Genoa	3,763
For Spain:	
Belg. Str. Burgondier, for Gibraltar	7,121
For Martinique:	
Nor Str. Fram, for Fort de France	3,825
For West Africa:	
Ital. Str. Della Terzo, for Dakar	8,846
Ital. Str. Boba Seconda, for Dakar	3,452
For Canada:	
Ital. Str. Labor, for Three Rivers	5,691
For Brazil:	
Br. Str. Telesfora de Larrinaga, for Rio de Janeiro	7,524
Br. Str. Francis, for Para	3,746
Amer. Str. Western Knight, for Rio de Janeiro	6,519
For Norway:	
Nor. Str. Norsfjord, for Bergen	2,405
For England:	
Br. Str. Grelisle, for River Thames	6,995
Dan. Str. Brosund for an English port	4,452
Br. Str. Emlymain, for River Mersey	7,493
For Cape Verde Islands:	
Br. Str. West Wales, for St. Vincent	7,178
For United Kingdom:	
Dan. Str. Grete Jensen	7,979
Br. Str. Ulmus	4,549
Span. Str. Zabalbide	4,566
Br. Str. Greliven	7,700
Nor. Str. Bjornstjerne Bjornsen	8,183
For Cuba:	
Nor. Str. Sagaland, for Havana	3,871
For Argentina:	
Ital. Str. Gerty, for Buenos Aires	5,095
For Ireland:	
Br. Str. Pacific, for Queenstown	4,220
For Uruguay:	
Du. Str. Park Haven, for Montevideo	6,094

FROM BALTIMORE

	Tons
For Italy:	
Ital. Str. Tirso, for Genoa	7,207
Br. Str. Eastmoor, for Genoa	8,004
Ital. Str. Campania, for Savona	6,964
For England:	
Br. Str. Ethelwold, for Dover	6,399
Br. Str. Rothley, for Liverpool	6,125
Br. Str. Roseden, for Liverpool	6,459
For Irish Free State:	
Br. Str. Wittington, for Dublin	4,681

FROM PHILADELPHIA

For Nova Scotia:	
Nor. Str. Dampfire, for Halifax	——

Hampton Roads Coal Dumpings*

(In Gross Tons)

	June 10	June 17
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week	150,268	135,272
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	78,268	112,247
C. & O. Piers, Newport News:		
Tons dumped for week	193,115	213,747

* Data on cars on hand, tonnage on hand and tonnage waiting withheld due to snippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS

	June 12	June 19†
Pool 1, New York	$5.40@$5.65	$5.40@$5.65
Pool 9, New York	4.90@ 5.15	4.90@ 5.15
Pool 10, New York	4.60@ 4.85	4.60@ 4.85
Pool 11, New York	4.35@ 4.55	4.35@ 4.50
Pool 9, Philadelphia	4.95@ 5.30	4.85@ 5.20
Pool 10, Philadelphia	4.70@ 5.00	4.60@ 4.85
Pool 11, Philadelphia	4.35@ 4.65	4.30@ 4.55
Pool 1, Hamp. Roads	4.40@ 4.50	**4.50@ 4.55**
Pool 2, Hamp. Roads	4.25@ 4.35	**4.35@ 4.40**
Pool 3, Hamp. Roads	3.90@ 4.00	**4.10@ 4.20**
Pools 5-6-7, Hamp. Rds.	4.00@ 4.10	**4.50@ 4.60**

BUNKERS

Pool 1, New York	$5.70@$5.95	$5.65@$5.90
Pool 9, New York	5.15@ 5.30	**5.15@ 5.40**
Pool 10, New York	4.90@ 5.10	4.85@ 5.10
Pool 11, New York	4.60@ 4.80	4.60@ 4.75
Pool 9, Philadelphia	5.20@ 5.55	5.10@ 5.35
Pool 10, Philadelphia	4.95@ 5.25	4.90@ 5.10
Pool 11, Philadelphia	4.60@ 4.90	4.55@ 4.85
Pool 1, Hamp. Roads	4.50	**4.60**
Pool 2, Hamp. Roads	4.35	**4.40**
Pools 5-6-7, Hamp. Rds.	4.10	**4.60**

† Advances over previous week shown in **heavy type**; declines in *italics*.

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Coming Meetings

American Society of Mechanical Engineers. Spring convention at San Francisco, Calif., June 28-30. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

Illinois and Wisconsin Retail Coal Dealers' Association. Thirty-first annual convention, Highland Hotel, Lake Delavan, Wis., June 28-30. Managing Director, N. H. Kendall, Great Northern Hotel, Chicago, Ill.

The **West Virginia Mining Institute** will hold its summer meeting July 13 and 14 at Bluefield, W. Va.

Fifth International First-Aid and Mine-Rescue Contest, San Francisco, Calif., during the first week of September, 1926, under the auspices of the Bureau of Mines, Department of Commerce.

Coal Mining Institute of America. Annual meeting, Chamber of Commerce, Pittsburgh, Pa., Dec. 8, 9 and 10. Secretary, H. D. Mason, Jr., Box 604, Ebensburg, Pa.

New Companies

The Barco Coal Co. has been incorporated in Denver, Colo., with a capital stock of $100,000, by K. S. Barnett, G. B. McClellan, and Fred Hunziker. Address Rothegerber & Appel, 650 Symes Bldg., Denver.

A certificate of incorporation has been issued to the **Rosedale Fuel Co.,** Fairmont, W. Va.; capital $1,000,000. The incorporators are C. H. Humphries, Charles E. Hawker and R. S. Waller, of Fairmont, and James E. Gaskins and Robert D. Bradford, of Morgantown.

Carbondale Coals, Ltd., of Calgary Alta., has been incorporated to mine and deal in coal, with a capital of $300,000. The incorporators include Andrew L. Stevens, William Kemp and Leonard E. Cross.

The Leland Coal Co., Ltd., has been incorporated to mine coal and other minerals, with a capital of $1,000,000, by James H. Prowse, George Gray, Norman R. Shaw and others. Headquarters are at Taber, Alberta.

The Freeport Collieries Co., of Columbus, Ohio, has been incorporated with a capital of $10,000 to own, deal in and operate coal properties of all kinds as well as to deal in coal and coke at wholesale. Incorporators are E. E. Learned, B. W. Gearhart, J. R. Elder, Adam G. Innis and S. D. Doney.

The Cameo Coal Mining Co., of Whitesburg, Ky., has been incorporated with a capital of $10,000, by A. B. Ewen, T. F. McConnell and W. J. Raybould, to operate in the Letcher fields of southeastern Kentucky.

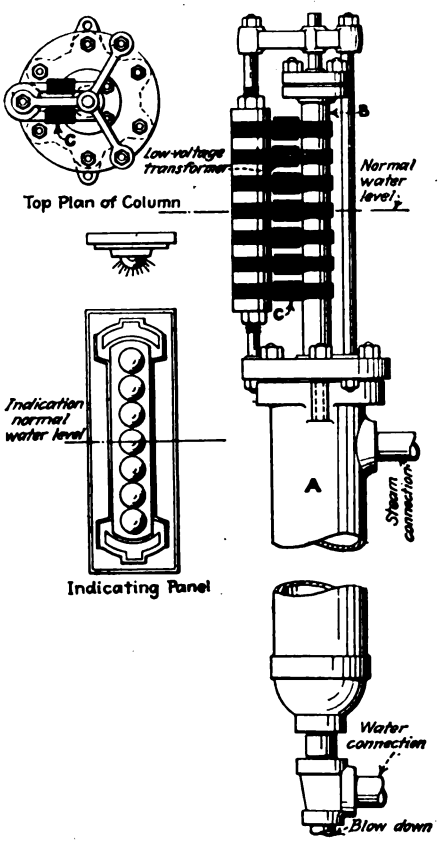
The Wabash Coal & Coke Co., 343 South Dearborn St., Chicago, has been incorporated with 1,000 shares of no par value to mine and deal in coal and other fuel products. The company was organized by E. M. Strachan, A. C. McClelland and Morris Bernstein.

New Equipment

Ace Water-Level Indicator

A type of liquid water-level indicator used for boilers, tanks, etc., known as the "Ace," with which one or more indicating panels may be used and which may be placed adjacent to or at any convenient point some distance from the boiler, has been brought out by the W. B. Connor Co., Inc., 110 West 42d St., New York City.

The indicator consists essentially of a float chamber or column *A* with a special extension tube *B* for the armature, low-voltage transformers *C* and a seven-light indicating panel. The tube *B* is made of non-magnetic metal through which the magnetic flux passes across the pole of the external armature. The low-voltage transformers *C* are located outside the apparatus in order to avoid contact with the live steam. They are also not subjected to any pressure or temperature. The armature actuated by a float in the column *A* and responding to the water level, travels through the magnetic field of seven transformers, giving seven indicating points. The armature is tubular in construction, made of magnetic material and copper plated. The rod connecting the armature to the float is Monel metal. The float is kept as small as possible, namely 3½ in. in diameter, and is made of forged steel suitable for steam pressures up to 600 lb. No guides or other internal mechanisms that would tend to cause sticking and prevent operation are used.



Water-Level Indicator

A float within the water column on the boiler actuates low voltage transformers located above it which energize a bank of remotely situated lamps. These show the level of the water in the boiler.

The transformers, located as they are, are not subject to excessive temperatures and the voltage carried on the primary is between 3 and 4 volts. The output of the secondary transformer when the armature is out of the field is about ¾ volt and with the armature in the field about 3 volts, operating a 3.8 volt light. The device can be used in connection with operating a series of lights of an indicator as illustrated or a graphic chart for permanent record or a high- and low-water alarm signal. The indicators are made for standard pressures of 150, 250, 400 and 600 lb., and the weight is approximately 175 lb. The water column or float chamber of the indicator can be used as an auxiliary to the standard water column as illustrated, or it can be furnished equipped with water gage to replace the existing column.

Switchboards Automatically Control Substation

In the accompanying illustrations may be seen the two switchboards constituting the new Cutler-Hammer automatic substation controller. This apparatus has been so designed that it starts the motor-generator set and automatically provides maximum protection without the expense of an attendant.

This controller is composed of two switchboards, one for the high- and the other for the low-tension current. These boards are interlocked both mechanically and electrically. The low-tension board is really the "master mind" of the control apparatus. It is this board which ferrets out the troubles and guards the motors, generators, machinery and control equipment from damage. It provides automatic starting, stopping and protection to all the equipment.

The apparatus can be made to start by means of a time clock, or a push button which may be located at some remote point. After it is started by either of these methods the low-tension board takes full control, responding immediately to all emergencies as well as to normal conditions.

The following controls are provided in the construction of this low-tension board: Automatic starting from a push-button station; alternating-current, low-voltage release; automatic restart after return of alternating current; dead-phase, reverse-phase, phase-failure and field-failure protection; alternating-current overload protection by means of an instantaneous trip and also by an inverse time limit; thermal protection of the transformers; automatic opening and closing control of the direct-current circuits; direct-current

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overload protection by time limit and also instantaneously; direct-current, low-voltage and reverse-current protection. The board also contains an alternating-current line voltmeter, direct-current ammeters for synchronous motor field, direct-current line voltmeter and a line ammeter.



The Master Mind

This is a front view of the direct-current switchboard. It is interlocked both electrically and mechanically with the alternating-current board, the two forming the complete control. Most of the real control apparatus is, however, mounted on this board.

The high-tension board carries all of the high-tension switching equipment. It is interconnected with the low-tension board, and functions in combination with it. This board also contains a potential transformer, providing dead-phase protection and in addition furnishes low voltage for the alternating-current line voltmeter. High-tension fuses protect this transformer. This board also carries current transformers for use with the overload relays and the alternating-current ammeter. It has also oil-immersed switching equipment consisting of: A 3-pole manually operated oil circuit breaker, arranged for bell-crank operation from the front of the low-tension board; a 5-pole, oil-immersed, magnetic contactor used in starting, which connects the auto-transformer to the line, and the motor starter to the auto-transformer low-voltage tap, during the acceleration period; one 3-pole oil-immersed magnetic contactor used in running.



Alternating-Current Switchboard

Upon the board is mounted the alternating-current switches and some other pieces of equipment. Although the two boards are separate they are so interconnected that they form practically a unit control. Thus although their functions are somewhat dissimilar they operate in conjunction one with the other.

In order to prevent short circuiting the auto-transformer this contactor is mechanically interlocked with the starting contactor so that both cannot be closed at the same time. The transfer from the starting to the running contactors is accomplished by the supervisory relays on the low-tension panel.

In the design of these switchboards, particular attention has been paid to accessibility for inspection and maintenance. All high-tension wiring between circuit breaker and oil-immersed contactors and transformers is made by means of a rigid busbar. Lugs are provided for connecting incoming lines, motor leads, and auto-transformer to the board. An asbestos terminal board near the floor provides easy means of connecting the control and meter circuits to the low-tension panel.

When the control circuit is closed either by push button or time clock, the synchronous motor comes up to speed and the direct-current circuit breaker is closed, connecting the load to the generator. If any trouble exists on either the direct- or alternating-current sides of the set which may damage the apparatus, or if such trouble should occur during operation, the set will automatically shut down until this difficulty is rectified. It will then resume operation automatically.

Recent Patents

Tipple-Screen Cleaner; 1,567,075. James S. Pates, Pittsburgh, Pa. Dec. 29, 1925. Filed Oct. 23, 1919; serial No. 332,711.

Coal Conveyor and Conveying System; 1,567,330. Richard Peale, St. Benedict, Pa., assignor to Rembrandt Peale, St. Benedict, Pa. Dec. 29, 1925. Filed Jan. 13, 1919; serial No. 270,909.

Aerial Tramway Grip; 1,567,391. Edward H. Sackett, Arvado, Colo. Dec. 29, 1925. Filed April 18, 1924; serial No. 707,439.

Overturning Cage; 1,567,522. Daniel F. Lepley, Connellsville, Pa. Dec. 29, 1925. Filed Nov. 2, 1923; serial No. 672,389.

Automatic Mine Door; 1,563,827. Giusto Boggio, Royalton, Ill. Dec. 1, 1925. Filed Sept. 4, 1925; serial No. 54,455.

Grab Bucket; 1,564,041. Clifton N. Windecker, Painesville, Ohio. Dec. 1, 1925. Filed Feb. 25, 1924; serial No. 694,881.

Dustless Rock Drill; 1,564,780. Charles C. Hansen, Easton, Pa., assignor to Ingersoll-Rand Co., Jersey City, N. J. Dec. 8, 1925. Filed Nov. 12, 1924; serial No. 749,374.

Loading Mechanism for Conveyors; 1,564,936. W. C. Cadwell, Anaconda, Mont. Dec. 8, 1925. Filed July 26, 1922; serial No. 577,552.

Method of Producing Mining-Machine Bits; 1,565,052. Newton K. Bowman, Bowdil, Ohio. Dec. 8, 1925. Filed March 12, 1924; serial No. 698,695.

Coal Cutter; 1,565,376. Nils D. Levin, Columbus, Ohio, assignor to the Jeffrey Mfg. Co., Columbus, Ohio. Dec. 15, 1925. Filed Oct. 18, 1917; serial No. 197,291. Renewed April 18, 1925.

Industrial Notes

John W. Guay, formerly sales engineer of the Fort Pitt Steel Casting Co., McKeesport, Pa., has been appointed works manager, and **H. F. Stratton**, formerly in charge of the pattern, mould and core department, has been named superintendent.

Hall-Will, Inc., Erie, Pa., is the name of a firm recently organized for the manufacture of pipe, bolt and nipple threading machines. Leslie S. Hall, formerly vice-president and general manager of the Williams Tool Corporation, who organized Hall-Will, Inc., is its president and general manager, and C. F. Williams, a son of the founder of the Williams corporation, is its vice-president.

Joseph T. Ryerson & Son, Inc., of Chicago, Ill., have taken over the reinforcing bar division of the Penn Metal Co., of Boston.

Wm. L. Moorhead, of the Moorhead Electric Machinery Co., and Gust Reitmeyer, expert in repairing and rebuilding mining equipment, have consolidated their interests and formed the **Moorhead-Reitmeyer Co., Inc.**, 40 Water Street, Pittsburgh, Pa. A complete line of used mining equipment and modern repairing facilities will be available.

The Ohio Brass Co., Mansfield, Ohio, has moved its Chicago office from 1217 to 1714 Fisher Building, 343 South Dearborn St.

The Baltimore office of the **Timken Roller Bearing Service & Sales Co.** was closed May 1. The service requirements of customers in this territory will be supplied through the Richmond, Pittsburgh and Philadelphia branches. T. F. Rose, formerly assistant manager of the Chicago branch of the company, has been appointed manager of the Cincinnati branch. H. C. Sauer has been named manager of the Detroit branch. Fred G. Rumball, formerly manager of the Kansas City branch, has been promoted to the position of sales engineer, automotive division, of the Timken Roller Bearing Co. Mr. Rumball will have his headquarters at Cleveland. The position of branch manager at Kansas City will be filled by J. M. Carey.

The Knoxville (Tenn.) office of the **Sullivan Machinery Co.**, E. L. Thomas, manager, has just moved from 614 Market Street to new and larger offices at 611-15 General Building, 623 Market St.

The Tulley Equipment Co., St. Louis (Mo.) representative of the Climax Engineering Company, Clinton, Iowa, has moved to 2339 Pine Street, where offices and a service station will be maintained.

The A. F. Brown Co., 79 Barclay St., New York City, has removed its sales department and stock room to the general office and works, at Elizabethport, N. J.

The Park Manufacturing Co., makers of motors for special use in coal mines, will start a factory at Petersburg, Ind., it has just been announced. At the present time the company turns out this equipment at Terre Haute, Ind.

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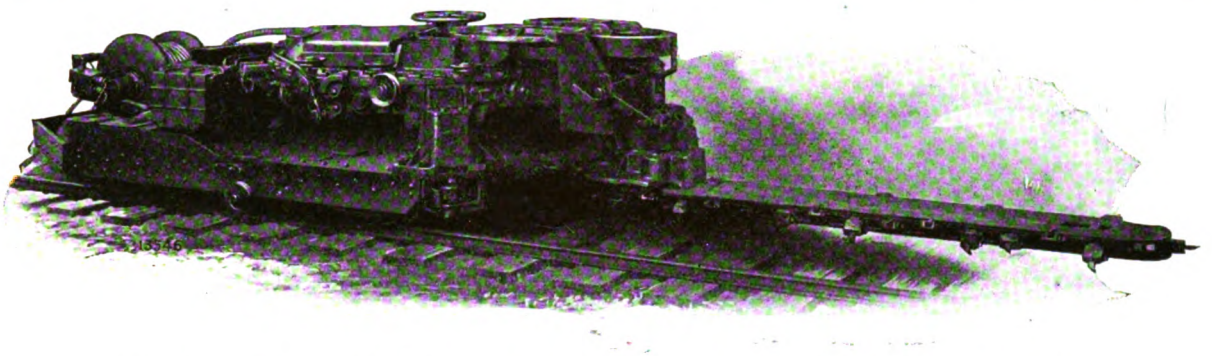
A COMPLETE LINE FOR CUTTING, LOADING, HANDLING & VENTILATING



29-C Arcwall Bottom Cutter. The swivel cutter-bar can be locked in three positions, which permits under-cutting on the bottom without interfering with the track, and leaving no wedge-shaped portion of bottom to be taken up.

29-C "ARCWALL" COAL CUTTER

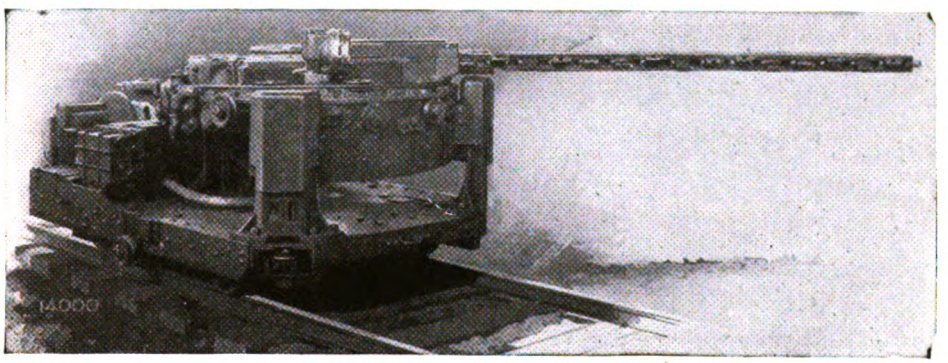
Trade Mark Reg. U. S. Patent Office

THE Jeffrey Arcwall has a wide range of cutting heights —on bottom, or at any place between bottom and roof; in the coal, or in the shale bands or dirt.

Adjustable while in operation to an irregular binder and operated on a truck, which eliminates loading and unloading.

Cuts out dirt bands, insuring a clean, marketable product. Produces more lump coal because light charges of powder may be used — coal is not shattered so much.

Has an average cutting record of 20 to 30 places in eight hour shift.



Jeffrey Permissible Type Arcwall Coal Cutter. Its construction follows the general design of the Standard Arcwall Machine and is Government Approved throughout.

The Jeffrey Manufacturing Company
912-99 North Fourth St., Columbus, Ohio

New York, Philadelphia | Pittsburgh, Scranton, Pa. | Charleston, W. Va., Chicago | Denver, Salt Lake City | Birmingham, Montreal, Canada

Sales and Service Stations

Pittsburgh ..... 600 Second Ave.
Salt Lake City ..... 153 W. Second South St.
Terre Haute, Ind. ..... 319 Cherry St.
Birmingham ..... 26 South 20th St.

Member of the Electric Power Club

JEFFREY
COAL MINE EQUIPMENT

Jeffrey Standard Coal Mine Equipment

Coal Cutters
Combination Cutter and Loader
Drills
Conveyor-Loader
Sectional Conveyor
Pit Car Loaders
Locomotives
Mine Fans
Tipple Equipment
Crushers

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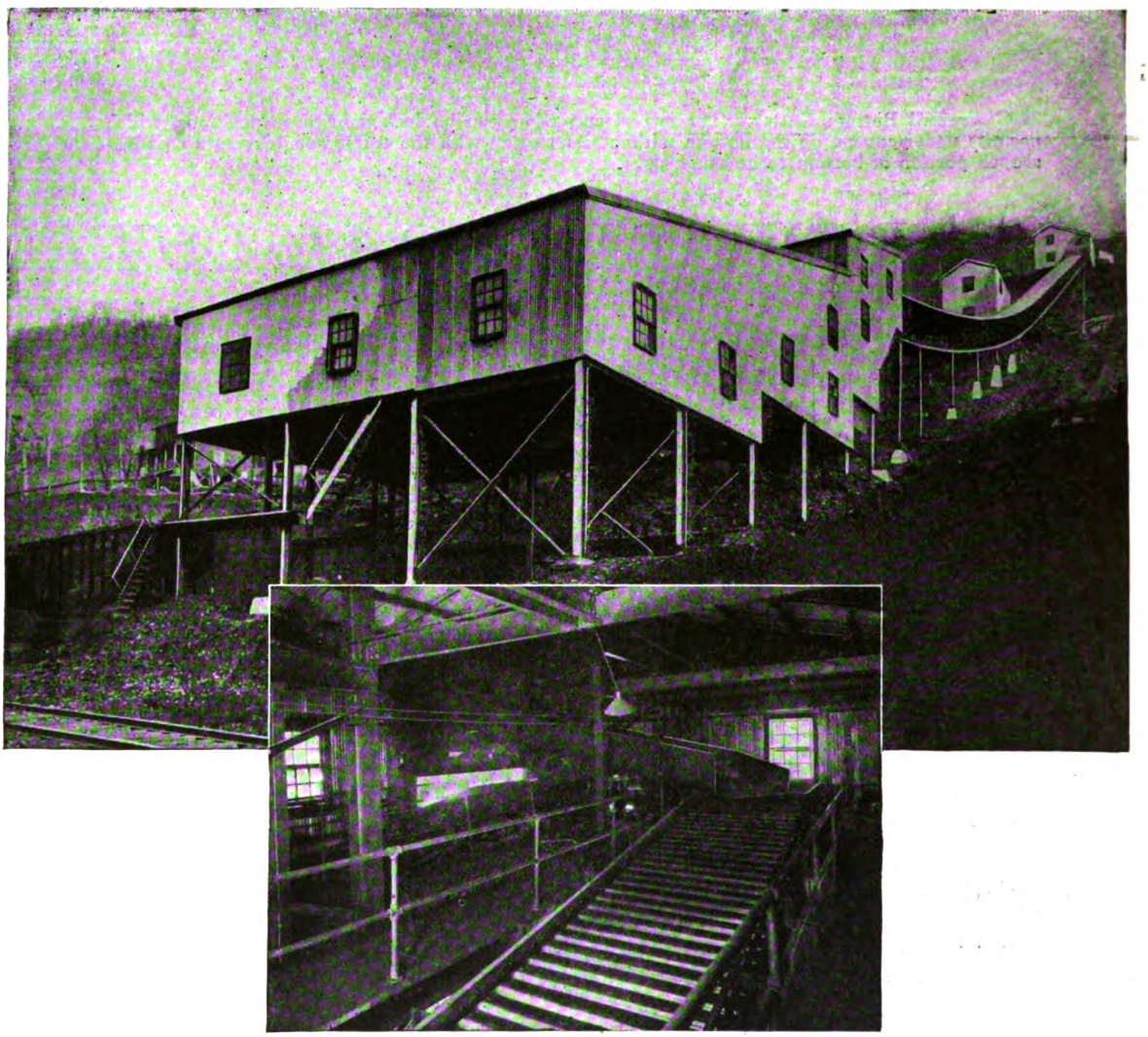
FAIRMONT

WHY? HOW?

LITTLE WORDS BUT THEY CARRY A PUNCH



Why does the successful coal operator better his product?
To broaden his market and secure a higher unit selling price.

How does he better his product?
By putting in the *best screening, cleaning* and *loading equipment* on the market.

FAIRMONT builds the best—Consult our engineers

FAIRMONT MINING MACHINERY COMPANY
FAIRMONT, W. VA.

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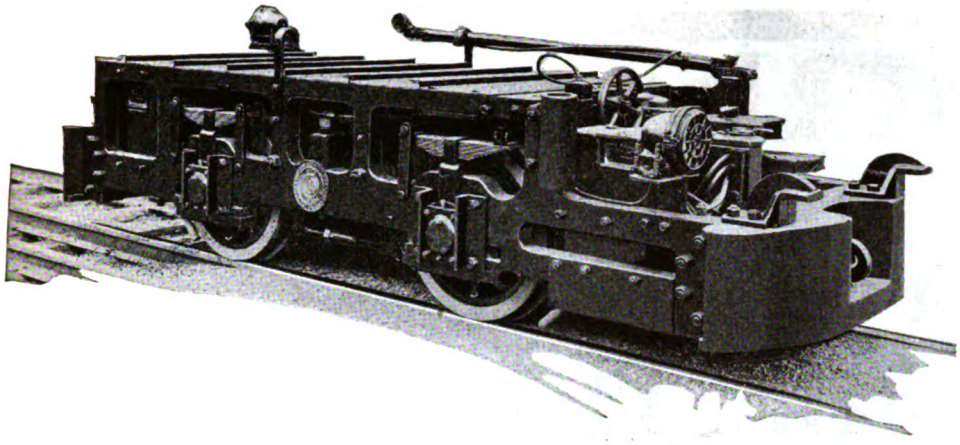

Your answer to— *lower locomotive costs per ton hauled!*

And how can your annual locomotive costs be reduced? Vulcan Electric Locomotives answer this question. They are designed primarily to reduce maintenance and operation costs. They embody the same long-service qualifications as the popularly used Vulcan Steam Locomotives, which have service records of thirty and forty years.

The feature which has done most to make possible Vulcan Steam Locomotive durability, and is now built into the Vulcan Trolley Locomotive, is the 3-point suspension of the chassis. This feature absorbs shock, reduces wear and strain, and cuts down maintenance costs.

Get the complete facts about Vulcan Electric Locomotives—both trolley and storage battery. It will pay you.

VULCAN IRON WORKS
WILKES-BARRE, PA.

New York Office: 50 Church St.

Established 1849

Chicago Office: McCormick Bldg.

VULCAN IRON WORKS OF Wilkes-Barre, Pa. U.S.A.
STEAM GASOLINE ELECTRIC **LOCOMOTIVES**

How and why it's built like the Vulcan Steam Locomotive

Here is the answer to the demand of the industry for a Trolley Locomotive with the same shock-resistant, long-service features as the Vulcan Steam Locomotive.

3-Point Suspension

This 3-Point Suspension of the entire chassis is an exclusive feature of the Vulcan Trolley Locomotive. One pair of springs supports the frame through one set of hangers. One end of another pair of springs is held by other hangers. The opposite ends of the springs engage an equalizing bar extending across the machine and supported in the center. By means of this arrangement shocks are absorbed, the weight is evenly distributed and the locomotive runs smoothly over any ordinary inequalities of track.

Other Features

Cast Steel Bar Frame

Each side frame is cast in one piece and of steel bar design, thus combining maximum rigidity as well as accessibility. The open spaces permit ample ventilation and simplify inspection.

Brake Rigging

The powerful, easily operated brakes, like the other two features, have been adopted in a large degree from Vulcan Steam Locomotive practice.

Vulcan Products

Hoists, Electric and Steam
Locomotives, Steam, Gasoline, Electric
Rotary Kilns, Dryers, Coolers and Roasters
Fairchild Double-Discharge Ball Mill
Mine Ventilating Fans
Cages and Skips
Sheave Wheels
Corliss Engines
Coal Crushers
Gray Iron Castings
Open Hearth Steel Castings
Gears, Moulded and Cut Teeth
Special Machinery

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You Can't Stop This

But You Can Replace the Switch —Quickly

BURNED out contact jaws and blistered blades are inevitable. Equally unavoidable are bends and twists caused by abuse. The huskiest switch is not sufficient protection from such conditions.

The remedy is a switch that is readily accessible and quickly installed. To install the new switch the insulator need not be removed from the line. The switch is readily accessible on top of the insulator.

The new switch always fits. The seats upon which the switch parts rest are machined after assembling on the insulator. Switches are interchangeable.

Sturdy ash side bars and a heavy all-bronze under-run give assurance of long life to the rest of the Double-Gap Section Insulator.

Westinghouse Electric & Manufacturing Company
East Pittsburgh Pennsylvania
Sales Offices in All Principal Cities of the United States and Foreign Countries

Westinghouse

X87895

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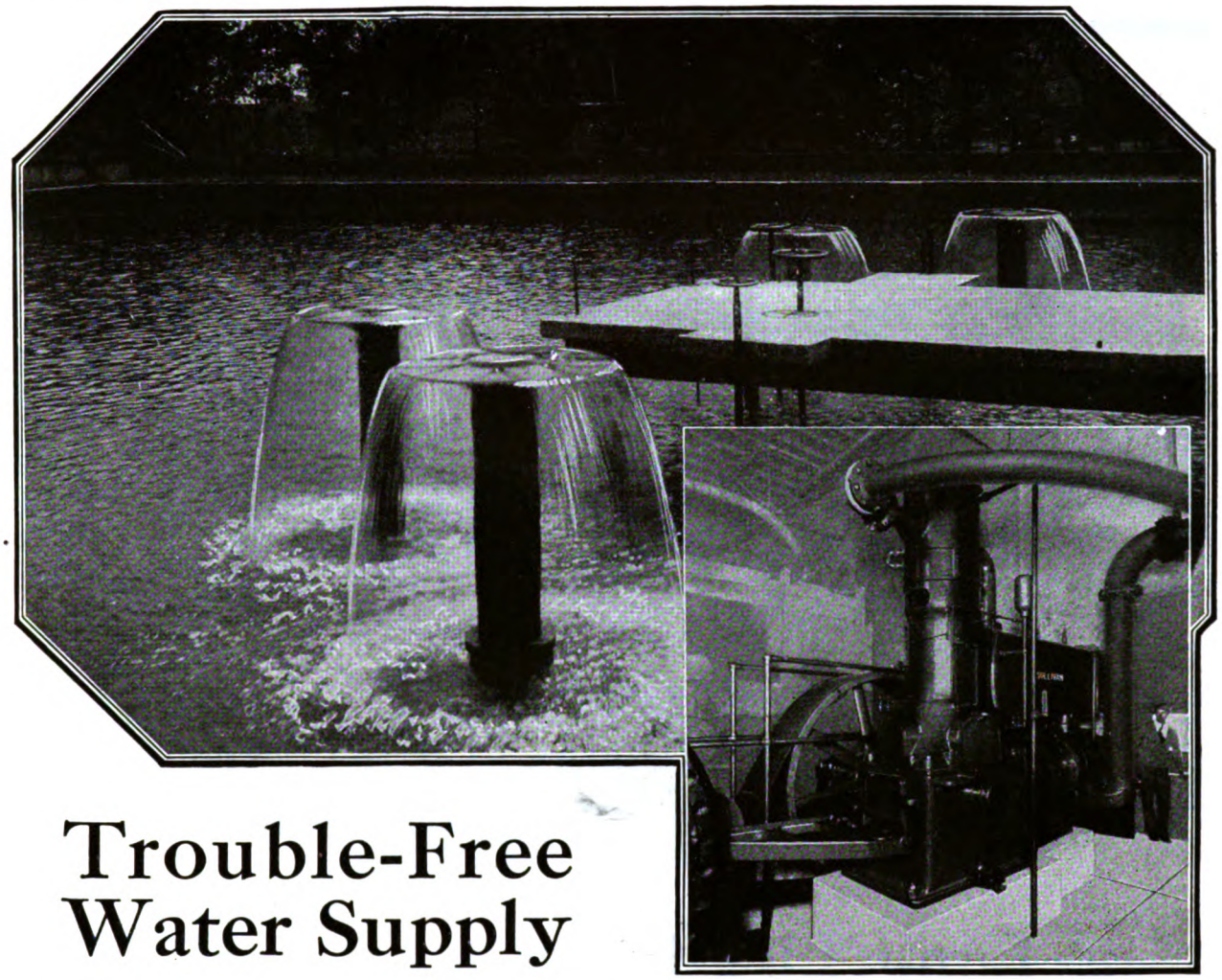

Trouble-Free Water Supply

Whether your water strata are deep or shallow, rock or gravel or sand, you can assure a continuous trouble-free supply from your wells by adopting the

SULLIVAN AIR LIFT SYSTEM

Sullivan Air Lift is dependable, because the wells may be cleaned, and then kept free permanently from mud or sand.

It maintains its efficiency over long periods.

There are no wearing parts in the wells to require inspection or repair.

A number of wells may be pumped from a central station, with full control of each.

More water may be obtained from wells by air lift than by mechanical pumping.

The most economical power equipment is available for operating the system.

Sullivan air lift installations have a reputation for economy and reliability. They are backed by 30 years' experience.

The pictures show one of the Sullivan Air Lift installations at Carthage, Missouri, the Angle compound motor driven compressor supplying air to pump two wells. There are two discharges from each well to the reservoir.

These plants are practically automatic. A second Sullivan angle compound compressor and air lift pump supplied most of Carthage single handed throughout last Winter, with only two daily inspections, morning and evening.

Tell us about *your* water problems.

Ask for Air Lift Catalogue No. 71-H

The Sullivan exhibit at Buffalo will show an operating model of an "air made" well, showing how the air lift gets rid of fine sand and secures a permanent supply. Don't miss it.

SULLIVAN MACHINERY COMPANY

134 SOUTH MICHIGAN AVE., CHICAGO, ILLINOIS U.S.A.

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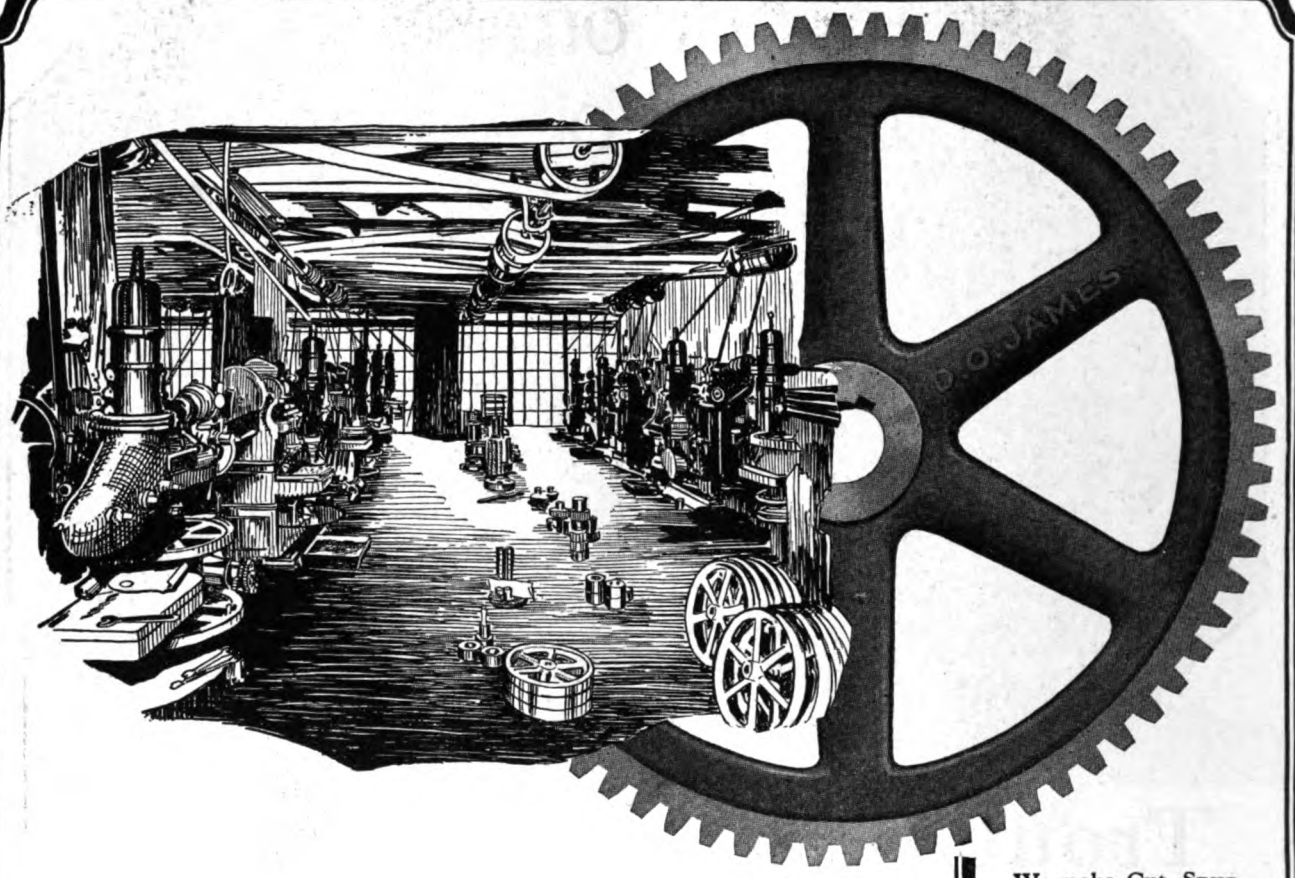

Long Life Gears

James "Long Life Gears" have quality in-built — a habit with us rather than a special effort. Made of the best materials — by men of long experience — and according to standards dictated by more than 40 years of specialization — they are a guarantee of long time, trouble-free operation.

Our facilities are most complete for making Spur, Bevel, Mitre, Helical, Herringbone, Spiral and Internal Gears of any material and in any quantity. Our prices are as low as is consistent with quality. Our service, because of our enormous capacity, is beyond competition.

Let us make your next order of gears. If they are standard size buy from our Catalog No. 99 (* have you a copy?) If they are special — let our Engineering Department help you with their design. The services of this department are gratis.

*Where shall we send the catalog?

D. O. JAMES MANUFACTURING COMPANY
1120 West Monroe Street, Chicago, Illinois

We make Cut, Spur, Bevel, Mitre, Helical, Herringbone, and Internal Gears of Cast Iron, Steel, Bronze, Bakelite, Fibre, Rawhide and other materials.



Send for Catalog No. 99

D.O.JAMES

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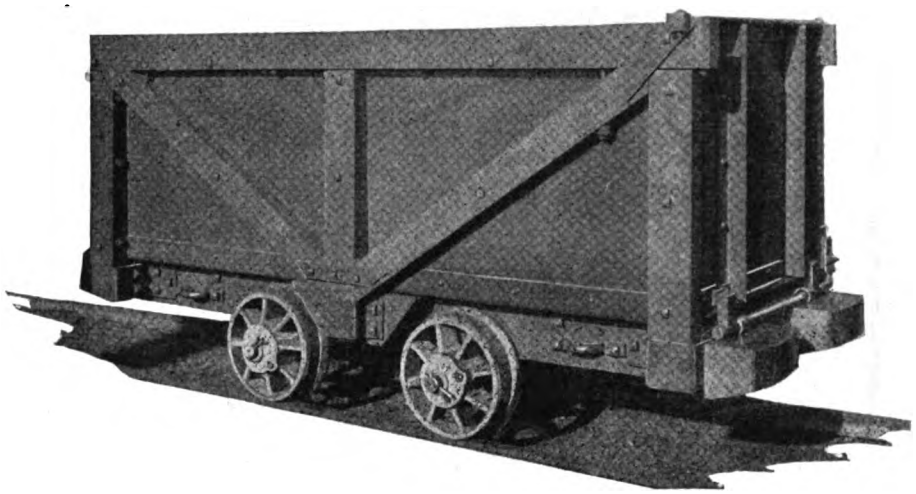
15 repeat orders – the test of satisfaction given by this big tonnage car



This big tonnage car was first designed and built by "Car Foundry" for a large mining company in 1908. And repeat orders have been coming in for it ever since. On March 15th the 15th order was received.

All of which speaks well for the ability of "Car Foundry" Engineers to design and build the car best suited to the job.

Whatever the conditions of your mine or whether you are mining bituminous or anthracite coal, "Car Foundry" Engineers can supply you with the car best suited to lower your loading and haulage costs. High as well as low cars; automatic drop bottom cars, end dump or rotary dump cars; big or small capacity cars; two-truck cars of ten-ton or more capacity for hauling long distances;— whatever your car needs, "Car Foundry" is equipped to fill them.

Get a "Car Foundry" quotation before you buy.



These "Car Foundry" Service Plants, each in the heart of a great mining region, enable us to render a national service with "localized" advantages—no matter where your mine is located.

American Car and Foundry Company

New York St. Louis Chicago Pittsburgh

"CAR FOUNDRY"

ELECTRIC RIVET HEATERS
BARS, IRON AND STEEL
CAR IRONS

BOLTS, NUTS, RIVETS
IRON BODY GATE VALVES
CAR TRUCKS

CHILLED IRON WHEELS
PINS AND LINKS
FLANGED PIPE

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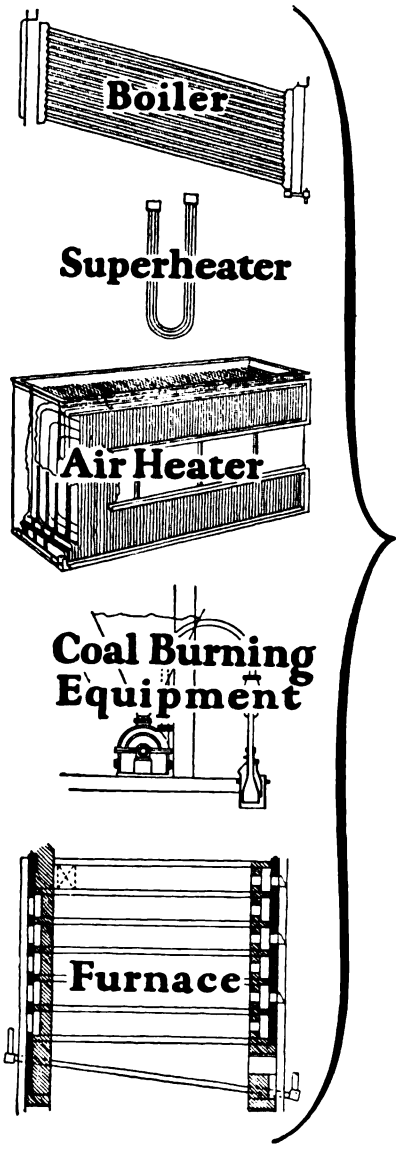
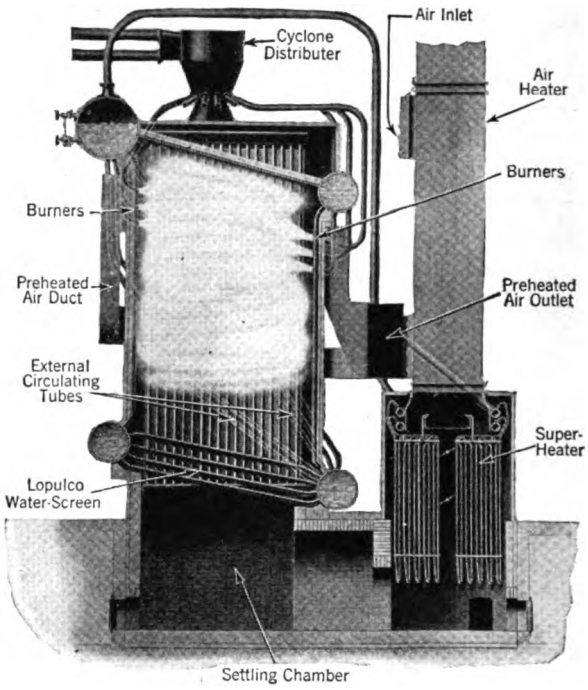
One Unit *vs.* Five Units





Combustion Steam Generators are designed as one complete steam generating unit.

The true relationship which one element should bear to the other is maintained and every part cooperates toward securing the maximum efficiency of capital expenditure.

Operating and maintenance costs are decreased.

Lopulco Pulverized Fuel System
Frederick Multiple Retort Stoker
Self-contained Stoker
Coxe Stoker
Type E Stoker
Type D Stoker
Type K Stoker
Type H Stoker
Green Natural Draft Stoker
Green Forced Draft Stoker
C-E Fin Furnaces
C-E Air Heaters
C-E Unit System (Pulverized Fuel)
Grieve Grates
Combusco Ash Conveyors
Quinn Oil Burning Equipment
Combustion Steam Generator
Ladd Water Tube Boilers

Combustion Engineering Corporation

43 Broad St. New York — Offices throughout the World

A SUBSIDIARY OF INTERNATIONAL COMBUSTION ENGINEERING CORPORATION

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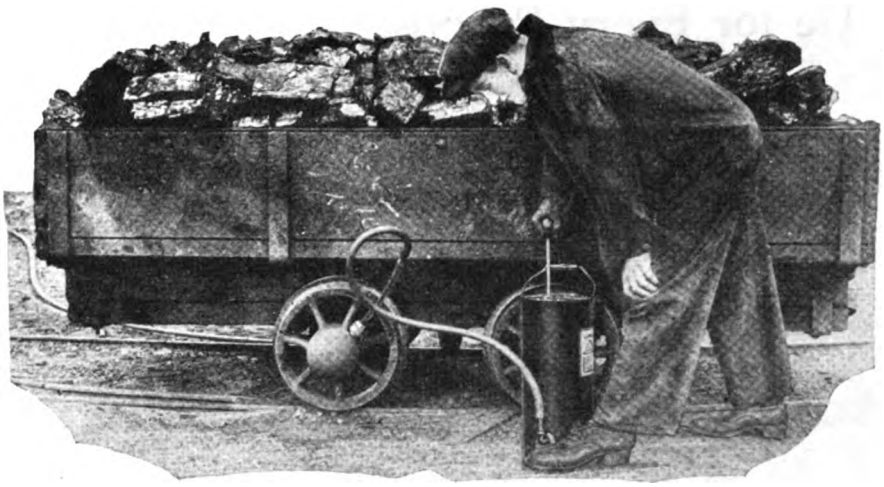
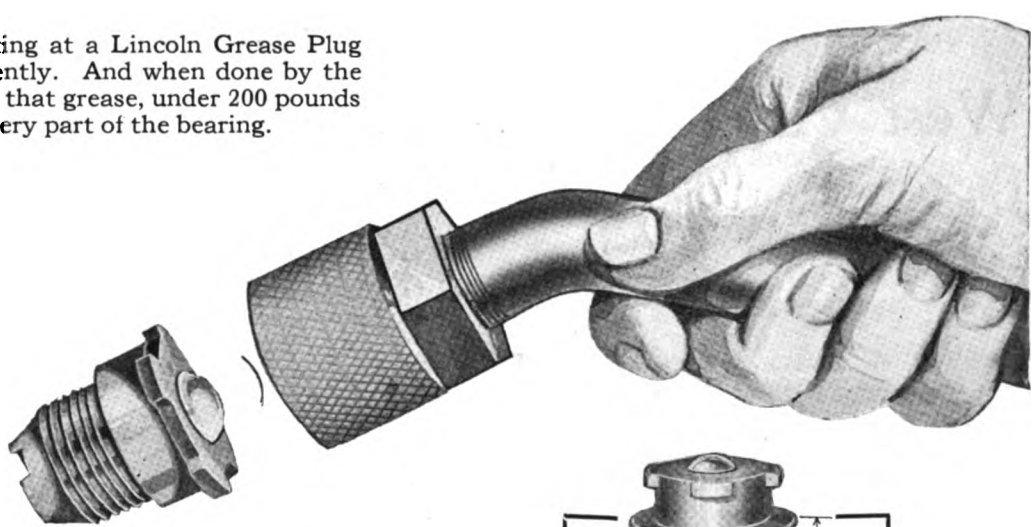


Compare the ease of greasing cars the Lincoln way, with the difficulty encountered when plugs have to be re-removed, grease gun inserted, an imperfect greasing done, and the plug replaced. The Lincoln way is not only much easier, but takes only a fraction of the time.

Grease 'em this way and you know they're greased!

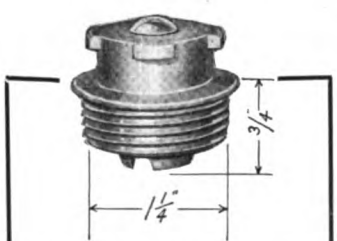
You can tell just by looking at a Lincoln Grease Plug **if it has been greased recently.** And when done by the **Lincoln System, you know** that grease, under 200 pounds **pressure has penetrated every** part of the bearing.



Slip the Coupler Nozzle over the grease plug and give it **a quarter turn. This locks** it in place with a grease tight **grip. One stroke of the hand** pump shoots a full quarter **pound of grease through the** plug into the bearing. The **plug is opened by the nozzle,** not by the grease pressure, **thus the pressure is not diminished** but applied in full.

Every Lincoln Grease Plug always admits grease, they **never rust, clog, or require** replacing. Hence there is **never any reason for slighting** a single wheel equipped **with a Lincoln Plug.**

Our introductory offer makes possible a thorough trial at very little expense. Write today for details.



Lincoln Plugs are made in sizes and threads to fit all types of mine cars. Write for our circular showing all types, or better still, send us one of your present pipe plugs and we will send you a rustproof Lincoln plug to replace it.

LINCOLN STEEL & FORGE COMPANY

5701 Natural Bridge Ave. St. Louis, Mo.

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A Tie for Every Purpose



DESIGN NO. 3

A rugged but convenient tie for universal service.



DESIGN NO. 5

A tie designed to especially meet the needs of those who desire to ball the jumper rail. Note how the clip holds the rail securely in place.



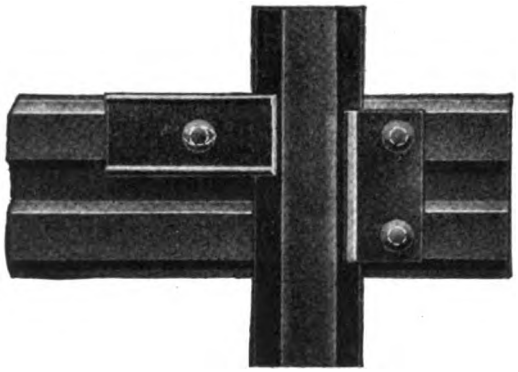
DESIGN NO. 7

This tie with the clips placed alternately is designed to permit of easy installation in existing track. By merely sliding the tie under the rails, raising, moving slightly so that fixed clips engage the rail flange and hammering the rotary clip a quarter turn, it is put into use. By reversing the procedure ties may be easily removed from the track.

West Virginia Mine Ties—

are made to meet any requirements

For new track—For "balling" jumper rails
For easy installation in existing track



Hammer the rotary clip. That's all you have to do to fix the rail to the West Virginia Steel Tie. A certain one of our three designs may be best adapted to your needs, but they are all rugged, convenient and hold the rails in place. No tipping or spreading of rails. Pressure on rails cannot loosen the tie.

West Virginia ties are quickly installed and reinstalled. They are easily carried. They save head room. They are shock resistant and rigid.

Complete facts about West Virginia products sent to you immediately upon your request.

Write for Bulletins on

Frogs	Ties
Switches	Portable Track
Switch Stands	Crossings

W.VA.RAIL

The West Virginia Rail Co., Huntington, W. Va.

WEST VIRGINIA RAILS & TRACK WORK

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"At the mine where I installed your Frederick Separator and other equipment last year the season netted us $25,000 profit: At our other mine, under same conditions, in same district, working the same seam but not using your equipment we lost money."

Perfect Screening without Breakage

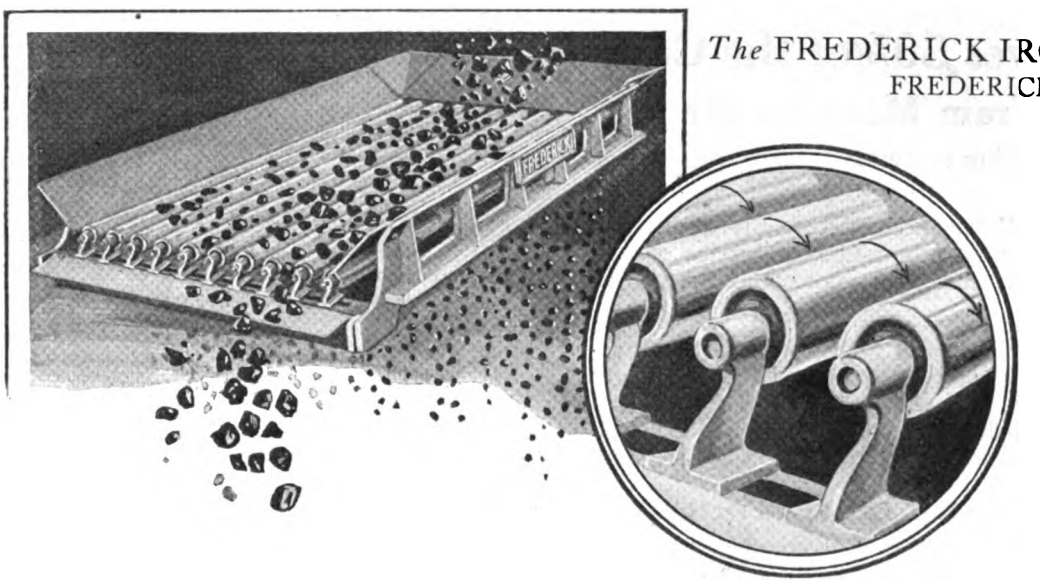
$25,000 profit or loss!

$25,000 profit in one mine and a loss in another — both mines operated by the same company, under the same conditions, in the same district, in the same seam! How was this possible? The Frederick Separator made all the difference between profit and loss!

If you want the name of the operator who sends us this report regarding the profits made possible with the Frederick, write us.

The Frederick makes profits possible by increasing your percentage of prepared sizes and decreasing your percentage of screenings, by cutting your power, labor and maintenance bill and speeding tonnage.

If you don't know the complete story, send for it.



The FREDERICK IRON & STEEL CO.
FREDERICK, MD.

FREDERICK Coal Separator

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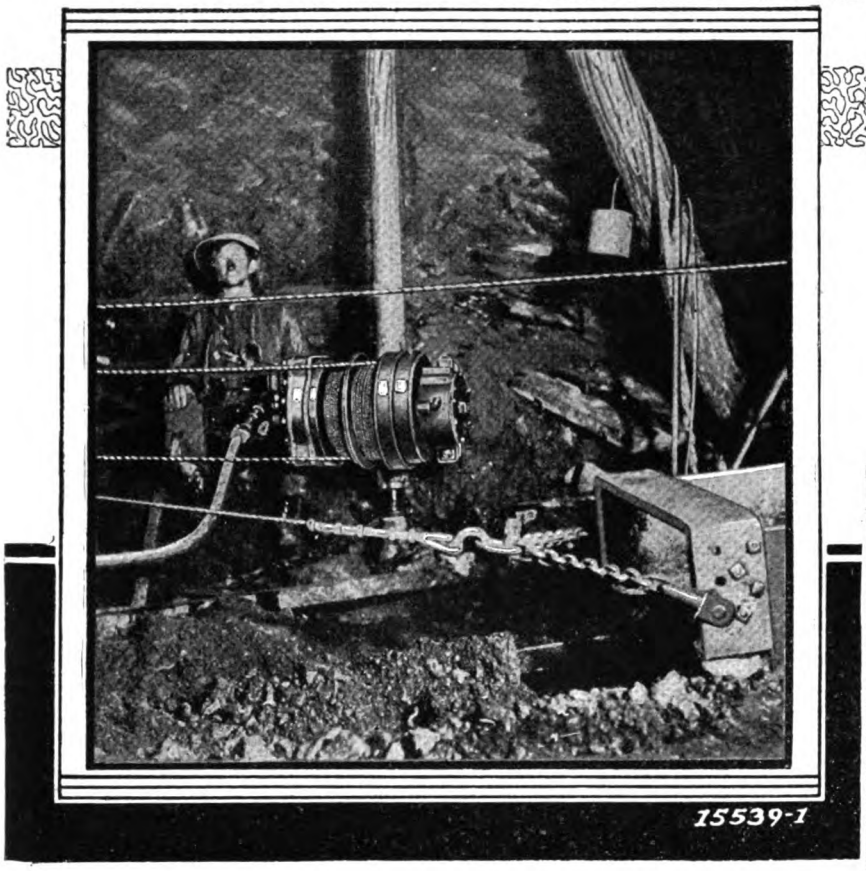
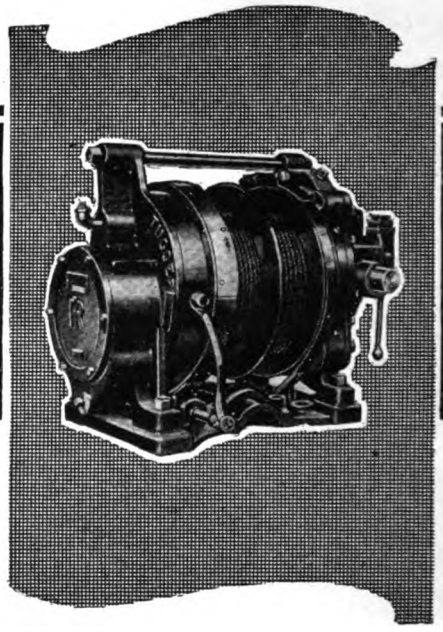
MINE METHODS-SCRAPING, LOADING and HAULING Revolutionized by "LITTLE TUGGER" HOISTS





"Slushing" Saves 50% of the Costs

Muck and Tram Mechanically

Hand mucking or shovelling consumes 35% to 45% of the *total* mine working time.

"Little Tugger Slushing" has been successfully applied in practically every method of modern mining without any change in the original mine layout and with appreciable savings in mucking and loading time.

However, if in planning the layout for a new level, arrangements are made to take the greatest advantage of "Little Tugger Slushing," the latter can be counted on to reduce the time to from one-half to one-fourth the time consumed by hand shovelling methods and with a corresponding reduction in labor.

6-H "Little Tugger" Hoist

From prehistoric days until within the last few years no great improvement was made in that important major mining operation of mucking and loading.

The necessity for lower costs and greater production has finally and definitely replaced hand shovelling by "Little Tugger Slushing" in many mines throughout the world.

Request Bulletin No. 4056

INGERSOLL-RAND COMPANY-11 BROADWAY, NEW YORK CITY.

Offices in all principal domestic and foreign cities.

FOR CANADA REFER-CANADIAN INGERSOLL-RAND CO. LIMITED, 260 ST. JAMES STREET, MONTREAL, QUEBEC.

Ingersoll-Rand

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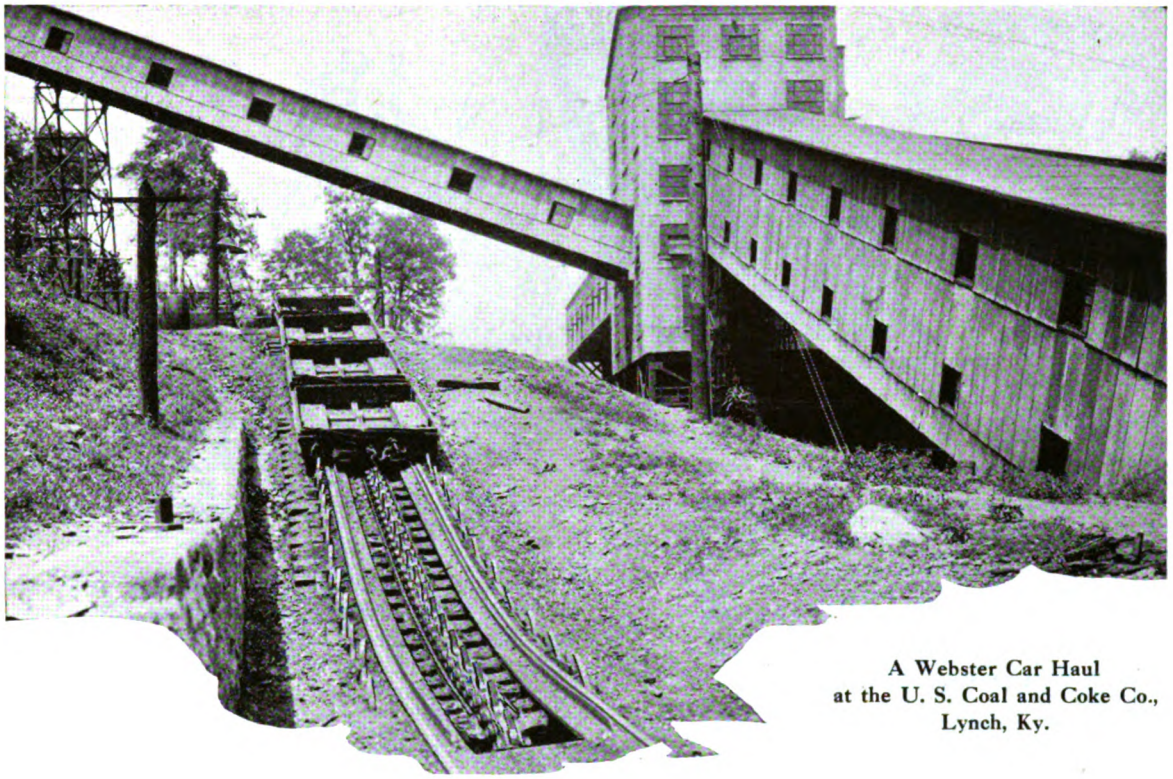
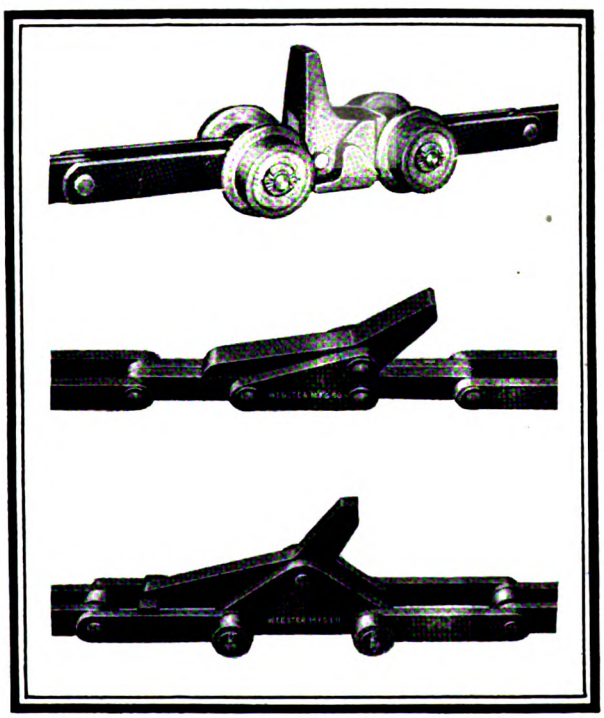


A Webster Car Haul
at the U. S. Coal and Coke Co.,
Lynch, Ky.

Webster Car Hauls and Trip Feeders



IN hauling loaded cars to the tipple and returning the empties, Webster car hauls and trip feeders have always performed with efficiency and reliability. Why? Because they embody features that assure trouble-free operation. And after all it is the absence of breakdowns that really counts in operating equipment of this nature.

We show several typical designs of car haul chains but our facilities are unequalled for manufacturing these chains in various styles and sizes. If you need a new car haul system—or contemplate rebuilding your present equipment, write us for our recommendations.

THE WEBSTER MFG. COMPANY

4500-4560 Cortland Street
CHICAGO

Sales Offices at BOSTON BUFFALO CINCINNATI CLEVELAND COLUMBUS
NEW YORK PHILADELPHIA PITTSBURGH
WEBSTER & COMPANY, KNOXVILLE, TENN.

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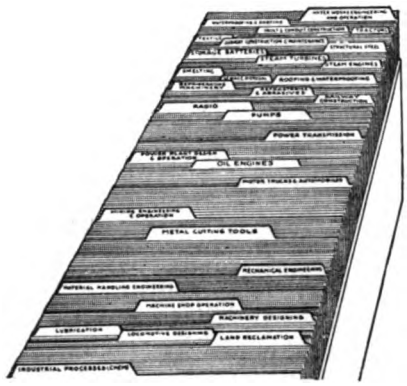
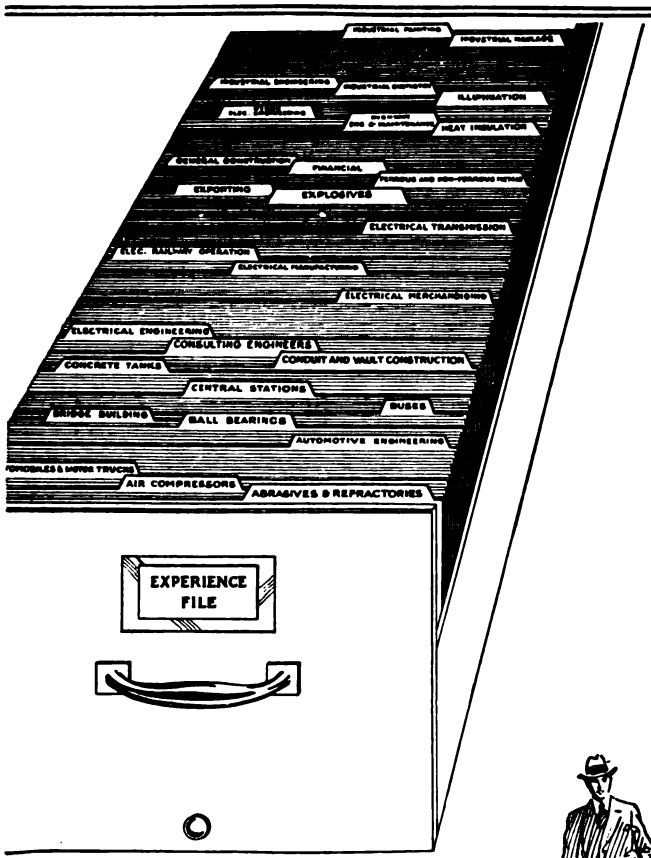




Knowledge of your industry





A Few Facts From The Experience Index

Going through the McGraw-Hill experience file at random you will find such facts as these:

5 McGraw-Hill men formerly in automotive engineering.

8 McGraw-Hill men formerly in material-handling engineering.

2 McGraw-Hill men formerly in subway construction.

12 McGraw-Hill men formerly with process (chemical) industries.

9 McGraw-Hill men formerly in electrical merchandising.

4 McGraw-Hill men formerly consulting engineers.

16 McGraw-Hill men formerly with central stations.

9 McGraw-Hill men formerly with electric railways.

6 McGraw-Hill men formerly machinery designers.

And so on.

From shop and mine, from factory and generating station, from chemical laboratory and construction job, from jobber and dealer, have come the men who make the McGraw-Hill organization. Production men, operating experts, specialists in selling from many industries have come to develop the McGraw-Hill Publications as authorities in industry..... authorities, first, to their subscribers, the creators and builders of industry.....authorities, next, to the men who are selling to industry.

As editors, department heads, service men, marketing counselors and field representatives, these men have become essential units in the McGraw-Hill organization, absorbing its purpose and spirit and devoting their fine attainments to carrying forward its tradition of over a half-century's service to industry.

The experience of these men has been cataloged, classified and filed for instant reference. That file is the nerve center of the organization. Thumb over the index tabs and it will be strange if you do not find a man, or twenty men, who have a working knowledge of the industry to which you sell, or the equipment which you make.

For more than fifty years the McGraw-Hill Company has known industrial America. Its contacts have been inside contacts; its fund of experience is the composite gained in shop, factory and field.

Through this intimate knowledge and constant contact, McGraw-Hill seven years ago sensed the step that industry is now taking in applying to its selling the same science and caution that have advanced industrial production and reduced costs. The service of McGraw-Hill Publications was extended to embrace not only the publishing of technical information on production and engineering but counsel on scientific, waste-free selling. This counsel is epitomized in the following McGraw-Hill Four Principles of Industrial Marketing which today are bringing country-wide endorsement from industry, bank, advertising agency and university.

MARKET DETERMINATION—An analysis of markets or related buying groups to determine the

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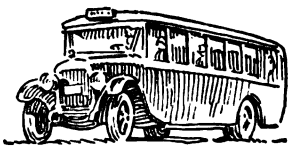
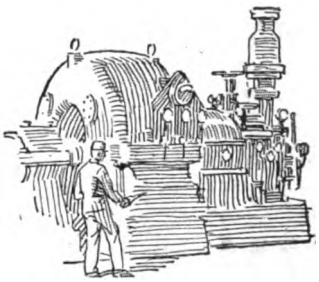
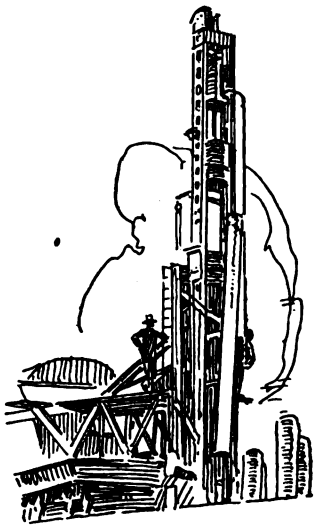






is here!

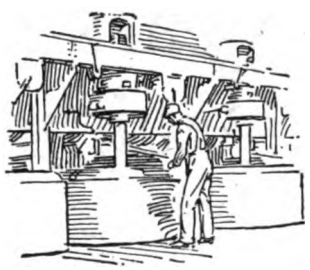
potential of each. With a dependable appraisal of each market, selling effort can be directed according to each market's importance.

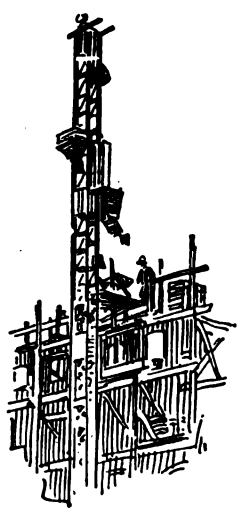
BUYING HABITS—A study of the selected market groups to determine which men in each industry are the controlling buying factors and what policies regulate their buying. Definite knowledge eliminates costly waste in sales effort.

CHANNELS OF APPROACH—The authoritative publications through which industries keep in touch with developments are the logical channels through which to approach the buyer. In a balanced program of sales promotion these publications should be used effectively and their use supplemented by a manufacturer's own literature and exhibits.

APPEALS THAT INFLUENCE—Determining the appeals that will present the product to the prospective buyer in terms of his own self-interest or needs.

These Four Principles are more than a formula. They are a method, repeatedly tested by practical application, backed by a half-century of intimate acquaintance with industry. Any manufacturer selling to industry can apply them to advantage in his own marketing program. Our Marketing Counselors will be glad to lay the details before you or your advertising agent. A conference can be arranged by communicating with our nearest office.





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45,000 Advertising Pages used Annually by 3,000 manufacturers to help Industry buy more effectively.

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ANALYSIS OF METALLIC AND NON-METALLIC MINING, QUARRYING AND CEMENT INDUSTRIES

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Dragged from one location to another, it still stands the gaff.

Two years use— *without a bit of trouble*

DURING the last two years considerable construction work has been done in this great middle west oil refinery. Addition has followed addition. And Super Service has played its part in this work.

The foreman in charge writes—"In the two years I have used Super Service Cords and Cables on Electric machinery in construction work, we have never had a single shut-down due in any way to their use."

A clean record made possible by the special process under which Super Service is built. Every foot is vulcanized in steel molds under tons of pressure—a special process used in the manufacture of no other wire.

A process that compresses the outer jacket of rubber into a tough, dense, yet flexible covering that protects the conductors from wear and abrasions and gives it many times the life of ordinary cables. It is absolutely waterproof and highly resistant to the action of oils and acids.

If you would like detailed information about these portable cords and cables with the long life, we will be glad to send you a catalog and price list.

2617

ROME WIRE COMPANY
Mills and Executive Offices: Rome, N. Y.
Diamond Branch: Buffalo, N. Y.

New York
50 Church Street

Boston
Little Building

Detroit
25 Parsons Street

Cleveland
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CORDS and CABLES
A ROME WIRE PRODUCT

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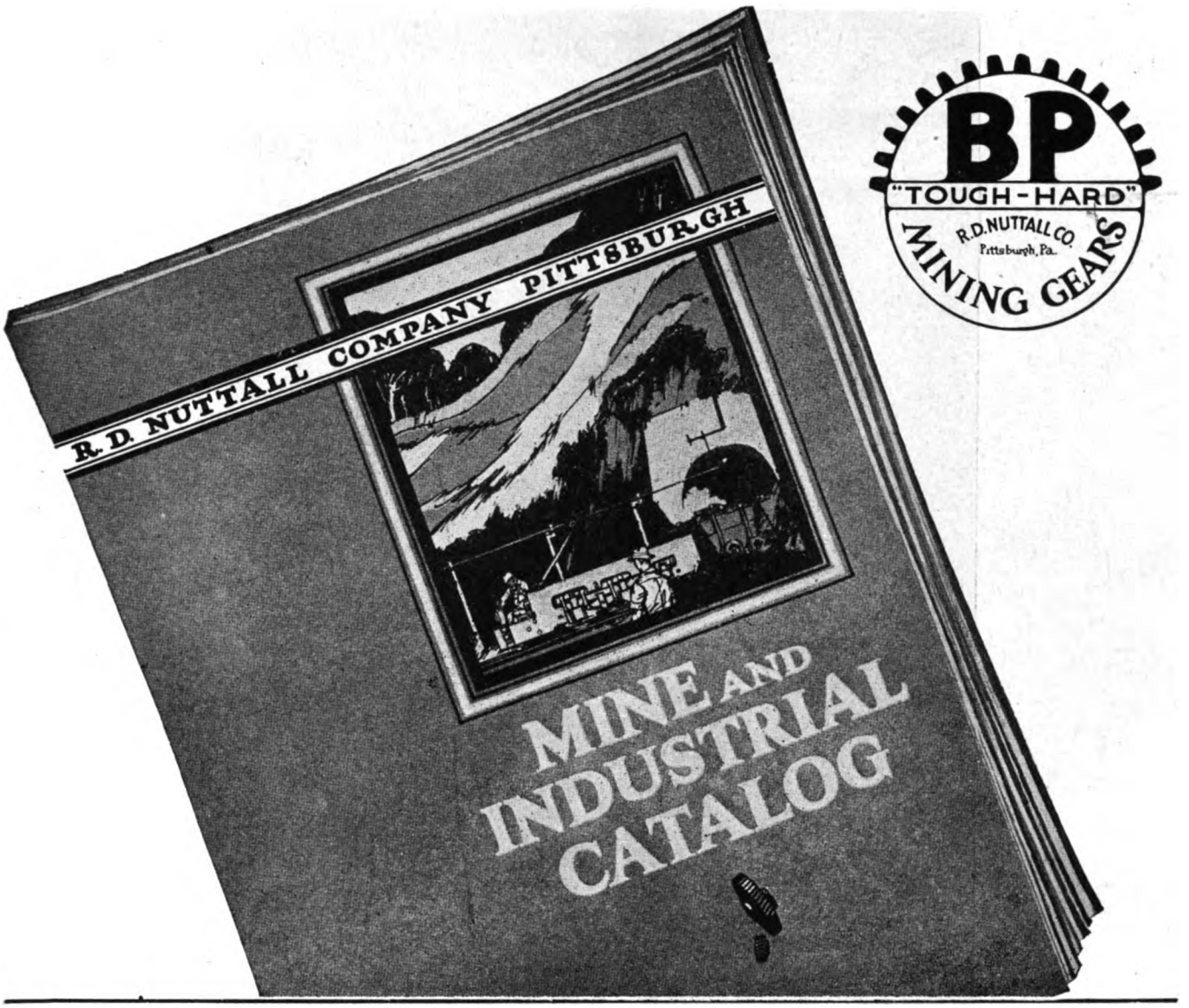

Tailor-Made—to Your Order!

Send for it NOW!

Every copy of this new catalog will be of practical and daily value to its owner. Why? Because it is built on the personal specification of hundreds of mining men who told us specifically what they wanted in an *ideal service* catalog on gears, trolleys, pole heads, harps, etc.

This book is prepared in loose-leaf sections. You tell us which sections you want, and a compact, *personal* copy will be assembled for you accordingly.

R.D.NUTTALL COMPANY
PITTSBURGH PENNSYLVANIA

Philadelphia Office: Westinghouse Bldg., 30th and Walnut Sts. In Canada: Lyman Tool & Supply Co., Ltd., Montreal and Quebec
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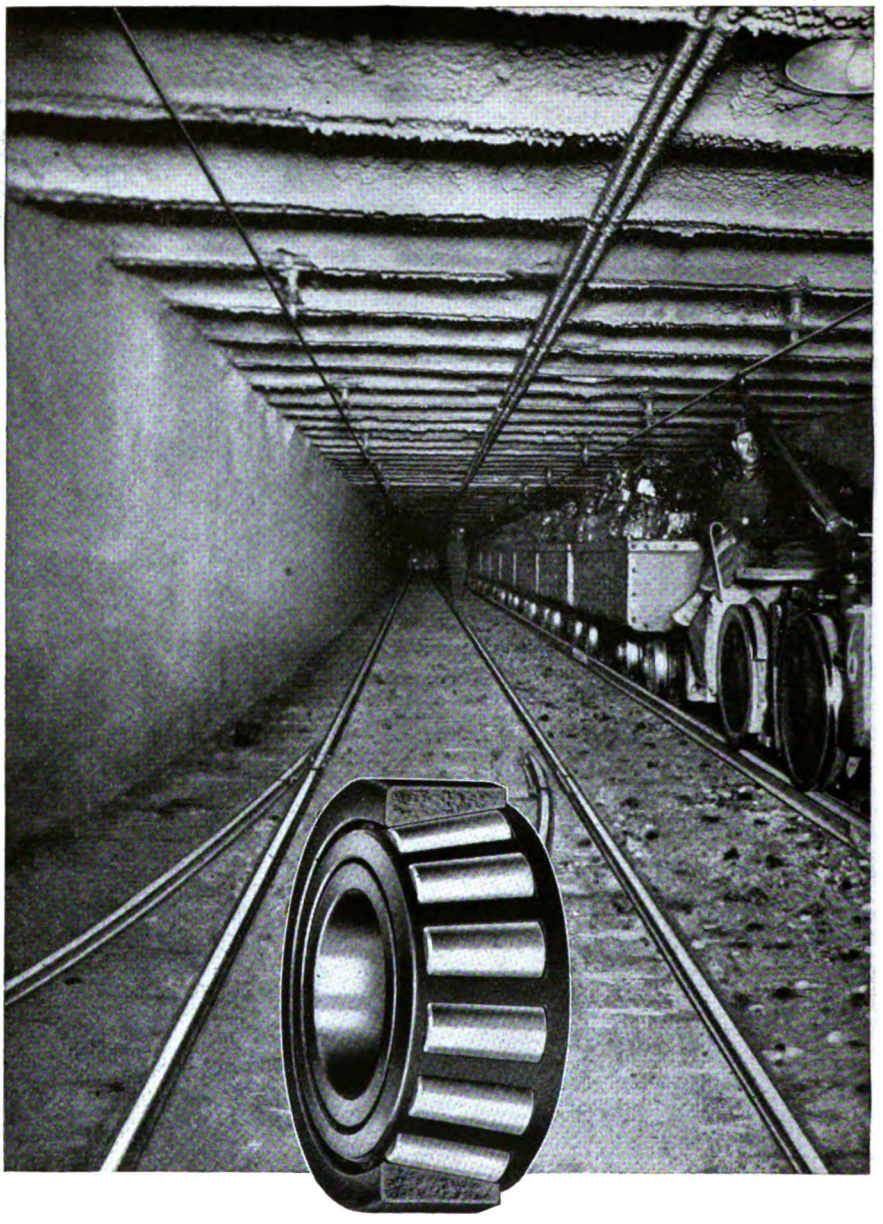

Modern Mining—Timken Bearings

When modern methods are emphasized today two things are well understood—more satisfactory profits—and Timken Tapered Roller Bearings. A clear lesson is being pointed by the most progressive operators. They are strikingly in agreement on Timken Bearings, in the entire coal handling equipment, including mine cars.

Timkens are heavily preferred for their *plus* characteristics, over and above the anti-friction properties* which save so much lubricant, man-power, animal-power or electric current.

Timkens also provide higher load area, inherent thrust capacity and *POSITIVELY ALIGNED* bearing rolls. This makes it possible to absorb all stresses scientifically within the bearings themselves. No motion is carried on extra parts or on the axle surfaces. Supremely enduring Timken-made electric furnace steel carries all the load, with rolling motion always.

Every form of self-destruction in the journals is overcome. Cars stay at work continuously and make more hauls per day at less cost per haul. Changing over to this high-efficiency basis is thoroughly practical. Ask Timken or leading car and equipment builders to outline a program which will pay its own way.

THE TIMKEN ROLLER BEARING CO., CANTON, OHIO

*Tests by U.S. Bureau of Mines prove Timken Bearings lower in friction—starting, running, and on curves

TIMKEN Tapered Roller BEARINGS

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The assurance of service when you "wire Weir"

Warehouses containing thousands of Titan frogs in all different sizes, and thousands of stands, switches, etc.—two large plants full of special machinery and entirely devoted to the building of trackwork—large stocks of rail steel and parts ready for immediate manufacture—all these are Weir facilities to render you prompt service on all your trackwork needs.

Thus, added to the Weir organization's desire to serve you, are unlimited facilities to do it. More mines are using Weir trackwork than any other brand in America.

Write for details of the Weir service guarantee, a plan that saves the mine money and insures immediate shipment of all orders.

Weir Kilby Corp.

Cincinnati, Ohio *Birmingham, Ala.*



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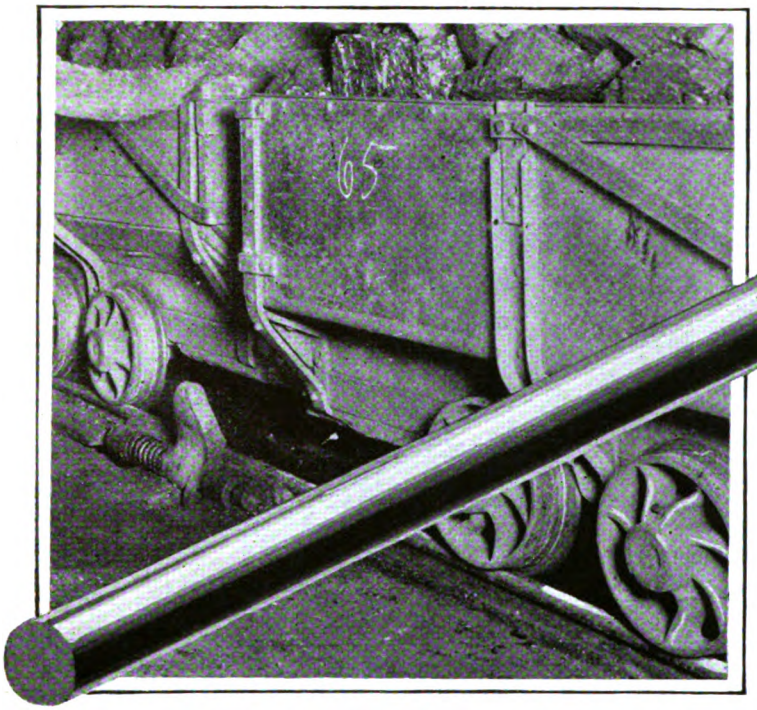

Mine Car Axles

Made of

Midvale Alloy Steel

are celebrated for their freedom from breakage

THE MIDVALE COMPANY

NICETOWN, PHILADELPHIA

Locomotive Tires—Cutter Bits—Drill Steel—Castings—Roll Shells

MICABOND *proves its dependability in mine service*

A number of coal mines have "gatherers," such as shown in this illustration, located at various places in the underground workings to gather the water to a common point.

It is in such applications where operating conditions are most unfavorable that MICABOND—the standard mica insulation—has proven its uniform dependability and unusual economy.

Send for a copy of "MICABOND—the modern mica"—it will show you the way to safeguard the efficient performance of any electrical product at a lower cost.

CHICAGO MICA COMPANY
438 Campbell St., Valparaiso, Ind.

MICABOND—the Standard Mica Insulation

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Authentic Data on Mechanical Loading

Just Published!

A treatise on Mechanical Loading!

Send for it!

This handbook contains authenic data on operation and maintenance of mechanical loaders. The information has been compiled from material furnished us through the courtesy of well known operators who are owners of Joy Loaders and who are working them successfully under widely varying conditions.

We will be glad to mail you a copy on request. Kindly use the attached coupon.

Joy Manufacturing Company
Franklin, Pa.

Joy Manufacturing Company,
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Gentlemen:

Please send us a copy of your Hand Book containing data on mechanical loading.

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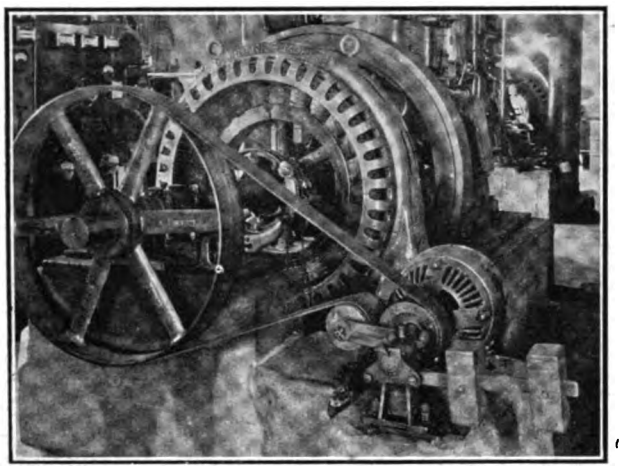
The LENIX DRIVE

(TRADEMARK REG.)



OIL-ENGINE-DRIVEN 6-KW. EXCITER

Driving pulley 40-in. dia., 6½-in. face, 300 R.P.M.
Exciter pulley 8-in. dia., 7-in. face, 1500 R.P.M.
Pulley centers 4-ft. 0-in.

"Beyond our fondest hopes"

That's the expression used by the superintendent of the Palmyra, Missouri, Light and Water Department, in referring to the Lenix Drives used by him on 12½ and 6 kw. exciters, with oil engine-generator units.

And good reason, too. Belt slippage is positively eliminated even on extremely short pulley centers and the automatic action of the Lenix causes it to maintain sufficient tension on the slack side of the belt to transmit the load.

In the words of the superintendent:

"Replying to yours of the 25th ult., as to the satisfaction we are receiving from the LENIX drives on our 12½ and our 6 kilowatt exciters, would say that they have been in daily use for over five months and we are satisfied with the service they are giving beyond our fondest hopes. In fact, I much prefer LENIX drive over a direct belt drive on account of the great reduction in belt tension and the reduction of heating in the exciter bearings."

Make no mistake about the Lenix. It is not an idler. Rather, a "belt-wrapper" applied to belt drives for saving floor space, eliminating belt slippage and increasing the general capacity of the drive.

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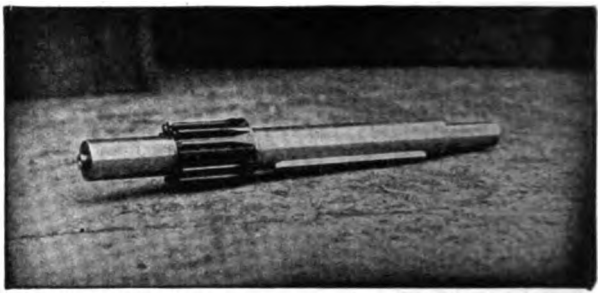
F. L. SMIDTH & CO.

ENGINEERS

50 Church Street New York, N. Y.



Armature Shaft Pinion

Does This Pinion Give You Trouble?

Do you have continual expense because of wear or breakage on this pinion?

If you do, ask us about our new design with a modified tooth shape that wears very slowly and does not break.

We have absolutely solved the problem presented by this pinion.

The standard of Quality
"Tool Steel" gears + pinions

The Tool Steel Gear & Pinion Co.

Cincinnati, Ohio

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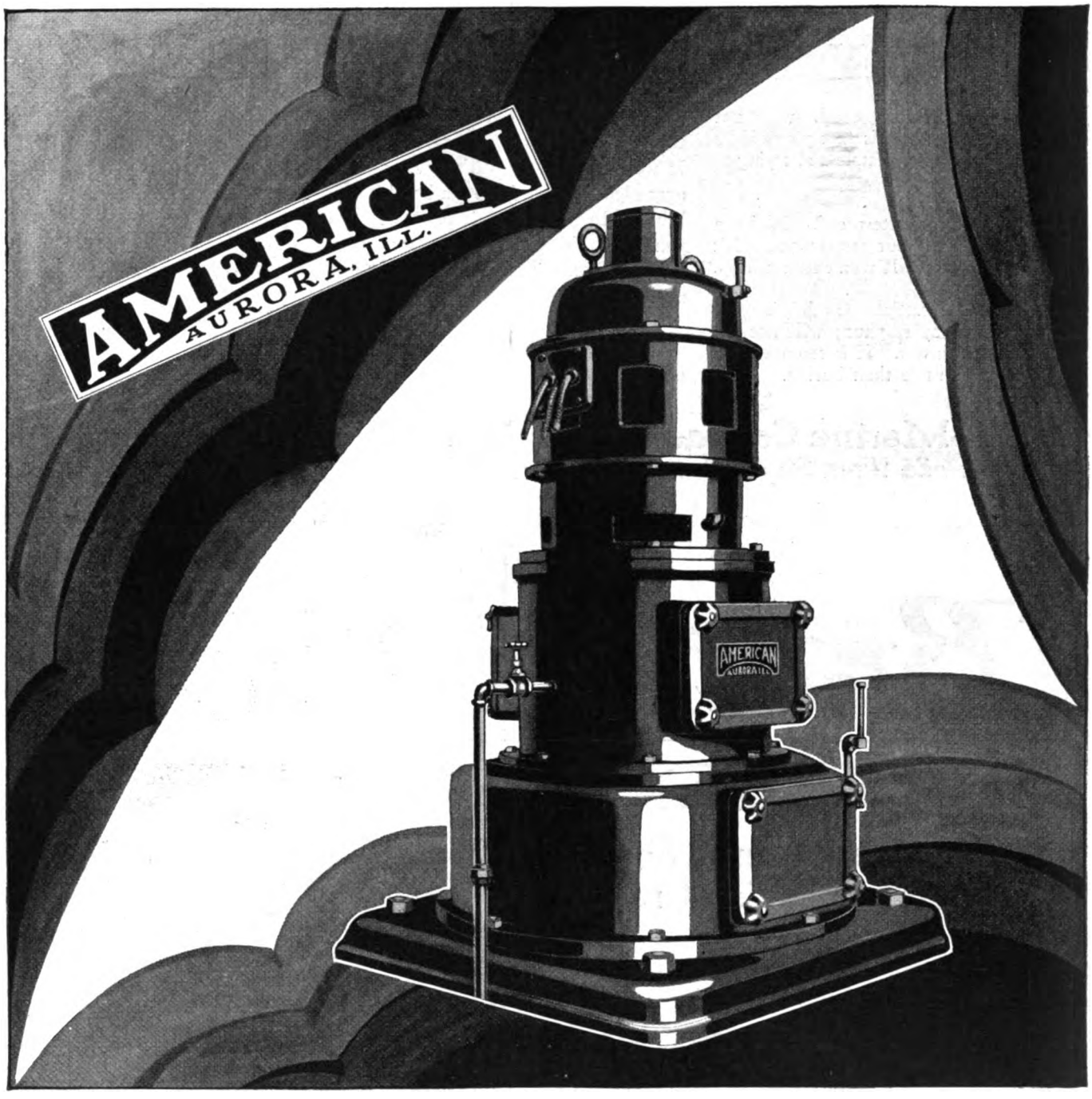

THE high hydraulic efficiency of "American" pumps, their compact design and their sturdy construction all make for years of low cost performance. They are largely preferred by consulting engineers—whose discriminating opinion can be safely accepted as a criterion.

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THE AMERICAN WELL WORKS

General Office & Works
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TRY TO BURN THIS SAMPLE!

Jaton Brattice Cloth will not burn. Prove this fact yourself by sending for a sample and trying to light it.

It is also waterproof. Make a cup out of your sample and fill it with water. It won't leak a drop.

Jaton Brattice Cloth is not affected by sulphur; will not rot nor wash out. It is stronger and more durable than burlap.

Cut your sample diagonally across the weave and try to unravel it. It won't. Soak in boiling water over night. Scrub it with a bristle brush. In fact, give it any test you like! You'll find it stands up better than any brattice cloth you ever saw.

To get your sample, simply fill in and mail the coupon.

Marine Canvas Supply Corp.
23 Ninth St, Brooklyn, N.Y.

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Send me my sample of Jaton Brattice Cloth to test.

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Brattice Cloth

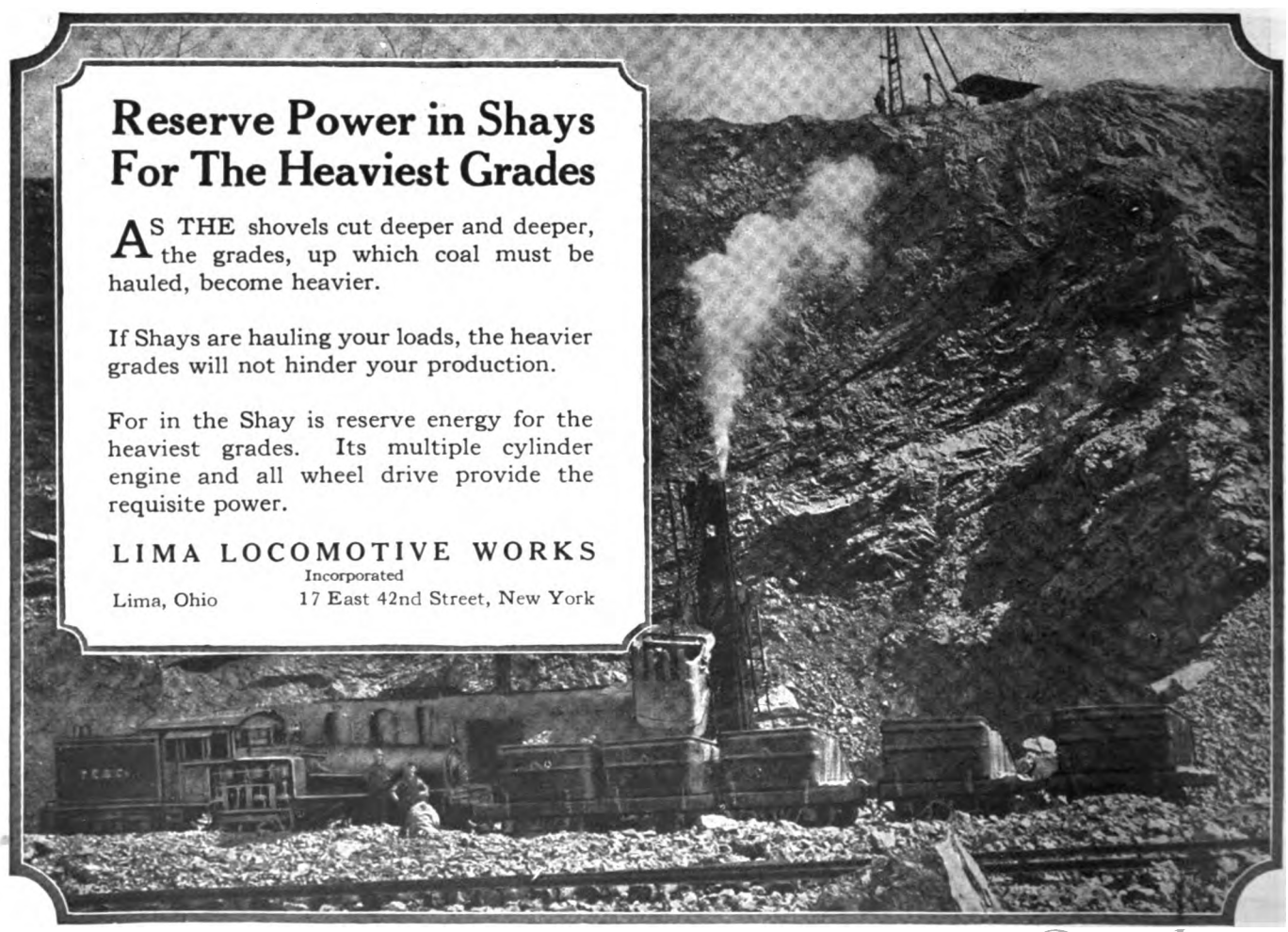
Reserve Power in Shays For The Heaviest Grades

AS THE shovels cut deeper and deeper, the grades, up which coal must be hauled, become heavier.

If Shays are hauling your loads, the heavier grades will not hinder your production.

For in the Shay is reserve energy for the heaviest grades. Its multiple cylinder engine and all wheel drive provide the requisite power.

LIMA LOCOMOTIVE WORKS
Incorporated
Lima, Ohio 17 East 42nd Street, New York



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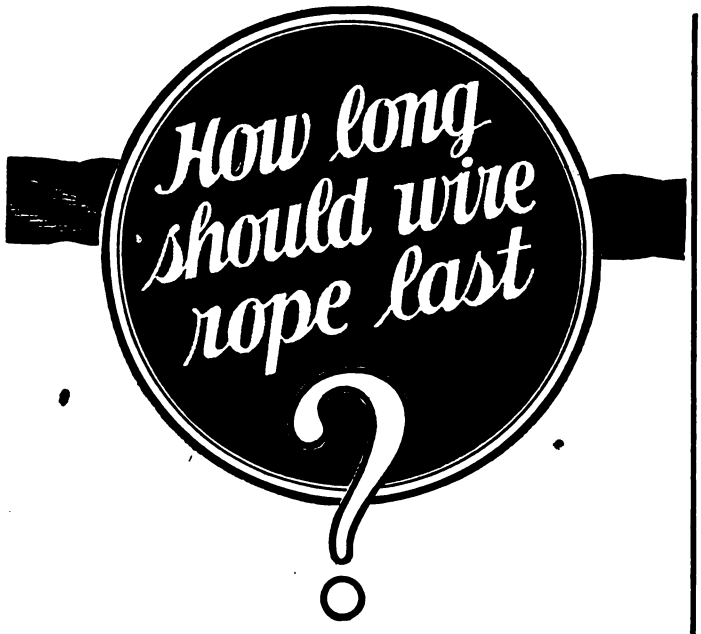


answer: The life of wire rope will always depend on the conditions under which it operates—plus the kind of rope used.

With the advent of Tru-Lay Brand, the disadvantages inherent in ordinary wire rope were eliminated and new records for length of service and economy established.

The ability of Tru-Lay Brand to decrease wire rope mortality is due to exclusive construction features that may be obtained in no other make.

It is made on a totally new principle that preforms each wire and strand to the shape it will take in the finished rope. This means longer service, less expensive lay-ups for replacements, a greater ease in handling with an added factor of safety, the ability to resist unstranding — to distribute strand loads equally, to eliminate seizing and resist kinking.

Users of Tru-Lay Brand know the answer to "How Long Should Wire Rope Last?"

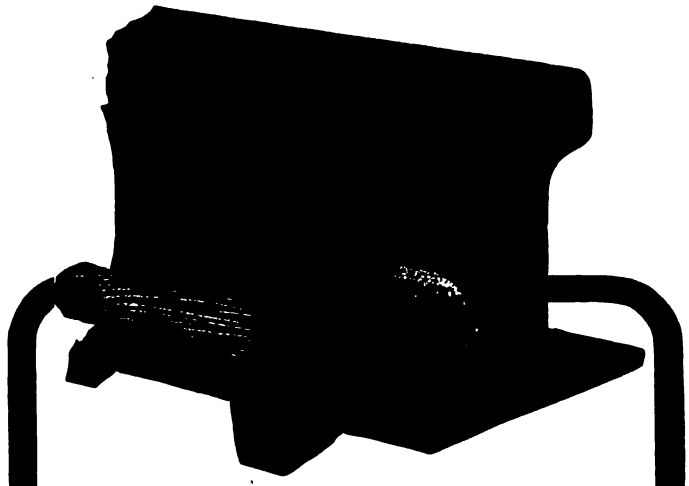
Write for a sample and interesting literature.

American Cable Company, Inc.
105 Hudson Street, New York City
District Offices: Chicago Cleveland Philadelphia Tulsa

Preformed Wire Rope

TRADE **TRU-LAY** MARK

(Reg. U. S. Patent Office)



UNA Metmold Mine Bonds

In this type of UNA Bond each bond head is provided with its own individual mold. There are no separate molds to be carried from joint to joint.

In positioning the bond, merely slip the lug under the base of the rail. A slight blow drives it home ready for welding.

The original UNA Process of Copper to Steel welding is used. The UNA Metal electrode melts under the heat of the arc. As the mold fills up the individual strands of the bond are welded into the bond head and the molten copper welds both to the base and web of the rail.

The welded bond provides a continuous path of copper from rail to rail.

The simple, positive and highly conductive copper to steel weld, make every UNA Bond a good Bond.

Send for a copy of Bulletin No. 116

UNA WELDING AND BONDING COMPANY
1615 Collamer Ave., Cleveland, Ohio

UNA Metmold Mine Bonds

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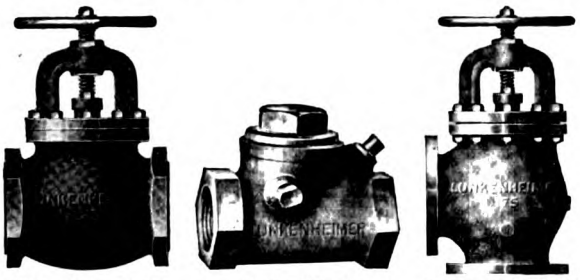
LUNKENHEIMER

Globe, Angle and Check Valves



Globe Iron Body Bronze Mounted | Swing Check Bronze | Angle Iron Body Bronze Mounted

are standard equipment in thousands of plants because of their economical performance over long periods of time. Once installed they require very little attention; they stay tight and maintenance expense is negligible. Procurable in bronze, iron or steel, in all standard sizes, for all prevailing pressures and temperatures. The extensive line provides a selection of the correct valves for any service.

Lunkenheimer Distributors are located in all commercial centers, and render prompt service right from stock. Call on them for your requirements.

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HULBURT OIL & GREASE CO.
Specialists in Coal Mine Lubrication
Gen'l Offices & Works: Phila., Pa.
Distributing Points Throughout Coal Mining Fields.



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Retarders
Automatic Cagers
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Hand Operated Feeders
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THE MINING SAFETY DEVICE CO., BOWERSTON, O.



Standard in 75% of Mines

"Superior" Bit Steel and Finished Bits assure superior performance. All sizes and types. Uniform in quality and finish. Our guarantee of performance and service life is worth investigating.



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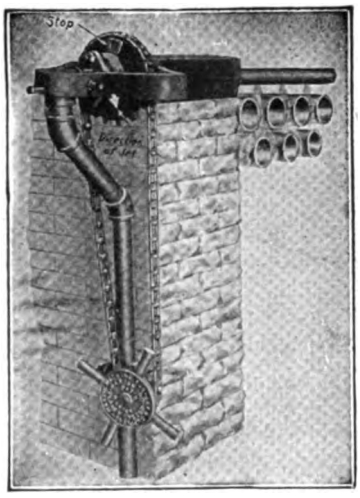

Marion Soot Blowers Save Coal

Soot insulated boiler tubes resist heat transfer and defeat the purpose of tube design.

Clean boiler tubes help to secure maximum effective use of the fuel energy.

Always-clean boiler tubes are easiest obtained by installing Marion Soot Blowers. Operation is so simple, and completely effective, that it is easy for firemen to clean the tubes as frequently as is needed to maintain maximum efficiency.

There is a type and size adaptable to every boiler. *Send for catalogue.*

Marion Machine Foundry & Supply Co.

Box 950, Scottdale, Pa.

MARION MINING MACHINERY

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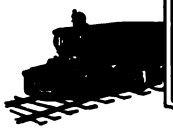

Storage Battery—Trolley and Dual Power Locomotives
THE IRONTON ENGINE CO.
Ironton, Ohio.

ROTARY CAR-DUMPERS FOR MINE CAR

Rotary Dumpers for Railroad Cars
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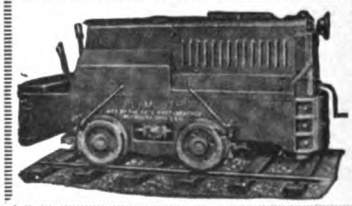

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Gasoline Locomotives

For mine use and general industrial haulage. Made in 3 to 20 ton sizes and in any track gauge. Write for Catalogs and Performance Bulletins.

THE FATE-ROOT-HEATH CO.
Plymouth, Ohio

ATLAS

Mine Locomotives



THE ATLAS CAR & MFG. COMPANY
Engineers CLEVELAND, O. *Manufacturers*

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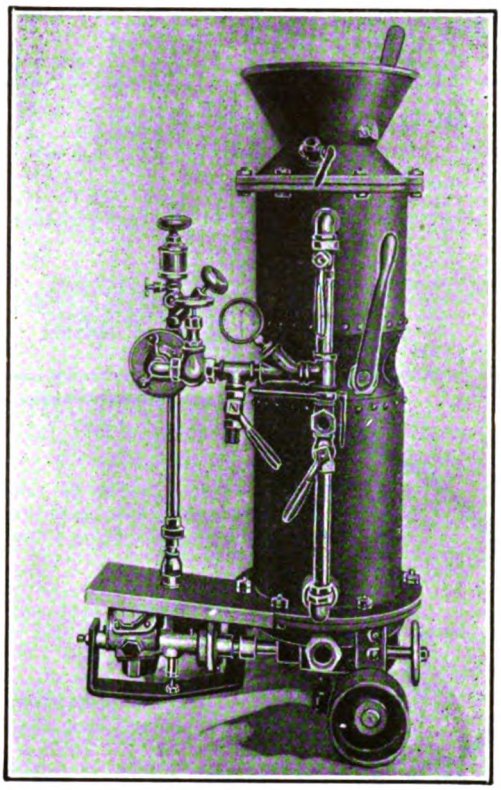
The new "Baby" CEMENT-GUN (TRADE MARK) for a one-drill compressor

(just what you wanted!)

All the advantages of its big brothers—but it's small, compact, convenient. Runs 100% efficient on a one-drill compressor, 60 cu.ft. actual air a minute. Weighs only 200 lbs. Just what you want to have around handy for the repair and maintenance of furnace linings, patching, stack-repairs, "Gunite" application generally.



Let us tell you all that "Gunite," applied by the "Cement-Gun," will save in your mine. Write for Bulletins.

Cement-Gun Company, Inc.
Allentown, Pa.

New York Pittsburgh Phoenix Chicago
Seattle Salt Lake City San Francisco

Sole representative for TRAYLOR MINE TYPE COMPRESSORS. The ideal compressor for all mine work. Large capacity, high efficiency and smallest overall dimensions of any mine type compressor on the market.

The CEMENT-GUN (TRADE MARK) IS NOT A RESTRICTED ARTICLE AND MAY BE PURCHASED AND USED BY ANY ONE.

We have a separate department which does "Gunite" work under contract. Let them make suggestions, estimates and bids on any of your work.

Mine Cars with Originality



Mr. Sanford Day

The Best Cars!
"Automatics"
(with drop-bottoms)



The Second Best!
"Whoppers"
(end and rotary dump)

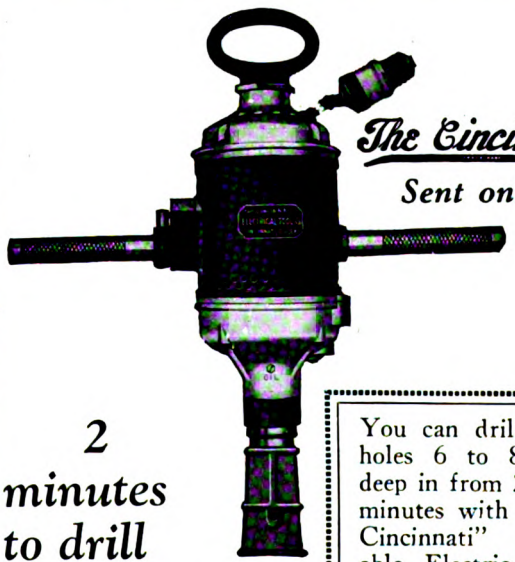


The Best Wheel!
S & D Wonders
(rollers guaranteed 10 years)



I will send you, free, a 4-foot tape line for a bona fide inquiry referring to this ad.

Mr. Sanford-Day of Sanford-Day Iron Wks.
Knoxville, Tenn.



The Cincinnati
Sent on trial

2 minutes to drill shot holes 6 to 8 feet deep!

You can drill shot holes 6 to 8 feet deep in from 2 to 3 minutes with "The Cincinnati" Portable Electric Coal Drills.

Sturdy and easy to handle, they will boost production immeasurably.

Send for Bulletin 113

The Cincinnati Electrical Tool Co.
Madison and Edwards Roads
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85 LIBERTY STREET, NEW YORK

Builders since 1868 of Water Tube Boilers of continuing reliability

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IF you want more light on the trolley clamp question write for pamphlet showing twelve features included in the design of Sure-Grip Clamps which no other one clamp includes.

No other clamp is so simple in construction or so easy to attach or detach as the Sure-Grip. After seventeen years of effort no designer has been able to improve upon the Sure-Grip principle.

Electric Railway Equipment Co.
2900-2918 Cormany Ave., Cincinnati, Ohio



SURE GRIP

Holds Lubricant for long periods

Is seldom shopped on account of truck trouble.
Is easily applied with a few large bolts.
Is guaranteed for a year against hub wear.
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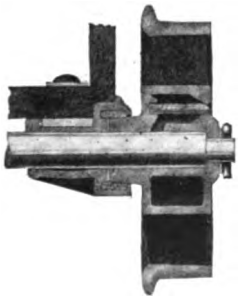

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Patent Open Cap Wheel Truck

This Truck is the ideal running-gear for large or small mines, light or heavy cars, animal or mechanical haulage. It will solve that problem of hard-running cars—on level track it runs 25 per cent easier than other improved trucks selling at the same price.

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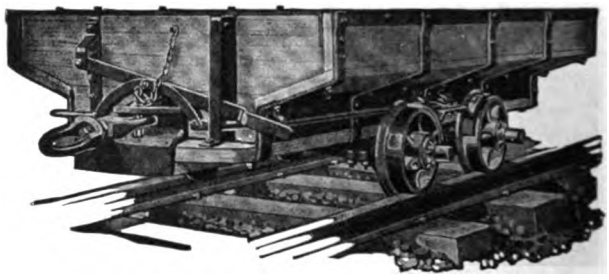

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"Weinman" Self-Oiler Power Pump, direct connected to motor.

Water Cylinder—Double-Acting, Hand Plate Type, Bronze Fitted or Anti-Acid Bronze for Acid Mine Water.

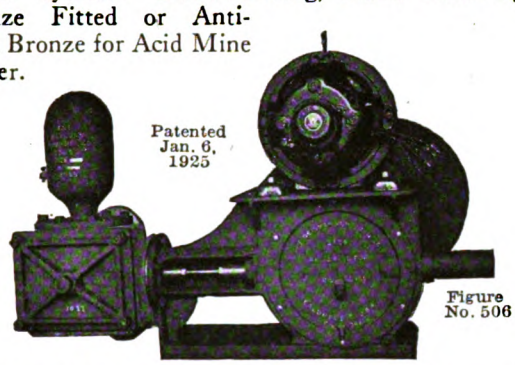

Figure No. 506

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We manufacture pumps of all types for all purposes. Send us your pump inquiries.

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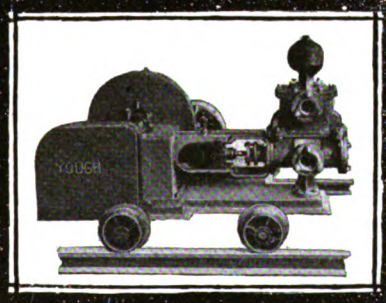

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All bronze bearing, single cylinder, double acting, electric driven piston Mine Gathering Pump. Suction: 3½ in. Discharge: 2½ in. Mounted on 8 in. trucks. Motor at top or side. Overall height 41 in.

Built to resist corrosive effect of mine waters.

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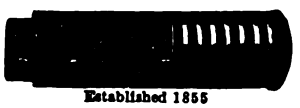

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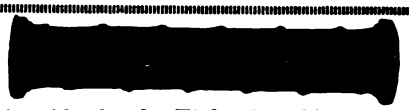

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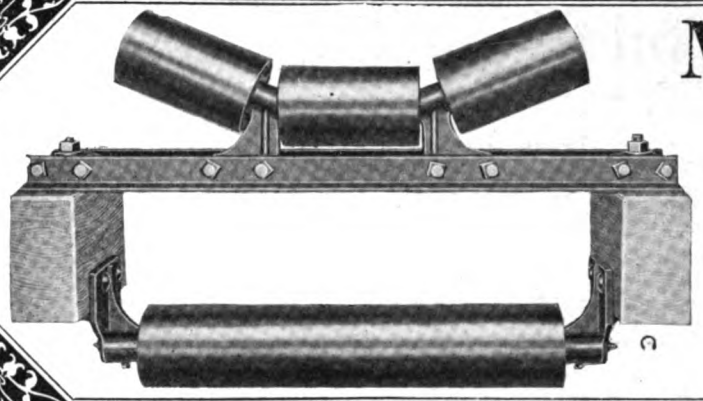

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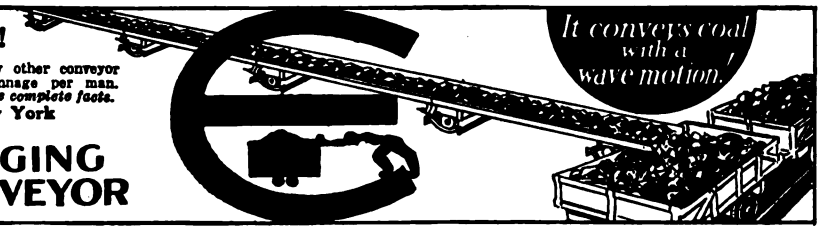

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The remarkably efficient service so long rendered by PLAT-O Tables in cleansing coal of ⅝ in. and finer has now been duplicated in the PLAT-O Washer for coal of ⅝ in. to 4 in.

Write us regarding your coal washing problems.

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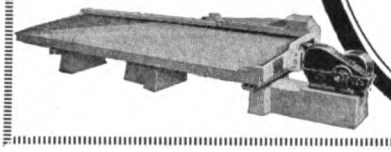

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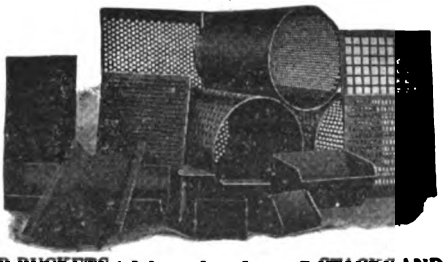

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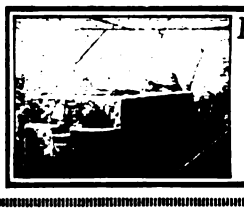

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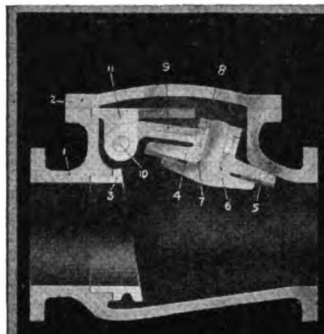

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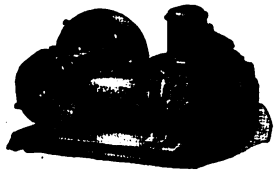

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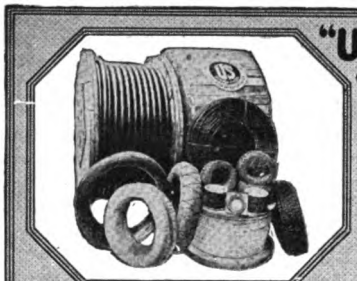

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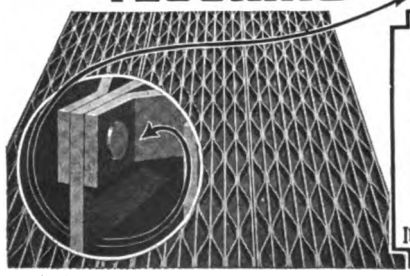
The Steel Flooring with the Shallow Reticuline Bar



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Catalog 4A102

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are economical carriers because
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1—524-ft. Chicago-Pneu. NSBE with motor
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1—1302-ft. Ing.-Rand PRE-2 dir. con. 2200-60-3 or 6.
2—2575-ft. Laidlaw-Dunn-Gordon dir. con. 2200-60-3.
2—2330-ft. Ing.-Rand PRE-2 dir. con. 6600-25-3.
4—2330-ft. Ing.-Rand PRE-2 dir. con. 2200-60-3. (New Trayler compressors)

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75-hp. Ldg. SD shaft hoist with motor.
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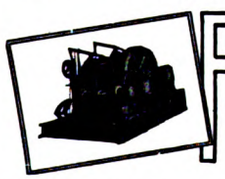

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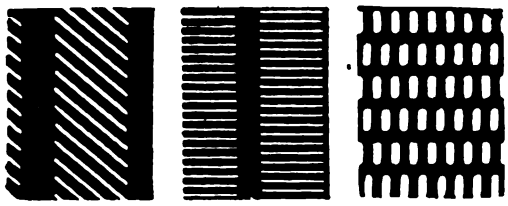

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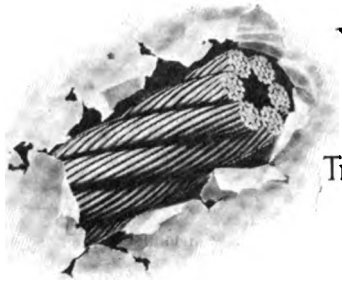

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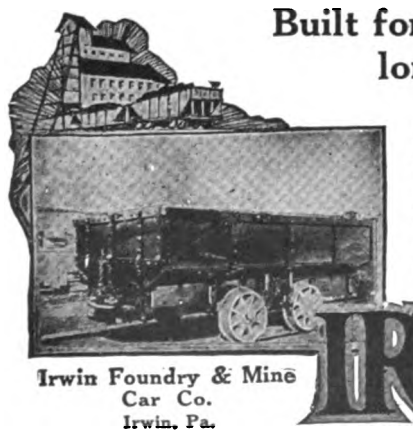

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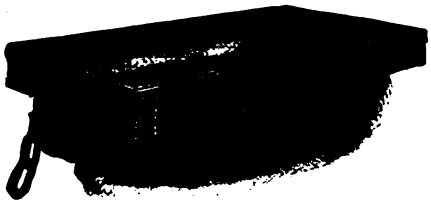

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For Alphabetical Index See Last Page

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American Car and Foundry Co.

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Ryerson & Son, Inc., Jos. T.

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Paragon Electric Co.

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National Carbon Co.

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Timken Roller Bearing Co.

Bearings, Tapered
Timken Roller Bearing Co.

Bearings, Thrust
Timken Roller Bearing Co.

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Dixon Crucible Co., Jos.

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Morse Chain Co.

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Jeffrey Mfg. Co.
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Webster Mfg. Co.

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(See Circuit Breakers Electric)

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Buckets, Coal Handling
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Buckets, Elevator
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Link-Belt Co.
Webster Mfg. Co.

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U. S. Rubber Co.

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Lidgerwood Mfg. Co.

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Morrow Mfg. Co.
Vulcan Iron Works

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Ingersoll-Rand Co.

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Hyatt Roller Bearing Co.

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Link-Belt Co.
Marion Mch. F. & S. Co.
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Hoists, Skip
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Hoists, Steam
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Abendroth & Root Mfg. Co.

Pipe, Wood
Standard Wood Pipe Co.
Wyckoff & Son Co., A.

Plates, Steel
Carnegie Steel Co.

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American Coal Cleaning Corp.

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Allen & Garcia Co.

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Hyatt Roller Bearing Co.
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Webster Mfg. Co.

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Electric Railway Equip. Co.
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Jeffrey Mfg. Co.
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Armstrong, Inc., Archer
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Deister Concentrator Co.
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Una Welding & Bonding Co.

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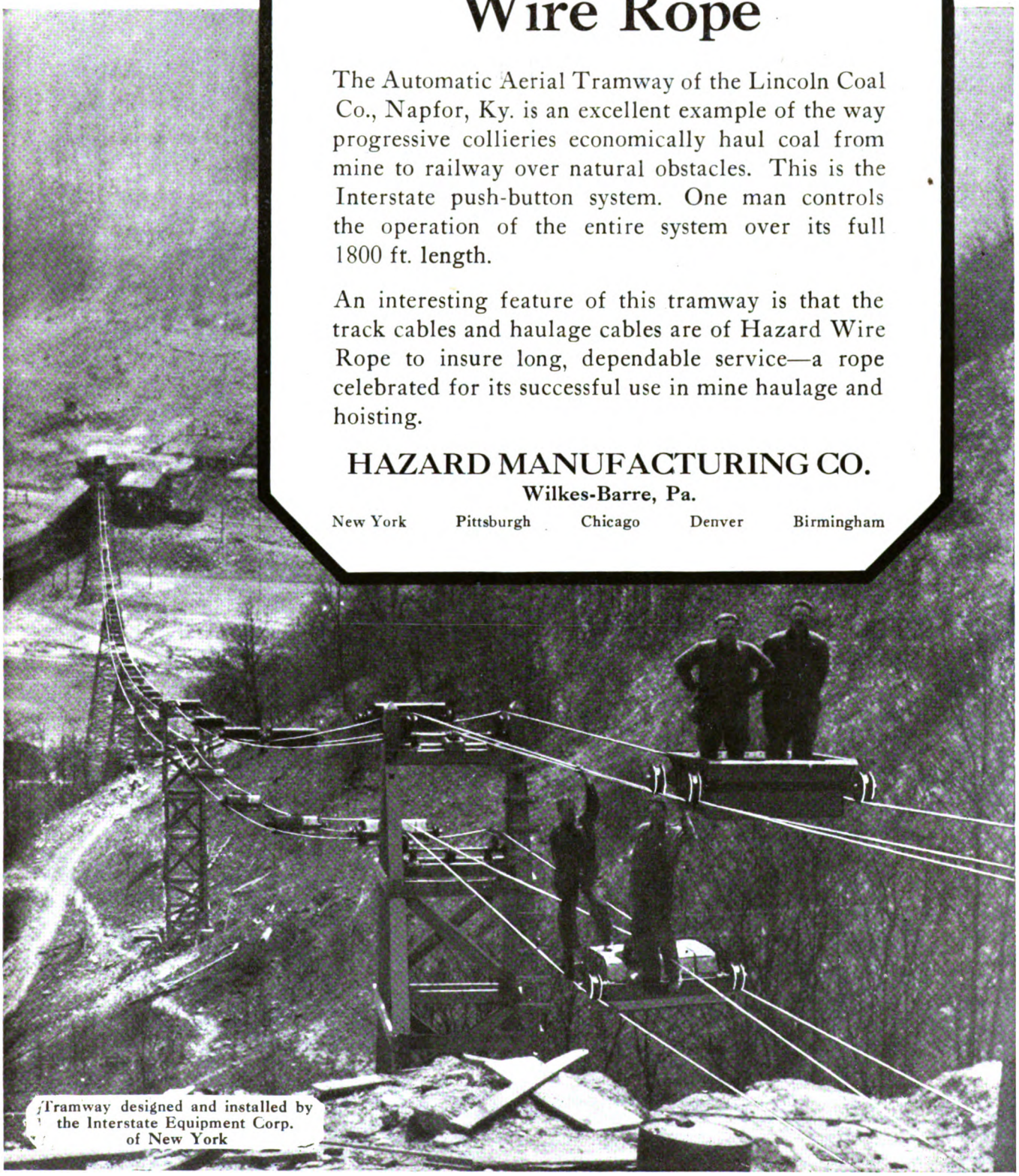

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ALPHABETICAL INDEX TO ADVERTISEMENTS

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	Page
Abendroth & Root Mfg. Co.	34
Allen & Garcia Co.	35
Allis-Chalmers Mfg. Co.	42
American Brass Co.	36
American Cable Co.	29
American Car and Foundry Co. ... Front Cover,	11
American Coal Cleaning Corp.	35
American Pulverizer Co.	34
American Steel and Wire Co.	44
American Well Works	27
Anaconda Copper Mining Co.	36
Atlas Car & Mfg. Co., The	30
Babcock & Wilcox Co.	32
Barrett, Haentjens & Co.	37
Bethlehem Steel Co.	40
Boyts, Porter & Co.	33
Cameron Steam Pump Works, A. S. (Ingersoll-Rand Co.)	16
Car-Dumper & Equip. Co.	30
Carnegie Steel Co.	40
Cement-Gun Co., Inc.	31
Central Foundry Co.	34
Chattanooga Armature Wks.	36
Chicago Mica Co.	24
Chicago Perforating Co.	34
Chicago Pneumatic Tool Co.	33
Cincinnati Electrical Tool Co.	31
Coloder Co., Inc.	34
Combustion Engrg. Corp.	12
Consulting Engineers	36
Conveyor Sales Co., Inc.	35
Deister Concentrator Co.	34
Deister Machine Co.	35
De Laval Steam Turbine Co.	42
Deming Co., The	37
Diamond Machine Co.	35
Dixon Crucible Co., Jos.	40
Dorr Co., The	36
Electric Railway Equipment Co.	32
Electric Ry. Impt. Co.	39
Electric Service Supplies Co.	36
Electric Storage Battery Co., Inside Front Cover	
Fairmont Mining Mchry. Co.	6
Fate-Root-Heath Co.	30
Fawcus Machine Co.	44
Flory Mfg. Co., S.	39
For Sale Ads.	38
Frederick Iron & Steel Co.	15
Harrington & King Perforating Co.	40
Hazard Mfg. Co.	43
Hendrick Mfg. Co.	35
Hoffman Bros.	36
Hulburt Oil & Grease Co.	30
Ingersoll-Rand Co. (Cameron Steam Pump Works, A. S.)	16
Ironton Engine Co.	30
Irving Iron Works	37
Irwin Foundry & Mine Car Co.	40
James Manufacturing Co., D. O.	10
Jeffrey Mfg. Co., The	5
Joy Manufacturing Co.	25
Leschen & Sons Rope Co., A.	37
Lima Locomotive Wks., Inc.	28
Lincoln Steel & Forge Co.	13
Linde Air Products Co. Inside Back Cover	
Link-Belt Co. Outsite Back Cover	
Little Giant Co.	34
Lorain Steel Co.	40
Ludlum Steel Co.	37
Lunkenheimer Co.	30
McGraw-Hill Publishing Co., Inc.	18, 19
Mancha Storage Battery Locomotive Co.	39
Marine Canvas Supply Corp.	28
Marion Machine Foundry & Supply Co.	30
Marion Steam Shovel Co.	34
Medart Co., The	39
Michigan Pipe Co., The	34
Midvale Co., The	24
Mining Safety Device Co.	30
Montgomery Coal Washing & Mfg. Co.	35
Morrow Mfg. Co.	34
Morse Chain Co.	34
Mott Core Drilling Co.	36
Nordberg Mfg. Co.	44
Nuttall Co., R. D.	21
Ohio Brass Co., The	4
Ohio Grease Co.	33
Okonite-Callender Cable Co. Inc.	44
Okonite Co., The	44
Ottumwa Iron Works	44
Paragon Electric Co.	44
Pennsylvania Crusher Co.	34
Phillips Mine & Mill Supply Co.	32
Pittsburgh Knife & Forge Co.	30
Positions Vacant	38
Positions Wanted	38
Raymond Bros. Impact Pulverizer Co.	34
Ridgway Dynamo & Engine Co.	39
Robins Conveying Belt Co.	42
Roebling's Sons Co., J. A.	40
Ryerson & Son, Inc., Jos. T.	42
Sanford-Day Iron Wks., Inc.	31
Schools and Colleges	36
Searchlight Section	38, 39
Second-Hand Equipment	38, 39
Simplex Wire & Cable Co.	37
Smidth & Co., F. L.	26
Southern Wheel Co.	40
Standard Wood Pipe Co.	34
Sullivan Machinery Co.	9, 36
Sweet's Steel Co.	39
Testing Engineers	36
Testing Laboratories	36
Timken Roller Bearing Co.	22
Tool Steel Gear & Pinion Co.	26
Una Welding & Bonding Co.	29
U. S. Rubber Co.	37
Vulcan Iron Works	7
Want Advertisements	38
Watt Car & Wheel Co.	32
Waverly Oil Works	34
Webster Mfg. Co.	17
Weinman Pump Mfg. Co.	33
Weir Kilby Corp.	23
Westinghouse E. & M. Co.	8
West Virginia Rail Co.	14
What and Where to Buy Section	41, 42
Wilmot Engineering Co.	37
Wyckoff & Sons Co., A.	34

INDEX TO SEARCHLIGHT SECTION

Armstrong, Inl., Archer	38
Buchanan Coal Co.	38
Cohen & Sons, Louis	39
Consolidated Coal Co.	38
Conveyor Sales Co.	38
Duquesne Electric & Mfg. Co.	38
Foster Co., L. B.	39
Frank, M. K.	39
Green Railway Equip. Co., L. A.	39
Hyman-Michaels Co.	39
Jefferson Gas Coal Co.	39
Miller-Owen Electric Co.	38
Moorhead-Reitmeyer Co., Inc.	38
Morrison & Risman Co., Inc.	39
New York Blue rint Paper Co.	38
Nashville Industrial Corp.	38, 39
Positions Vacant	38
Positions Wanted	38
Sherwood, E. C.	39
Want Ads	38

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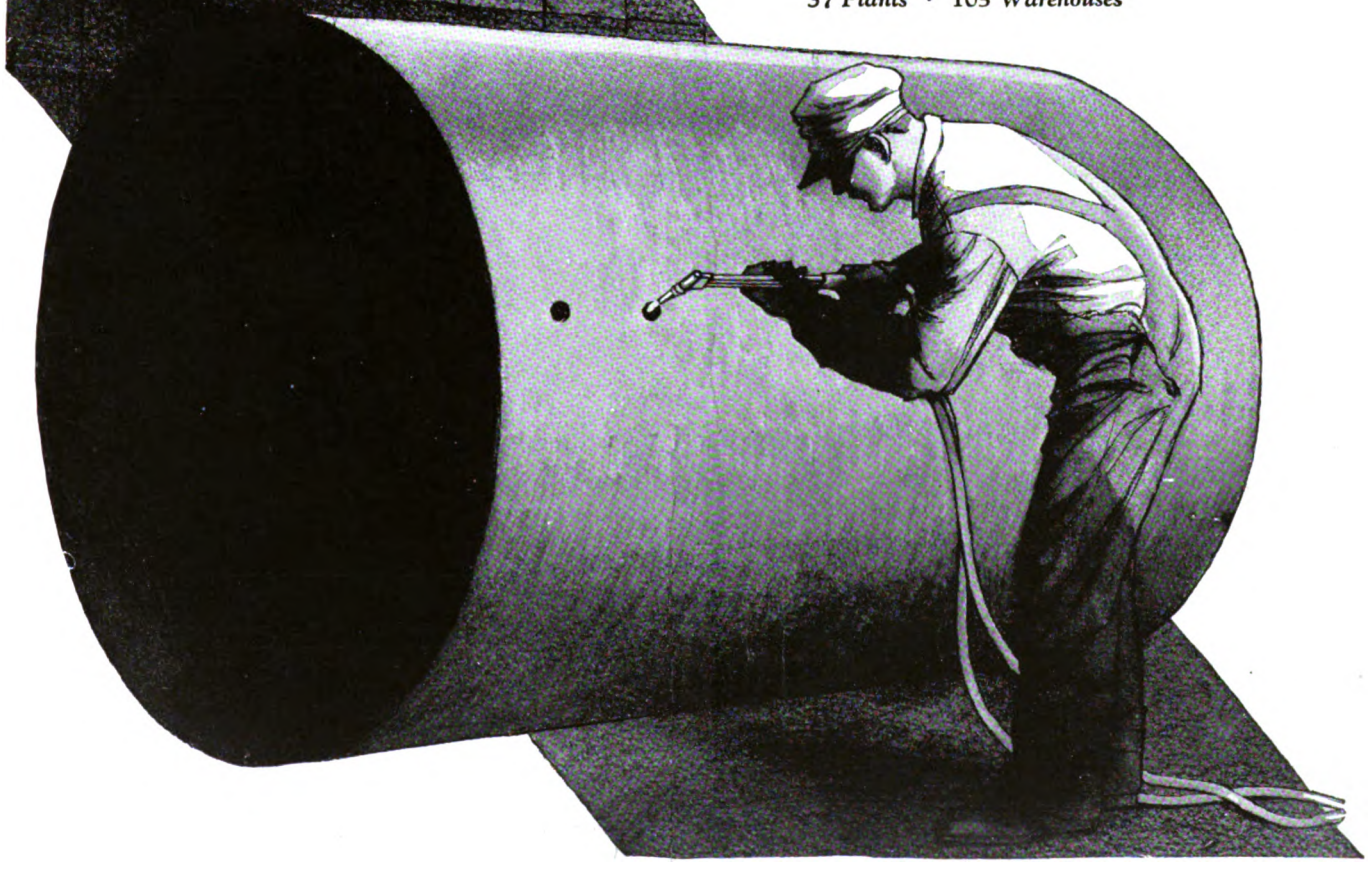

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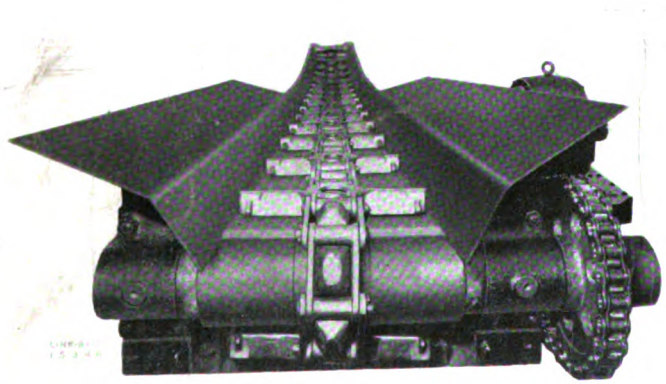

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