# COAL AGE

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## Postponed Troubles Draw Interest

THE BRITISH COAL CRISIS has shifted so rapidly from an industrial dispute to a class struggle threatening to merge into a civil war that, for the time being, the issues which precipitated the clash are submerged. This is unfortunate. A class army has been massed with the intention of compelling a nation to coerce the adversaries of a class group. This challenge to orderly government is serious enough to engage the attention of statesmen and citizens throughout the world. The outcome, if the issue is fought to a definite conclusion, necessarily will profoundly affect social and economic life and theories here and abroad.

These large aspects of the situation cannot and should not be minimized. Nevertheless, the coal industry and our government both will be the losers if they permit interest in these more general issues to obscure a clear understanding of the genesis of the trouble. The root of that trouble was economic, but attack upon it was delayed by official palliatives and political compromises. "Peace at any price" was the ruling consideration—until it was finally driven home that steady tribute paying was the price.

Prior to the World War the export trade was not only the key to the prosperity of the British coal industry but coal was the foundation of Great Britain's vast foreign commerce. Wreck that structure, and England ceases to be a first-rate power. The war disorganized and curtailed exports. The problem which faced the British coal industry when peace was restored was the recovery of the foreign markets it had lost. Home consumption has shown little change. The yearly fluctuations in the quantities used in Great Britain, both in tonnages and in percentages, in no wise compare with the fluctuations in this country.

British producers could not meet the demands of labor for higher wages and shorter hours and sell their coal in competition with other contenders for the world trade in fuel. Twice the government forestalled an economic settlement of the problem by subsidies, the last of which expired on April 30. Twice the industry was bribed to forget its internal differences in the hope, apparently, that a turn in the wheel of fortune would somehow eliminate the basic economic difficulties. The withdrawal of this contribution by the taxpayers set the stage for the present strife.

Happily there is no reason to fear that the United States may find itself in a similar predicament. Our non-union output is too large for that. But England's plight shows the dangers of the one-hundred per cent unionization advocated by the United Mine Workers as the cure for American coal evils. The English crisis also is a vindication of the loudly condemned policy of non-interference pursued by the national administration during the last anthracite strike. Interference would have only postponed the issue—and a postponed issue, as England is now learning, exacts a usurious rate of interest when the day of settlement arrives.

And yet the suggestion still is heard in Washington and elsewhere that the government be empowered to take over the mines in times of emergency and fix emergency wages and prices.

## Possibilities in Research

FROM A SMALL MINE in southern West Virginia came a story in last week's issue of *Coal Age* on the use of storage batteries to smooth out the load curve of the mine substation and thereby reduce the monthly demand charge. By this means the company saved money. The public utility corporations operating direct-current stations and substations have long recognized the value of storage batteries floating on the line as a help during sudden peaks. Many industrial corporations are following the same plan. But this installation is, so far as we know, the first application at the mines of the principle of storing up current during periods of low demand to be later released upon attainment of a predetermined economical peakload.

Of course, results somewhat similar in principle have been and are obtained wherever locomotives and cutting machines are driven by storage batteries, which can be charged at night or at any time when the demand for power is low.

The fundamental principle of the use of storage batteries for this purpose is sound and possesses worthwhile possibilities as a subject for research, both for manufacturers who desire to widen their markets and for coal-mine operators who seek economies in operation. Battery installations of proper design will enable a mine to be carried over its heaviest peakload, will allow the mine to operate upon the most economical demand rate and will enable it to increase its load factor, the batteries discharging during peakloads and being recharged during periods of lessened power consumption.

The energy in kilowatt-hours put into the batteries at a comparatively low rate over a rather prolonged period will cost little compared with the saving the battery will make by keeping the kilowatt-demand rate within an economical limit. Kilowatt-hours are sold by the power companies at a few cents each whereas the kilowatt demand charge runs over $1 per unit.

Batteries in this class of service if properly inspected and kept in condition should last many years. It would seem that for such service the battery would not need to be so rugged as one used in locomotives of power-trucks. Despite the value of standardization, it might be well to design the batteries for this particular service to suit the needs of the job that the battery has to perform rather than to accord with standards set up for an entirely different class of work. In this way

the batteries can be obtained for far less than is necessarily paid for locomotive and power-truck batteries that have to be capable of withstanding frequent shocks.

## It Can't Be Done

AMERICA HAS GROWN POWERFUL because it has used power. Ever since about the year 1800 in all phases of this country's industrial activity the utilization of mechanical energy has steadily increased. First came the cumbrous saw- and gristmills driven by ponderous slow-turning overshot waterwheels. Later these gave way to the much smaller and, in most cases, more efficient hydraulic turbines.

With the development of the steamboat and locomotive came a corresponding development of the stationary steam engine. Then, just before the dawn of the present century the steam turbine became a potent factor in power generation. This machine and the electric generator were developed in large measure concomitantly because the one was admirably adapted to driving the other.

Electric distribution of power solved many of the problems in energy transmission that had long vexed industry. Not only was transmission greatly simplified but it was simultaneously rendered more efficient. Lineshafts, belts, ropes, tumbling rods and the like, could not compete, either in cost or utility, with the little, stationary, well-protected electrical conductors with which everyone is familiar today.

Electric transmission, also, has made it possible in many cases to take the machine to the work to be done instead of taking the work to the machine, as before it was necessary to do. This is well exemplified by the electric drill or the more recent electric hand saw that will cut wood from six to ten times as fast as it can be sawn by hand.

And all of this development and utilization of power has taken place because it paid financially. Among the ancients—and not so far back either—a person's prosperity was frequently judged largely by the retinue of servants he maintained. The number of slaves that a man owned and which were constantly at his beck and call, ready at all times to do his bidding, fixed his status in the civilization and community in which he lived.

Today residents of this country have working for them—far more continuously than any bondsmen of former times could possibly endure to work—machinery and mechanical devices of one sort and another equal in power to an average of thirty slaves for every man, woman and child in the land.

So efficient, so advantageous has the employment of mechanical energy become in the performance of work useful to humanity that it is today recognized as little short of an economic crime to employ human muscles during any appreciable period of time for doing any task that a machine can be made to perform. Unfortunately some people in the past—and plenty of their ilk are still extant—have been inclined "to buck" even to the point of violence, the adoption of labor-saving machines and devices.

They resent interference with the daily routine of their chosen vocations even though this may admittedly further the welfare of humanity, themselves included. Ultimately the economic rearrangement brought about by the adoption of new and better equipment and processes is as much to the workman's advantage as it is to that of the rest of mankind. For in any real democracy where lines of class distinction and caste are non-existent the status of the individual cannot rise without exerting a corresponding influence upon the body politic and vice versa.

When economic advantage lies predominatingly on the side of machinery, it is useless for any man or set or class of men to attempt for long to resist its adoption. Certain it is that many of the processes of coal mining now performed manually are susceptible of mechanization. There are naturally certain problems involved that cannot be worked out immediately or their solutions obtained over night. It is but natural, perhaps, in the light of past experience, that the innovation of mechanical loading should be resisted by the workmen affected by it. In the end however it will redound quite as much to the advantage of the miner himself as to that of the populace that consumes his product.

Concerted effort on the part of the mine workers to stay the advance of mine mechanization may act as a temporary deterrent to the universal adoption of machinery and mechanical processes. Economic laws, however, are as inexorable as are the laws of Nature and the mine workers might about as wisely attempt to prohibit the ebb and flow of the tides as to prevent the adoption of labor-saving machinery in the coal mines of America.

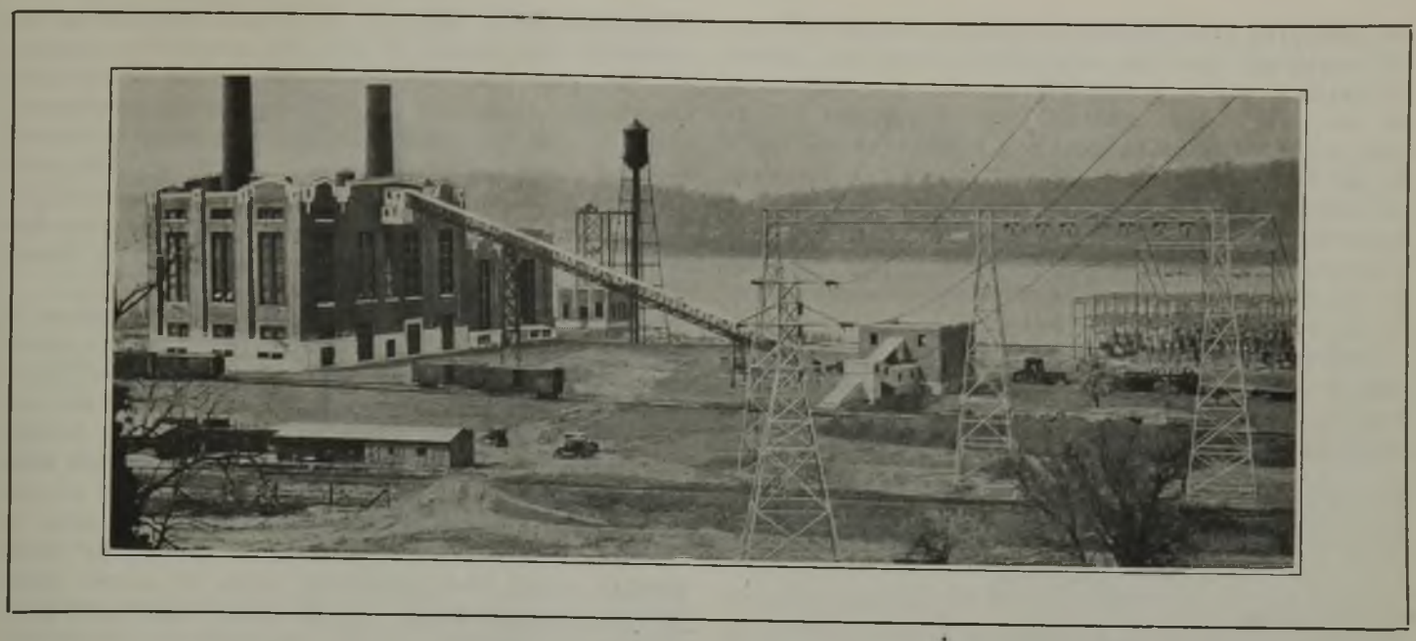
## Safety and Sanity

A FAVORITE dictum of C. P. Tolman, at one time president of the National Safety Council, is that "Safety is only good engineering," by which he means that the engineer has not schemed the most profitable way of doing things if he has forgotten safety. He frequently illustrated his thought by showing how a dull band saw was not only a danger to all who had to work around it but wasted power, wrecked itself, cut an undue and irregular kerf and was anathema to a good engineer.

He, in the course of his work, has saved many a life from lead poisoning by conserving the lead of the company with careful methods of handling. A poor place, he thought, was the passing breeze and the bodies of the employees for the good lead dust that the company had been at expense to mine, to ship and to refine. He proved that fact abundantly by the savings resultant on his methods of keeping the dust where it belonged.

In coal mines it is no different. Safety is and always has been good engineering, even though it has become many times as important since the accidents of the mine worker have had to be paid for by his employers. Many an operator who was fully insured has had to deduct from his earnings or from his capital, if he had no earnings, the tremendous cost of an explosion or mine fire. Even the wrecking of a trip, the breaking of a switch, the loss of coal pillars or the injury to a machine is a recognizable charge on profit or on capital invested. The effect of accidents on morale also is bad. No operator is so hedged in by economic difficulties nor is any mine so profitable, that indifference to correct safety principles can be regarded as good engineering.

The Bureau of Mines is showing us in its safety efforts and studies not only the safer way but incidentally the cheaper way to mine coal.



# In Southern Illinois Big Central-Station Plants Deliver Reliable Power to Coal Mines

## Two Efficient Plants Furnish Mines with Operating Energy — Diversified Load Factor Attained by Serving Industrial Plants and Municipalities Gives Results That Isolated Stations Cannot Attain

By Frank H. Kneeland
Associate Editor, *Coal Age*, New York, N. Y.

AS A RULE the public utilities that devote their energies to the generation and distribution of electric current seek as diversified a load as possible. Power plants can earn only when in operation, and their earnings are roughly proportional to the average percentage of the time during which their generating equipment is utilized. In other words, that plant earns most which operates most continuously day and night at or near its full capacity. The load factor or average percentage of loading on the plant thus plays an extremely important rôle in determining the earnings and profits of the installation.

The load factor afforded by coal mines alone is anything but good, especially in those regions where by union agreement practically all operations except ventilation are performed during the day shift, leaving the night load small and even inconsequential. It is interesting to learn, therefore, that large, reliable, efficient central stations and transmission lines can be built and operated profitably to serve a region whose basic industry is coal production.

To furnish the southern portion of Illinois, the Central Illinois Public Service Co. has built plants and erected transmission lines so that the counties of Union, Jackson, Williamson, Franklin, Saline and Gallatin, which produce by far the greater bulk of Illinois fuel, are afforded the benefits of central-station power. This is one of six practically complete power transmission systems owned and operated by this public utility in Illinois.

In the headpiece is shown the power plant at Grand Tower, Ill. Here are already installed 50,000 kw., and provision has been made for doubling its capacity twice, making 200,000 kw. in all. The transformer station at the extreme right steps up the generator voltage to that of the transmission line. The hills of Missouri may be seen on the opposite bank of the Mississippi.

In probably no other industry is continuity of service more important than in coal mining. Many, if not most, of the mines in this region are closed-light operations wherein any stoppage of ventilation may prove serious. Furthermore, if haulage is interrupted for any appreciable length of time miners will not long remain idle in their places but will quit for the day. As a result, all reasonable precautions must be taken to make the electrical service rendered thoroughly reliable.

The transmission system is provided with a power plant at each end of the territory served. On the west is the plant at Grand Tower located on the east bank of the Mississippi River. This is provided with six B. & W. boilers of 1,160 hp. each. All these boilers are equipped with chain-grate stokers, those on the east side of the plant being of Coxe and those on the west side of Illinois make. Each stoker is 18 ft. wide and the fuel consumed is 1½-in. Illinois screenings.

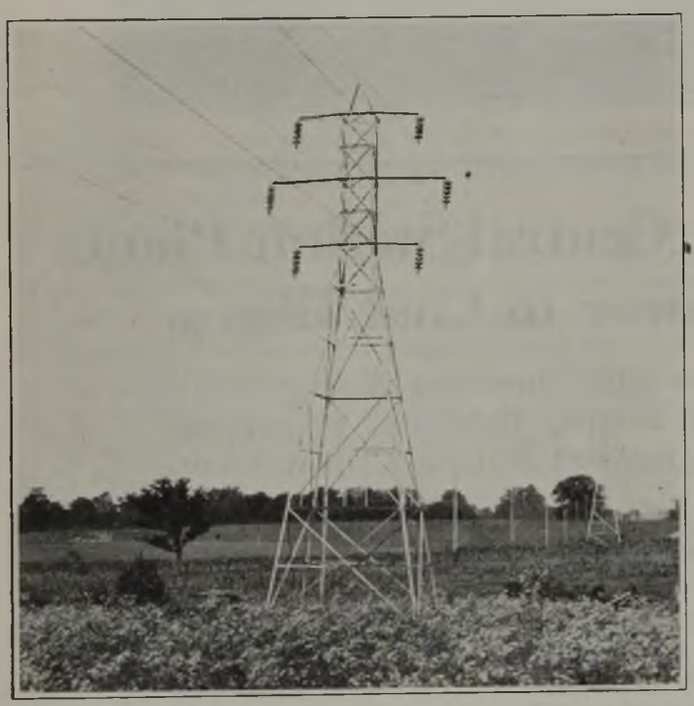
### Ample Storage Is Provided

Coal is brought to this plant in drop-bottom cars. Ample space is available for storing fuel during the summer for use in winter. It is both stocked out and reclaimed by means of a locomotive crane, which is also available at all times for working over, moving and cooling off the coal should it at any time be threatened with spontaneous combustion or should it actually take fire.

From the railroad cars, coal is delivered to a track hopper from which it is discharged by means of a

reciprocating plate feeder and passed through a Bradford breaker that not only breaks down any frozen lumps that may be present but removes any tramp iron or other extraneous material that it contains. It is then delivered to an inclined belt conveyor which leads to the top of the boiler plant. This inclined conveyor delivers to a similar one of the horizontal type that spans the top of the bunkers longitudinally. This latter conveyor is provided with a traveling tripper that can be moved either automatically (that is by the power of the belt passing over it) or by hand.

There are twelve bunkers in all, each of which is capable of holding about a carload of coal so that approximately 600 tons of fuel may be stored in the bunkers. This is roughly one day's supply. The bunkers are arranged in two rows (one to each row of boilers) with doors in the partition between them through which the coal may flow so that a boiler on either side of the plant may be fired with coal from the bunker on the opposite side.



**Nervous System of the Territory Known as Egypt**

Over sere pastures, waving corn and blooming buckwheat, clear across the southern end of the state from the Mississippi to the Ohio extends this 66,000-volt transmission line, furnishing the power to light the homes and mine the coal that warms the hearths of a prosperous people.

Steam is carried on the boilers at 400-lb. pressure and is superheated approximately 250 deg., giving a final temperature of about 700 deg. F. Each boiler is provided with its own forced-draft and its own induced-draft fan making control of the air passing through the fuel bed and boiler passages easy and certain. These steam-generating units absorb heat with great efficiency, the temperature of the stack gases being only about 270 deg. F. even when the boilers are forced to 250 per cent of their normal rating.

Two main generating units are installed in this plant. These are duplicate turbo-generators each of 25,000-kw. capacity. These machines take steam at full pressure and exhaust to a vacuum which averages approximately 29 in. Naturally these units are highly efficient, a kilowatt-hour of electrical energy being produced from $1\frac{1}{2}$ to $1\frac{3}{4}$ lb. of coal with an average heat content of 11,500 B.t.u. per pound as delivered.

Abundant water is drawn from the river, but as Mississippi River water is notoriously roily, being exceeded in this respect by few streams in the country, the Missouri alone excepted, this water is carefully screened, strained and filtered before going to the condensers. All water used for boiler feeding is treated chemically and thus purified before entering the boilers. The hot circulating water is returned to the river at a point appreciably below or down stream from the intake, so that by no possibility can it again be drawn into the circulating system.

On the eastern end of this transmission system is the Muddy power plant at Harrisburg. This is a much older installation than the one just described although it is still highly efficient. In this plant steam is carried at 250 lb. pressure with 150 deg. of superheat. As this installation is not built beside any large stream able to furnish an abundant condenser supply, water for its operation is impounded, in a reservoir many acres in extent. This furnishes make-up to the spray pond through which the circulating water is passed upon leaving the condensers. In this plant four turbo-generators are installed. These comprise three 5,000-kw. and one 10,000-kw. units, making 25,000 kw. in all. The two power plants operate in parallel with each other in supplying current to the line between them.

### Making the Line Accident-Proof

But the most efficient power plant ever built would be at a woeful disadvantage from the standpoint of their value to the public if the line over which current is transmitted to the customer were not efficient. Any public-service company of this kind has two products to sell—kilowatt-hours or energy and service, or continuity of energy supply. It is necessary, therefore, that the transmission line be not only efficient but as nearly accident-proof as possible. If, as in this case, transmission is made by means of a main or trunk line and numerous side, or delivery, branches, reliability is equally important on all of these.

In this power system a double transmission line—that is, two sets of conductors, each set consisting of three cables or one for each phase—is carried on substantial steel towers extending northeast from the plant at Grand Tower to West Frankfort and from thence in a southeasterly direction to the power plant at Muddy. Here a similar line has been built northeast to Eldorado and thence southeast to Shawneetown on the banks of the Ohio River where connection is made to the line of the Kentucky Utilities Co., furnishing electrical energy to western Kentucky. The current is transmitted over this main trunk line at 66,000 volts. The standard towers of this line are about 80 ft. high and under normal conditions are spaced about 700 ft. apart.

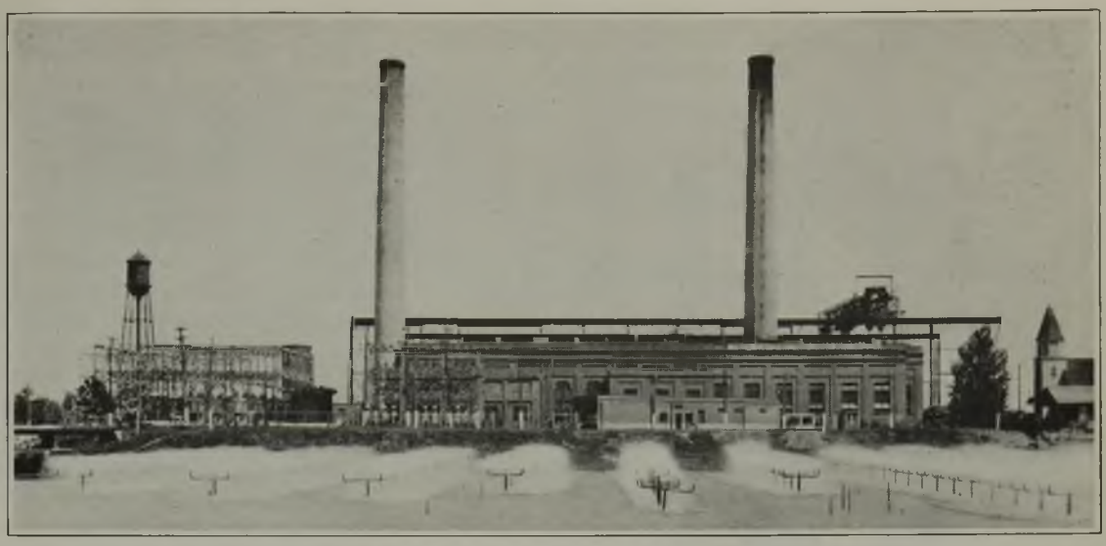
### West Frankfort's Transformer Station

Many power lines radiate from the big transformer station at West Frankfort, where the main line potential is stepped down from 66,000 to 33,000 volts for transmission to the various mines and communities served. The biggest industrial consumer in this locality is the Old Ben Coal Corporation. This company takes all its current at one point and transmits over its own lines to each of its twelve mines scattered throughout this region. This arrangement tends to equalize the demand and reduce excessive peaks. The more mines that are connected in this way the more thoroughly and completely are sharp demand peaks avoided.

Other companies served in this region are following

**Across the Pond**

This is a view of the Muddy plant taken from the bank of the spray pond. Make-up water for the operation of this plant is impounded in a reservoir several acres in extent which affords an ample supply for both condensing and boiler-feeding purposes.



a similar practice wherever possible. Thus, the Orient mines, Nos. 1 and 2, of the Chicago, Wilmington & Franklin Coal Co., are connected electrically, and power for their operation flows both ways from a common substation serving both mines.

Again, electric hoisting naturally constitutes an intermittent demand for power and tends to run up the peak requirements which, in turn, affects the price paid per unit of energy consumed. In order to lower, so far as possible, this demand charge, most electric hoists installed throughout this region are operated on the Ilgner, or Ward-Leonard, system. By this system a flywheel motor-generator set is interposed between the line and the hoist. The excessive momentary current requirement of the hoist is thus largely supplied by the momentum of the flywheel which thus irons out, or equalizes, the power demand.

### Power Factor Is Ninety per Cent

A higher power factor is preserved throughout this transmission system because of the many synchronous motor-generator sets employed. This power factor averages 90 per cent or more on the entire system.

Throughout this region all or practically all, the mining load comes on in the daytime. About the only operations performed in the mines on the night shift are ventilation (this is common to the day load also), some pumping and some battery charging. In other words, the conditions in this field are such that the night load of the mines is extremely light compared to the demands of the day shift. This results in a bad load factor so far as the mines alone are concerned, their total requirements averaged throughout the entire 24-hr. period being only about 25 per cent of their maximum demand.

By lighting all the communities through which its lines pass and by supplying most of the local industries there located, the Central Illinois Public Service Co. is enabled to increase this load factor to about 45 per cent. This makes possible corresponding economies in power generation and consequently a lower sale price.

Again, the region served by this power system is one that is poorly watered. A glance at any map of Illinois will show that few sizable streams traverse this area, which in this respect differs somewhat from the central and northern portions of the state. Though the actual rainfall over the southern counties probably does not differ materially from that in other portions of the upper Mississippi valley, yet its distribution throughout the year appears to be more erratic. At times no rain has fallen in this region for as much as three months at a time, these being the hottest months of the summer. As a result the procurement of a water supply sufficient for the operation of a sizable power plant may prove to be both difficult and expensive, if not even impossible. Utilization of purchased power relieves the mine of this expense and the management from this source of trouble and worry.

## Flat-Rope Hoist Planned For 4,265-Ft. Lift

IN HOISTING from extremely deep mines the great length of round rope that would be necessary on the ordinary drum cannot be accommodated and flat rope must be substituted. The following description of a deep mine hoist built to accommodate this type of rope is abstracted from *The Engineer*, London, England, of Feb. 19 and relates to a recent installation in the Belgian fields where the depth of the coal beds is excessive.

Flat rope used in such deep mines resembles a ribbon woven from steel wires. This is wound upon itself like tape on a bobbin as the cage is raised. Some decided constructional advantages inhere to this system. Thus, the hoist drums are simple and light in weight compared to those of the cylindrical or cylindro-conical type ordinarily used. They consequently impose small gravity and inertia stresses upon the machine.

In the accompanying illustration Fig. 1 shows a flat rope hoist recently installed by the Société Anonyme des Ateliers de Construction de Charleroi in Belgium. It raises coal from the main shaft of the Peiton pit of the Société des Carbonnages de Monceau-Fontaine. It was the original intention at this colliery to employ round ropes because of their greater durability, but the huge size of the drums necessary as well as other considerations caused the abandonment of this idea and the substitution of the flat rope system. The hoist in question is designed for an ultimate working depth of 1,300 m., or 4,265 ft. The present depth is 805 m. (2,640 ft.). Each cage complete weighs 4,000 kg. or 8,816 lb. and will hoist eight mine cars per trip. The weight of an empty car is 300 kg. or 662 lb. while its contents when full of coal will weigh 600 kg. or 1,322 lb. When loaded with rock this weight will be 950 kg. or 2,095 lb. When new the cable is 200x25 mm. (7.9x0.985 in.) in cross-section. It is composed of ten hawsers, each consisting

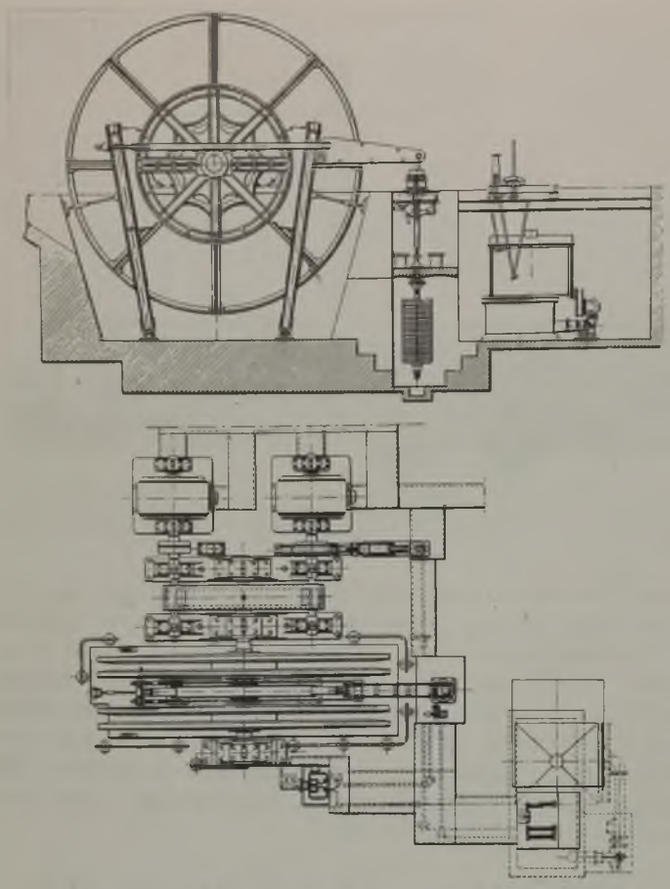


**Fig. 1—Plan and Transverse Section of Hoist**

This is a typical modern flat-rope hoist. Its distinguishing characteristics are the narrow width and light weight of the drums. Aside from this the machine here shown strongly resembles both in structure and duty cycle a modern American hoist fitted with double conical drum.

of four strands of eleven wires each. Its weight is 11.9 kg. per meter of length (about 8 lb. per foot) and its breaking strength is 212,000 kg. (about 468,000 lb.). This affords a factor of safety of 9 when carrying a maximum load of 23,500 kg. or 50,000 lb.

When hoisting from a depth of 805 m. (2,640 ft.) it was specified that the machine should be able to raise a useful load of 7,600 kg. (16,750 lb.) at the rate of 25 trips per hour. From a depth of 1,000 m. (3,280 ft.) it must be able to raise a useful load of 6,650 kg. (14,650 lb.) at a speed of 23 trips per hour, while from the full depth of 1,300 m. (4,264 ft.) it must be able to lift a useful load of 5,700 kg. (12,580 lb.) at the rate of 20 trips per hour. It was also specified that the machine must be able to raise a load of 500 kg. (1,100 lb.) from a depth of 1,000 m. at a speed not exceeding 75 per cent of normal. A further condition was that the hoist should have a good commercial efficiency when working with cages of half the capacity above mentioned from a depth of 805 meters.

In order to meet the conditions specified it was decided to drive the engine by means of two duplicate electric motors connected to the main shaft by double-helical gears. The arrangement is shown in the accompanying illustrations. The motors are placed side by side with their pinions meshing with opposite sides of the main gear wheel. The speed reduction thus secured amounts to 9.85 to 1. These motors are of the induction type, 3-phase, 50 cycle, 6,300 volts and have a continuous rating of 575 hp. each. Their synchronous speed is 500 r.p.m.

Should it become necessary to operate this hoist for a short period at reduced capacity, one motor may be disconnected at the flexible coupling, while, if such operation were to be continued over an extended period, the pinion would, of course, be removed. It should be noted that the pedestals of the pinion shafts are mounted on continuous transverse sole plates so that the distance between the various shaft centers is rigidly maintained.

The hoist drums are of the type common to Belgian mines. They consist of cast-iron centers carrying radial steel arms of built up T-sections and connected at their outer ends to angle iron rims. Arms and rims serve only as guides to insure an even coiling of the rope upon itself and consequently during normal operation no stress is thrown upon them. Each arm carrries a facing of oak where it comes in contact with the rope. Both drums are movable on the shaft so that adjustments of the rope may be easily and quickly effected. They are mounted on hubs keyed to the shaft and each can be instantly locked to its hub by means of a simple patented device. Provision is thus made for any degree of adjustment required.

### Double Water Rheostat Controls Hoist

The driving motors are started simultaneously by a double water rheostat, each part of which has three fixed electrodes, composed of numerous sheet iron plates about $\frac{1}{8}$ in. thick. Each set of these electrodes is, of course, connected to the slip rings of the motor controlled. The plates are specially shaped to give the required rate of change of resistance as the depth of immersion varies. The liquid employed is a solution of carbonate of soda. This is delivered continuously by a small motor-driven centrifugal pump to the electrode chamber. The tank has a rectangular opening in one side provided with a sluice gate through which the solution can escape into a reinforced concrete tank below. This gate is operated by the starting lever and its position will obviously determine the rate at which the electrodes are immersed.

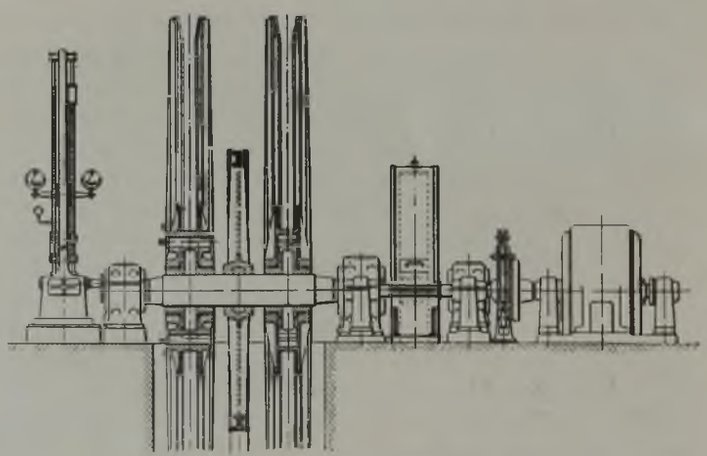
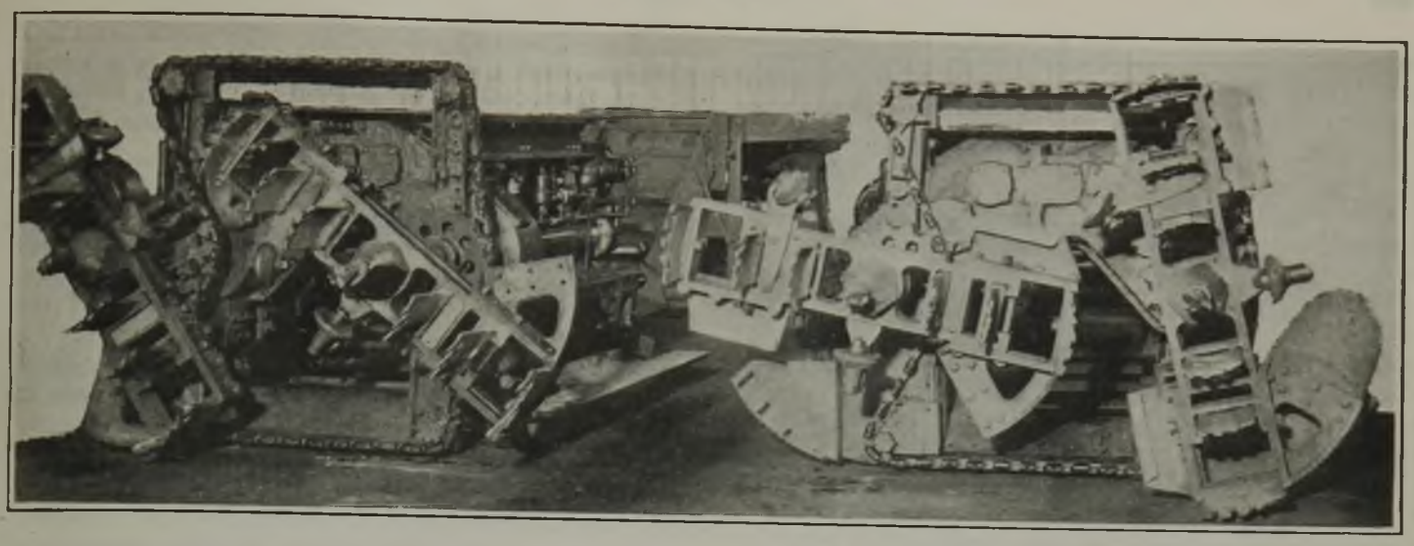


**Fig. 2—Vertical Section Through Drums**

The narrow width of the drums or spools is worthy of comment. The width of opening of each spool is of course only slightly greater than the width of the rope. Wearing strips of oak protect the drum spokes.

To reverse the direction of rotation of the motors and hoist, a three-pole change-over switch is connected mechanically to the rheostat lever. This switch controls the excitation of sets of solenoids which in turn operate the reversing oil switch. This reverses the connections of the two phases in the stator of each motor and thereby changes the direction of rotation of the magnetic field.



# Machine Cuts and Loads with Minimum Breakage And Without Aid of Explosives

## Advances One Foot in About Two Minutes—Saves Roof and Ribs by Making Blasting Unnecessary—Shape of Roadway as Driven Is Nearly Oval—Costs Are Less Than Those of Hand Mining

By Oscar Cartlidge
Consulting Mining Engineer
Charleston, W. Va.

TWO large revolving arms fitted with long, thin, protruding blades set with teeth of high-speed tool steel, followed by wedging wheels that break the coal down in large lumps onto a swiftly moving conveyor, the whole device advancing into the solid coal at the rate of an inch every ten seconds—such is the McKinlay automatic coal mining and loading machine, a mechanism that cuts coal out of the solid and delivers it into mine cars or to conveyors without the exercise of manual labor or the use of explosives.

One of these machines has advanced in Pocahontas No. 3 coal at the rate of over 7 in. per minute, cutting an entry approximately 5 ft. high and 10 ft. wide and loading three cars of 3-ton capacity in 10 minutes. In the Illinois No. 6 bed it has advanced an entry 6 ft. 2 in. high and 11 ft. 4 in. wide a distance of 195.5 ft. in 30 hours of consumed working time, with a production of 155 tons of coal. This was accomplished by entirely inexperienced men in the employ of the coal company, with no representative of the machine manufacturer present. None of the men operating it had ever seen a machine of this type before. Later runs in this same mine have averaged 8 ft. of advance per hour, the actual forward movement at times being as much as 4 in. per minute. Places have been driven for 35 ft. in this extremely hard coal without a change of cutting bits.

In a Kentucky mine the first machine of this type actually placed in operation, working under conditions where but one-third of the forward speed was available on account of power shortage, 368.5 ft. of advance was made in 24½ shifts. If full power had been available on the machine to push it into the coal, it is safe to assume that the advance would have been at least twice this distance, if not more. This entry was driven toward the outcrop and was actually advanced to within 4 ft. of daylight before the machine was compelled to halt. During the night the roof caved, and the next morning the machine runners walked outside through the opening. It would have been impossible to approach anywhere nearly as close to the outside if work had been conducted by ordinary methods and the coal brought down with explosives. This entry was 6 ft. high and 11 ft. 6 in. wide.

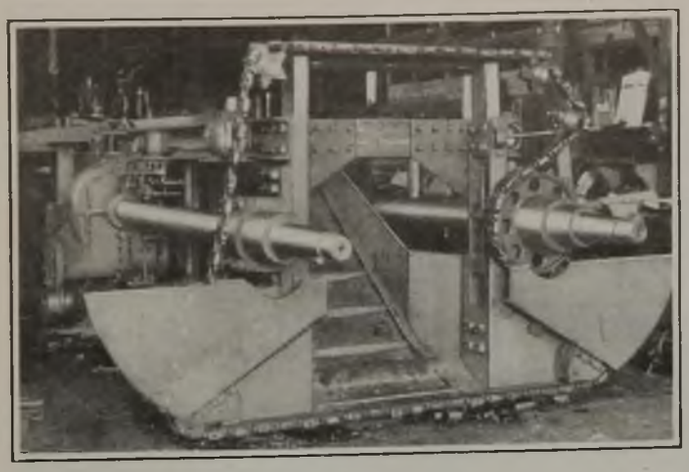
Actual labor costs for an average day at this mine, in comparison with the standard cycle of machine cutting, shooting and hand loading, is interesting. Such a comparison shows the results recorded in the table.

**Cost of Operation of McKinlay Machine Compared with Machine Cutting with Hand Loading**

| McKinlay Machine | | Standard Method | |
|---|---|---|---|
| *Daily Expense* | | | |
| Machine operator | | | $7.00 |
| Helper | | | 5.60 |
| Car trimmer | | | 5.60 |
| Total labor | | | $18.20 |
| Tons produced | | | 62.4 |
| *Costs per Ton* | | | |
| Labor | $0.291 | Cutting | $0.120 |
| Power (purchased) | 0.025 | Power | 0.025 |
| Depreciation (estimated) | 0.100 | Explosives | 0.040 |
| | | Loading | 0.620 |
| Total production cost | $0.416 | Yardage | 0.100 |
| | | Total | $0.905 |
| Difference, per ton, in favor of machine | | | 0.489 |

A test made on this machine covering an entire day's run gave a metered power consumption costing 2½c. per ton of coal produced. Tests on an installation in

The headpiece shows the business ends of two McKinlay machines in different positions. The revolving heads cut out circular openings that slightly overlap each other, leaving triangular segments at top and bottom. These were cut away by means of the cutter chain that follows close behind the revolving heads.



**With Cutter Arms Removed to Show Conveyor**

This shows more clearly the cutter chain and the means employed for driving it and altering its height. As shown the machine will cut a heading about 9 ft. wide and 7 ft. high. The cutter travels at a linear speed of about 100 ft. per minute.

Illinois showed an average demand of 65 hp. when the machine was advancing at the rate of 3 in. per minute.

In the softer Pocahontas coal, during a test run this machine when under full power required 55 amp. of current and three mine cars of 3-ton capacity each were loaded in 10 minutes.

This machine affords a complete process for mechanical coal mining and performs all of the usual functions of undercutting, blasting and loading. The frame is rectangular, built up of heavy structural members upon which the various parts are mounted. Steel castings, nickel-steel castings, steel forgings and nickel-steel forgings intended for extra heavy duty, with bearings of ample surface, are used throughout. Roller and ball bearings are employed where necessary, and the gears are all of hardened steel with cut teeth.

### Many Simultaneous Actions

The entire unit is mounted on wheels and moves forward without tracks under its own propulsion traveling on the bottom of its own cut. The various operations performed are: (1) The cutting and wedging down of the coal, (2) the pushing or sweeping of the coal onto the conveyor, (3) the transport of the coal through the machine and into cars or onto auxiliary conveyors, and, (4) the movement of the machine forward as it cuts its way into the coal—that is, the feed. These will be considered briefly in the order named.

The cut made usually is about twice as wide as the height of the coal bed in which the machine is operating. In thin coal, however, the cut may be widened by the addition of one or more extra rotating arms. The shape of the cut is almost oval, but with a smooth, flat surface about the vertical axis at both the top and bottom.

The main cut is made by two heavy cast-steel bars, or arms, which revolve in slightly overlapping circles. These arms are driven by the two main shafts and are of nickel steel. Both revolve toward the center at the bottom. The heavy bearings of the drive shafts. with their rigid construction and the balanced motion of the arms, permit the cutting to be done with little vibration. Fitted into these cutter arms are long flat bit holders about 10 in. wide curved to the radius of the circle in which they operate.

These holders are made of nickel steel and are fitted at the ends with removable cutting bits. They are detachable from the rear of the cutter arms for quick replacement of the bits. The distance at which they are spaced on the cutter arms and the depth at which they cut are determined by the size of the product desired and the natural cleavage of the coal. Each bit holder makes a narrow circular kerf about 2 in. wide. When these kerfs are advanced to the proper depth—usually 12 to 18 in.—adjustable wedging wheels also carried on the cutter arms enter them and force the coal apart until it breaks and falls in front of the machine but in the rear of the arms.

The cutter arms, making two perfectly circular openings in the coal, leave two triangular segments, one at the top and the other at the bottom of the cut directly in front of the center of the machine. These segments are overcut and undercut respectively by a chain provided with removable bits driven by cast-steel sprockets on the main shafts. The guides for this chain form wedging plates which break the coal loose.

### Drill Guides Progress of Machine

In the center of each cutter arm is a pilot, or guide drill. This bores into the coal slightly in advance of the kerf-making bits and breaks it outward to the first or inner circular kerf. The cutter arms are driven by the main motor of the machine, which is geared to the main shafts. Practically all the power used is absorbed by the cutting tools.

In front of the main frame but behind the cutter arms is a space into which the dislodged coal falls. On the back of each cutter arm is mounted a heavy plate sweep or shovel. This, with a half sweeping, half shoveling action, delivers the coal to the machine conveyor, thoroughly cleaning up all the material that is broken down.

At the bottom of the frame and extending from its forward end to a point beyond its rear extremity, is a sturdily built steel flight or drag conveyor. The coal is pushed onto this conveyor by the sweeps and is delivered by it into mine cars or to an extension conveyor if the mine is using a conveyor system.

The rear ends of the main drive shafts terminate in ball bearings mounted on a steel-casting crosshead. At the center of this crosshead is mounted a hydraulic plunger or ram. This may be jacked to either side of the cut in the solid coal and moves the entire machine forward when pressure is applied through the pump.

### Can Regulate Feed at Pleasure

It can be run at any speed desired by means of a variable-speed electric motor driving a hydraulic pump, employing light oil as the operating liquid. The greater the application of this pressure the faster will the machine move forward. All cutting stresses on the arms are transmitted directly through the main drive shafts to the thrust bearings on this crosshead and do not pass through the frame of the machine. The direction of the cut can be varied by adjusting the jacks extending from the ends of the ram to the sides of the cut. The machine also is kept in alignment by this means.

After the machine has been put in operation and the driver has become familiar with the proper feed to maintain in the coal in which it is working, the jacks can be set and the machine operated with little or no attention until it has moved forward the full stroke of the plunger. The flow of the liquid is then reversed,

causing the plunger to move inward; the jacks meanwhile are reset. This operation takes about one minute, after which the machine again may be started.

While cutting is going on the men see to the delivery of the coal into the cars and keep up the mine track back of the machine. An operator soon becomes accustomed to the sound of the machine when it is working properly and needs to give it little attention except to reset the jacks.

The number of men required to operate this machine varies from three for the largest size to two for the smallest. At present three sizes are built, each having extensions on the ends of the cutter arms providing a variation of 8 in. in the diameter of the circular cuts.

The minimum and maximum dimensions of the cuts are: Small size, 4 ft. 6 in. high by 8 ft. wide, extensible to 5 ft. 2 in. high and 10 ft. wide; medium size, 5 ft. 4 in. high by 9 ft. 2 in. wide, which can be increased to 6 ft. 2 in. high and 11 ft. 4 in. wide, and the large size, which is 6 ft. 4 in. high by 11 ft. 6 in. wide, extensible to 7 ft. high and 12 ft. 2 in. wide.

### Chains Can Be Changed to Suit Arms

When the cutter arms are either lengthened or shortened the cutter chain also must be raised or lowered in accordance. This is quickly done by altering the position of the sliding heads to which the corner sprockets are fastened. The same principle of moving the cutter chain up or down is used to make the machine conform to varying thicknesses and positions of partings when separating them from the coal.

In order to facilitate the handling of cars, the most recently constructed machines are provided with an extension conveyor long enough to permit several cars to be placed under its delivery end, the actual number depending on the size of the place being mined. The ram or pusher advances the cut about 3 ft. at one stroke, after which the oil is reversed and the machine made ready for another start. During the minute or so required for this operation the loaded cars are removed, being replaced with empties. Consequently the conveyor should be long enough to permit the spotting of enough cars to hold all the coal mined at one advance of the plunger.

The most recent machines are fitted with hydraulically operated leveling devices connected directly to the feed cylinder. They are thus enabled to follow any variation of the coal bed by changing the cutting angle.

For thin coal, in order to obtain width more than two circles may be cut or the two circles may be pitched farther apart, with the cutter chain loosening the coal between them. Another alternative would be to have several parallel cutter arms, driven from the main shafts, which would operate on long faces, being propelled by a rope or chain.

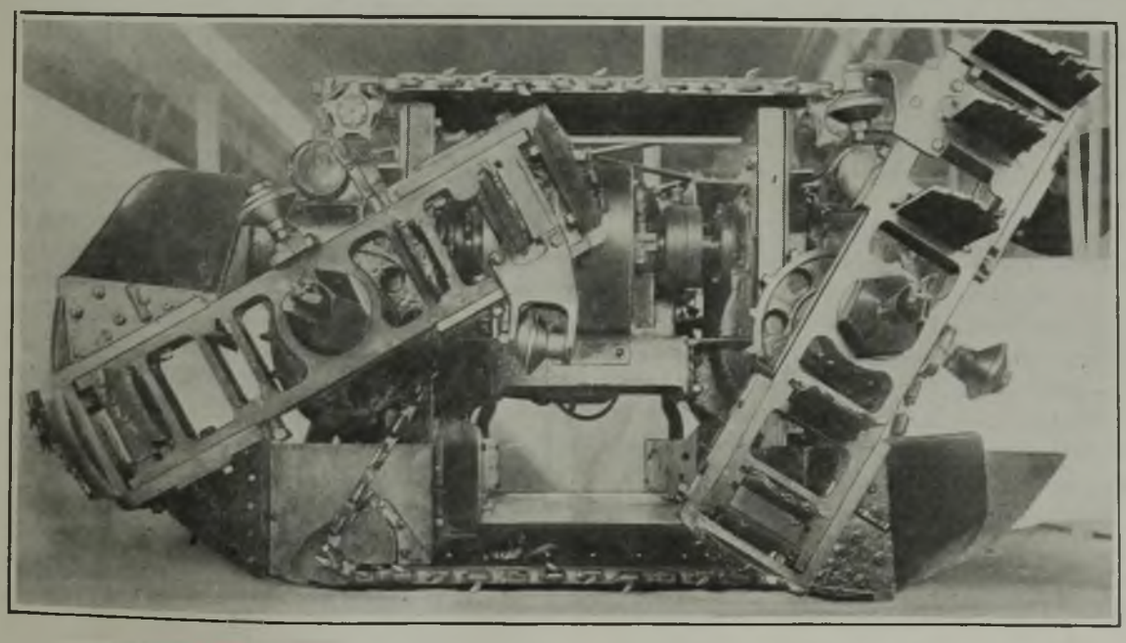
The present machines are provided with long axles and removable wheels that may be set to any gage. These are replaced by smaller wheels before the cutters are started into the coal. Dashpots, actuated by hydraulic power, raise and lower the wheels for easy and quick interchange.

Designs are being prepared for other sizes intended for work in coal as thin as 30 in. Still others will provide for the removal of bands of slate and other impurities. This is accomplished by superimposing one set of cutter arms above another, the lower cut extending from the floor to the parting and the upper from the parting to the roof or to the next band of impurity, if there is more than one.

The upper cut will advance slightly ahead of the lower, and the coal from it will be deposited by a short drag upon the main conveyor below. Wedging guide plates, supporting the chain that cuts out the triangular segments, will break up the slate band, and a short side conveyor will carry it to the gob. More than one band can be removed in this way by superimposing cutter arms, all of which will be securely fastened to the lower frame and driven from the main shafts by chain and sprockets. The upper cutter chain is so made that it can be raised and lowered. Thus a parting or band can be followed, should it increase in thickness or change position. It also is necessary to lower this chain when transporting the machine to another working place.

### Sharpen Bits on Emery Wheel

The outer set of bits on the cutter arms, of course, travel much faster than those nearer the center of the cut and are in contact with more coal in any given length of time. As a result they dull more quickly. The number of rotations made by the cutter arms is about eighteen per minute. By experimenting with different grades of high-carbon tool steel and by using blunt-



**"Bows On"**

With bit holders and bits in place. The center augers, wedging wheels and the means employed for adjusting or changing the length of the cutting heads also are visible. The bits and augers are sharpened on an emery wheel instead of being heated and retempered. As much as 35 ft. of heading has been cut with one set of bits before replacement.

nosed or hammer bits it has been possible to make an average advance of 35 ft. in the Illinois No. 6 bed before having to change bits. These bits are not heated and hammered to shape when dull but are simply "touched up" on an emery wheel without retempering.

Successful but experimental work has been done with this machine in fireclay mines. In these tests it was found that by setting the bit holders close together the clay was reduced to small pieces. This is desirable inasmuch as fireclay has to be finely ground before being made into any manufactured product. At present a machine with one crossarm is being built for a Cleveland contractor who intends to drive a tunnel with it in black slate. This passage will be 6 ft. in diameter and 6,000 ft. long. Doubtless the machine can be used to cut not only fireclay but slate and shale.

This machine, which is manufactured by the McKinlay Mining & Loading Machine Co., of Philadelphia, Pa., has a low maintenance cost and promotes safety by dispensing with explosives entirely and by cutting an approximately oval passage that gives more support to the roof than if the ribs were vertical. By making it possible to drive places without the use of explosives the roof, ribs and floor are saved the shattering that invariably accompanies blasting.

# Charleston Welcomes Coal And Byproduct Men

## Buyers of Coking Coal Call for Evaluation Table and Stabilized Prices—Possibilities of Gas Coals—Loading Problems Discussed

**By a Staff Contributor**

CONFINED AS IT WAS to coal mining and to the problems involved in producing and disposing of byproducts, the meeting at Charleston, W. Va., May 6 and 7, of the local section of the American Institute of Mining and Metallurgical Engineers proved of special interest to mining men. The attendance of fifty or more was made up for the most part of mine operators and mining engineers. Territory from New York to Illinois, inclusive, was represented.

Appropriately, the subject which to some operators has been a "bitter pill" was placed first on the program. A joint paper by Robert M. Lambie, chief of the West Virginia Department of Mines, and Gordon MacVean, of the Mine Safety Appliances Co., dealt with pertinent facts on the subject, "Rock-Dusting in West Virginia." In the discussion that followed, prominent operators told how "Bob" Lambie had slowly but surely convinced them of the value of rockdusting and how the dose was proving to be sweet rather than bitter.

In May of last year, there were but two completely rock-dusted mines in the state, these being mines Nos. 2 and 12 of the Boone County Coal Corporation at Sharples. Today thirty mines owned by twenty-two companies are listed among those rock-dusted. Although the center of the practice is in the Fairmont district, there are now dusted: Seven mines in the Wheeling-Panhandle district; five in the Pocahontas-Tug River field; four in the New River field; two in Logan County; two in Boone County and one in the Thacker field.

In the paper attention was called to the factors which influence the explosibility of coal dust. Important among these are the volafile content, the fineness and the dryness of the coal. Experiments indicate that with coals of varying volatile content the presence in the dust of the entry of from 54 to 75 per cent of incombustible matter will prevent the propagation of an explosion.

John H. Jones, safety engineer of the Old Ben Coal Corporation, led the discussion of this paper. He described in convincing terms the part that rock dust played in stopping the gas explosion at Orient No. 2 mine. The section of the mine in which it occurred had been dusted five or six months before, and the ratio of rock dust to coal dust was probably 80 to 20. The entries had been driven 250 ft. beyond the end of the dusting and were very wet for this distance. The gas accumulation at the face probably extended only 30 to 40 ft. This condition provided an excellent opportunity for the wet section to stop the explosion, but it failed.

### After 25 Ft. No Coke Was Seen

At a point 100 ft. from the face the coal dust did not ignite, but at 250 ft. ignition of the dust began. Twenty-five feet beyond the beginning of rock dust no coke was to be found. The inference was that water is of no value in stopping the propagation when such a body of gas is present, whereas rock dust is quite effective in extinguishing the flame.

Mr. Jones disagreed with a statement in the paper regarding the cleaning of the entries before dusting. He thinks it better to rock-dust without waiting to clean the dust from the entry. This gives immediate instead of delayed protection. In his opinion if the coal dust exceeds a certain limit there is no increased danger, for the force of the explosion is limited by the quantity of oxygen the air contains. Any excess of fuel for the flames remains unburned.

He said that in the Illinois mines the rock dusting did not deteriorate 10 per cent per month, as the readers of the paper asserted. Assuming 93 per cent of non-combustible to be present at the start, by the end of the first month the percentage will have dropped to approximately 83. At the end of the following month it will be 81 per cent, and in the succeeding months 80½, 80¼ and so on. The Old Ben Coal Corporation had found that dusting twice a year would afford protection. The falling of the roof and the spalling of the ribs were the principal causes making redusting necessary.

The material from which the Old Ben Coal Corporation prepares its dust is a shale occurring above the coal. It is ground to an average fineness such that 92 per cent will pass through a 255-mesh screen. Although the dust was of so dark a color that it did not aid much in the illumination of the mine, it was the best that they had found, considering the fineness with which it could be pulverized and the high percentage of incombustible matter it contained.

Asked concerning the practice in the Old Ben mines in regard to rock-dust barriers, Mr. Jones said that the length of the trough has been reduced to 6 ft. and the dust content per trough from 200 to 60 lb. Moisture does not appear to affect the dust in the barriers to an appreciable extent. Certain barriers which were put up nine years ago are still as effective as ever. Although the troughs had been redesigned partly because troughs of smaller capacity were more readily supported, the main reason for the change was to make the troughs of such size that they could be readily

lifted and carried, should their contents be needed to extinguish a mine fire.

He described how seven years ago a serious fire was extinguished by rock dust. The chemical extinguishers had failed to control the flame, and seals were in the process of erection, when someone suggested the use of rock dust. A number of troughs were brought to within 150 ft. of the fire, which was as close as they could be transported on account of the heat of the burning coal. A trough of dust was then thrown in the air toward the fire. This dust was carried into the flame by the air current. It cooled the flame to a noticeable extent. This was followed immediately by an advance of about 10 ft., at which point another trough was discharged. The fire fighters proceeded, gaining about 10 ft. with each discharge until at last the men walked right over the fire. Others following plastered dust over the points that were smoking. The extent of the fire is indicated by the fact that, on cleaning up the roadway, a car of coke was loaded. This was shipped to the power plant for boiler fuel.

### Water Not Without Effect

Carl Scholz, manager of the Raleigh-Wyoming mines, stated that he believed moisture does have a marked effect in arresting or minimizing an explosion. He cited the case of the local gas explosion at Glen Rogers mine, which is very wet. After the explosion no coke could be found. To illustrate the difference in moisture between this mine and a certain Illinois mine he stated that he had to discontinue overcutting in the Illinois mine, whereas in the West Virginia operation he was able to centercut the coal without causing any appreciable dust. He closed his remarks by declaring his belief in the rock-dust remedy, repeating, however, his conviction that the presence of moisture was helpful.

Dr. T. T. Read, formerly of the Bureau of Mines and now assistant secretary of the American Institute of Mining and Metallurgical Engineers, then discussed the relation between the mechanicalization of mines and accidents. Generally speaking, the introduction of machinery in an industry does increase the hazard, but statistics so far show little or no relation between accidents per 1,000 men employed and the degree of mechanicalization of coal mines.

R. W. Sweetser, assistant to the vice-president of the American Rolling Mill Co., read a paper entitled "Evaluation of Coal in Metallurgy." He stated that the necessity for evaluating coal came to mind when he found how closely the quantity of coke required per ton of pig iron varied with the percentage of ash in the coke. The old idea that a certain quantity of ash was necessary in metallurgical coke to give it strength is entirely fallacious, said Mr. Sweetser.

Speaking generally, coke is used in a furnace solely to provide a source of carbon. The higher the carbon content of the coke the better. One per cent of ash in coking coal adds 30c. per ton to the cost of pig iron. Mr. Sweetser advised the coal men to start at the point at which the iron men have already arrived. They had prepared a schedule on which was based the premiums and penalties which determined the relative values of iron ore. He asserted that iron men had just as many variables and difficulties facing them in making a schedule as the coal men have in determining one for their product.

In the discussion Dr. T. T. Read emphasized the fact that a coal table would not have to show the correct relative values of the coke but would need only to provide a scale from which to measure. C. E. Krebs, consulting engineer, of Charleston, related the difficulties which he had encountered in trying to make a table evaluating coals on the basis of their various desirable and undesirable qualities.

### Of Many Analyses, Swore By Best

Josiah Keely, president of the Cabin Creek Consolidated Coal Co., expressed the opinion that to base prices on an analysis would result in an endless squabble as to the fairness of the sampling. Mr. Sweetser replied that the iron men had all of these difficulties and more. Twenty years ago it was not unusual for the seller of ore to engage as many as three different laboratories to sample and analyze his shipments. He based his price on the best analysis. Today the sampling must be done by a method which had been adopted as a standard.

Mr. Kelly, a commercial chemist, stated that 75 per cent of all the coal samples sent to him for analysis are really worthless because of the improper sampling methods. He thinks, however, that a channel mine sample, within the limits of accuracy of the analyzing equipment, can be taken without difficulty.

O. O. Malleis, chief chemist of the laboratories of the Koppers Co., which are maintained at the Mellon Institute, delivered an illustrated talk on "Development in Byproduct Coke Ovens." He defined a coking coal as "one which will produce merchantable coke," saying that the limits are now so broad that this is the only safe definition. Most coal is still being pulverized to 70 to 80 per cent through a $\frac{1}{8}$-in. hole before coking, but the Carnegie Steel Co. is charging ovens with coal crushed so as to pass a hole of $1\frac{1}{2}$ in. diameter.

Josiah Keeley followed with a paper on "Mechanicalization of Coal Mines and Its Influence on Market Preparation" and Edward Graff, general superintendent of the New River Coal Co., one on "The Effect of Mechanicalization on the Cleaning of Coal."

### Small Consumer Will Burn Slack

At a banquet held in the evening after the first day's meeting J. G. Bradley, president of the West Virginia Coal Association, who acted as toastmaster, said that the domestic stoker is a coming development which will widen the demand for coal and lessen the demand for lump sizes. Other speakers at the banquet were S. A. Taylor, of Pittsburgh, president of the A.I.M.E.; W. A. MacCorkle, ex-Governor of the state, and Walter Cunningham, secretary of the West Virginia Coal Association. About 200 were in attendance.

At the morning meeting of the second day J. J. Forest, president of the By-Products Coal Corporation, of Chicago, addressed the assemblage on "Byproduct-Plant Operation and Sale of Product" and later W. W. Freeman, of Cincinnati, president of the Union Gas & Electric Co., spoke on "The Utilization of Artificial Gas and Its Practicability as a Means to Supplement the Available Supply of Natural Gas in Various Industrial Communities."

The Charleston meeting was ended by a short talk by J. K. Taylor, president of the section, in which he deplored the interference of government bureaus in business, referring especially to the Interstate Commerce Commission.

# Underground Operation

## Why No Mine Can Be Properly Ventilated Unless Roof Is Caved

### Air in Open Spaces Should Be Renewed Many Times Each Hour—In Uncaved Mine, Power on Fan Must Be Increased One Thousand-Fold to Achieve That End

**By Edward O'Toole**
General Superintendent, United States Coal & Coke Co., Gary, W. Va.

Failure to extract pillars presents to the ventilation engineer almost insuperable problems. The vacant spaces harbor large quantities of coal dust, no matter how much air is supplied, and that is one reason for providing for such complete extraction that the roof will fall and cover such deposits.

If the air in a gaseous mine is not removed in the extraction areas either by falls of roof or ventilation it will contain dangerous quantities of methane. No really gaseous mine is receiving enough air to bring the atmosphere to a desirable degree of freedom from that gas.

#### Every Mine Its Own Hazard

In some mines danger is greater and more imminent than in others, but all mines have danger zones. The dangers in some are at the working face, where, as mining proceeds, explosive gas is liberated. Some mines have a danger zone in the second mining, or pillar-drawing, stage, caused by the breaking of the strata overlying the coal and the liberation of explosive gas thereby. This explosive gas, being lighter than air, accumulates in high places, such as the cavities and crevices caused by breaks in the strata or by falls of the mine roof. When the gas is present in sufficient quantities, it floods into the adjacent open workings.

The danger zones in some mines are to be found in the large open spaces resulting from the non-extraction of pillars. Such open spaces, when not properly ventilated, act like the backwater of a stream. In such open areas the fine coal dust that is carried in the mine air settles on the sides, timbering and floor, just as flood water runs into backwater sections, leaving a deposit of fine mud behind.

#### Where Danger Zone Lies

This dust is raised in the mine atmosphere whenever the passing of cars, the falling of roof, the explosion of gas or of powder, or some other rapid movement causes an inrush of air. In all mines material may fall from the sides or the roof and endanger the workmen.

In our mines we draw a line horizontally along the sides of all hauling, traveling and air ways and along the face of each working place, 3 ft. from the bottom. We consider all space above this line as a danger zone.

The mining laws of most mining states require that all abandoned, or temporarily abandoned, open spaces in the mine shall be made safe by adequate ventilation. This brings up the question: What is proper ventilation?

**Table I—Ventilation Required for Certain Rooms**

| *Type of Room* | *Number of Times Air Should Be Removed per Hour* |
|---|---|
| Public waiting rooms | 4 |
| Public toilet rooms | 10 |
| Small convention halls | 4 |
| General offices | 3 |
| Public dining rooms | 4 |
| Banquet halls | 5 |
| Hotel kitchens | 4 to 6 |
| Textile mills | 4 |

According to Allen and Walker's "Heating and Ventilation," page 181, rooms should be ventilated as in Table I.

Do open spaces in mines require as much or more ventilation than these classes of buildings? If they only require as much, the presence of open spaces in mines becomes a serious matter. An estimate has been made of the open space in a mine producing 3,500 tons daily with the result as in Table II.

**Table II—Open Space in a Mine of 3,500 Tons Capacity**

| | *Length in Feet* | *Area of Open Workings, Cu.Ft.* |
|---|---|---|
| Headings | 101,700 | 6,857,631 |
| Aircourses | 94,800 | 9,297,984 |
| Heading crosscuts | 49,285 | 4,229,638 |
| Rooms | 28,300 | 4,163,496 |
| Machine room | 8,900 | 1,091,140 |
| Room crosscuts | 11,280 | 968,049 |
| Drainage heading | 14,800 | 1,814,480 |
| Total | 309,065 | 28,422,418 |

From Table II it can be readily calculated that the open space in the mine instanced is about 8,000 cu.ft. for each ton of daily capacity. This ratio of volume of mine space to daily coal output is possibly as low as in any mine operated by the room-and-pillar system with the type of mining machinery now in general use. The average for the country would be about 20,000 cu.ft. of mine space per ton of daily capacity.

#### Air Required per Ton of Coal

If this mine was ventilated as well as Table I would indicate for general office buildings, 576,000 cu.ft. of air should be circulated through it each 24 hours per ton of coal produced. If this mine was ventilated as well as convention halls should be, it would need 768,000 cu.ft. of air each 24 hours per ton produced. If it was ventilated as well as a banquet hall, it would need 960,000 cu.ft. per 24 hours per ton produced.

Some large mines produce as much as 10,000 tons of coal per day. One ton of coal in the solid seam occupies about 25 cu.ft. of space; therefore, each day's mining produces 250,000 cu.ft. of open space,

Second part of paper on "An Experiment in Combined Cutting, Mining and Loading in Coal Mines," read March 11, in New York City at a meeting to discuss coal loading sponsored by the Materials Handling Division of the American Society of Mechanical Engineers and the National Coal Association. First part, which deals with the action of the mine roof, appeared April 22, pp. 570-571.

plus what additional cubic feet of rock and refuse may fall or be taken down and have to be removed.

Allowing 200 days for a year, at the end of the first year there will be 50,000,000 cu.ft. of open space in such a mine; and if in ten years no pillars are drawn and the open spaces are not filled by water or other means, there will be 500,000,000 cu.ft. of open space in such a mine.

I have developed this subject of mine ventilation for the purpose of showing you the magnitude of the problem of properly ventilating large mines by replacing all the air from their vast spaces three, four, or five times per hour, as required in office buildings, assembly rooms and banquet halls, respectively.

### Fill Excavations by Falls

One other example, showing the problem from another angle: In June, 1915, two shafts reached the coal seam at a depth of 600 ft. Since that time the mine has been developed, and 1,710,257 tons of coal has been mined and shipped, and, in addition, this mine has hoisted and stored on the mountainside a large quantity of rock and refuse. Therefore the space excavated in the mine is approximately 45,000,000 cu.ft.

As no pillars have been drawn so as to cause the roof to fall and as the space from which the coal and rock has been mined has not been filled, this excavated space is standing full of air. To ventilate this mine, 200,000 cu.ft. of air per minute enters one of these shafts and goes out at the other. The chemical analysis of the exhausted air shows that it contains 0.9 per cent of methane.

### Concentration Safer

This methane is transpired from the coal surrounding the spaces from which the coal shipped was mined. When it first issues from the coal it is pure, but when it comes in contact with the mine air it diffuses and mixes with the mine atmosphere and pollutes it to the extent that all the air coming from the mine contains 0.9 per cent of methane. In diffusion it has passed through all percentages of gas and air from pure methane to the mixture of methane and air which is exhausted from the mine.

This mine produces about 2,500,000 cu.ft. of pure methane every 24 hours and at all times about 400,000 cu.ft. of pure methane, mixed with air, occupy the spaces in the mine. This mine has about 130 working places, is equipped with the usual mining machines, and produces about 2,000 tons of coal every 24 hours, or about 15 tons of coal per working place in that same period.

### Caves Save Power

Not only does this mine harbor large quantities of methane, but it also stores away part of the gases resulting from the use of about 700 lb. of explosive every 24 hours. It is receiving less than one-tenth of the air required to ventilate general office buildings properly, and for lack of an adequate supply of air is dangerous.

It is possible to increase the air entering this mine 50 per cent, but only at a great expense, as the velocity of the air current in the shafts is now 1,500 ft. per minute, and the power required to produce more air will increase as the cube of the velocity. Therefore, to provide 50 per cent more air will require over three times the power. To meet general-office air requirements over a thousand times the present power would be required.

To safely increase the production from this mine, operations should be concentrated and the extracted areas completely caved. The production from each working place should be from 300 to 400 tons per day instead of 15 tons, as at present. The ventilation would then be a small problem and the mine would be a safer place for the workmen.

## Relative Hazard of Electric Circuits in Signaling

Exhaustive studies, extending over many years, into the ignition of methane by small electric currents such as are used in signals made under the direction of R. V. Wheeler for the Safety in Mines Research Board, of Great Britain, have resulted in the following conclusions: The igniting current for a given mixture of methane and air varies directly with the volatility of the metal at the spark gap, being lower than the boiling point of the metal.

### Gold Arc Less Hazardous

Thus if the contact is between cadmium points which boil at 778 deg. C. the igniting current is 0.22 amp. at 120 volts, whereas if the contact is between gold points which boil at 2,530 deg. C. the igniting current is 0.5 amp. at the same voltage. Copper, which boils at 2,310 deg. C., gives a value of 0.49 amp. for the igniting point, the boiling point of copper being lower than that of gold and higher than that of cadmium.

The volatilization of the metal causes a variation in the duration of the flash resulting from a break in the circuit. Thus in the standard mixture of 8.5 per cent methane, the break flash lasted 0.00321 sec. with cadmium and only 0.00070 sec. with gold which volatilizes in a far lower degree. These results were obtained with a potential of 120-volts and with currents of 0.23 and 0.50 amp. respectively.

Other conditions remaining constant the igniting current for a given mixture of methane and air is lower the more rapid the break in the circuit. The smaller the area of contact at the moment of break, the lower is the igniting current required for a given mixture of methane and air under otherwise identical electric circumstances.

No simple universal law connects the value of the igniting current with the inductance of the circuit, but the relationship varies with the mechanical conditions under which the sparks are produced. Under one particular set of conditions, the energy required in the circuit before a break would produce an igniting spark was nearly constant. In general, particularly with highly self-inductive circuits, the igniting power of the flash produced on breaking the circuit is affected far more by the strength of current in the circuit than by the impressed voltage, if the value of the latter is comparatively low. With the higher values of the impressed voltage, however, currents of lower amperage will ignite the gas mixture.

### Kind of Current Unimportant

The character of the current supply, whether continuous or alternating, does not materially affect the current strength at which methane mixtures are ignited by breaks in the circuit.

These results are recorded in Bulletin No. 20 entitled "The Electric Ignition of Firedamp: Alternating and Continuous Currents Compared," obtainable from His Majesty's Stationery Office, Adastral House, Kingsway, London, England, price 1/- (25c.).

# Practical Pointers For Electrical And Mechanical Men

## Hillman Coal & Coke Co. Introduces Automatic Electric Gate

By J. A. Malady
Electrical Engineer,
Hillman Coal & Coke Co.,
Pittsburgh, Pa.

Where cages, instead of skips, are used in the main shaft, and when this shaft is used for handling men and materials, the gate at the surface landing must be opened and closed many times a day. Doing this by hand not only causes delays but is not a safe manner of operation, for the gate may be opened or left open when the cage is not at the surface landing. Furthermore, such practice does not comply with Art. VIII of the Pennsylvania mine law. Automatic, air- or steam-operated gates are rather common, but few installations of successful electrically operated gates are seen about the coal mines.

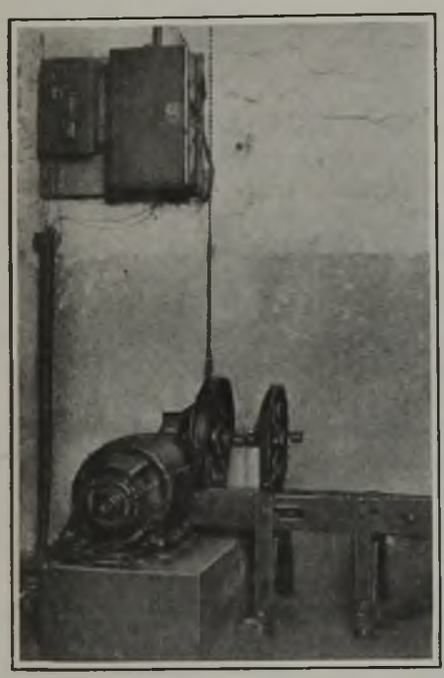


**Fig. 1—Worm-Driven Gate Hoist**

The relay on the wall near the starting switch is adjusted to a few seconds time delay so that when the cage passes the surface landing at normal, or even at reduced speed, the gate will not open.

At the No. 1 shaft of the Isabella mine of the Hillman Coal & Coke Co., near Brownsville, Pa., an electrical device has been used for about two years to open the gate automatically. The necessity for improvising this equipment arose when the old steam hoist was replaced by one operated by electricity. Formerly, the gate, which was of the rising type, was actuated by a steam cylinder. After the old hoist was removed steam was no longer available, nor was compressed air.

An air compressor might have been installed, however, but this obvious though expensive solution did not suit the purpose because there was a danger that the moisture in the air cylinder would freeze. The company knew of no completely successful automatic electric gate-opening equipment which had been placed on the market, so it built one of its own.

Fig. 1 is an illustration of the gate hoist, starting switch and time-delay relay which is being used at No. 1 shaft. This equipment is installed in one corner of the room in which the main hoist is located. The other end of the rope, one end of which is seen attached to the drum, is connected to the rising gate at the shaft. The small worm-driven hoist is of the type commonly used for dumbwaiter service. The motor is reversible and, at its limits of travel when opening and closing the gate, is stopped by a spring-reset limit switch.

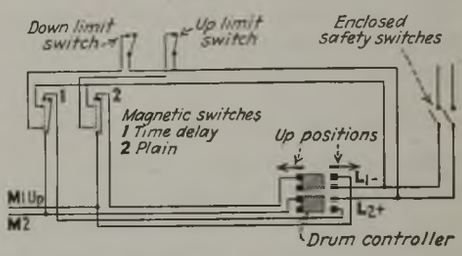



**Fig. 3—Wiring and Control Details**

The time delay is the brains of the whole arrangement because it decides whether the gate is to be opened at the ground landing for men or left closed for the coal that has to pass to a higher point in the shaft.

Fig. 2 is an illustration of the thread bar and its supporting stand, which is connected to the end of the

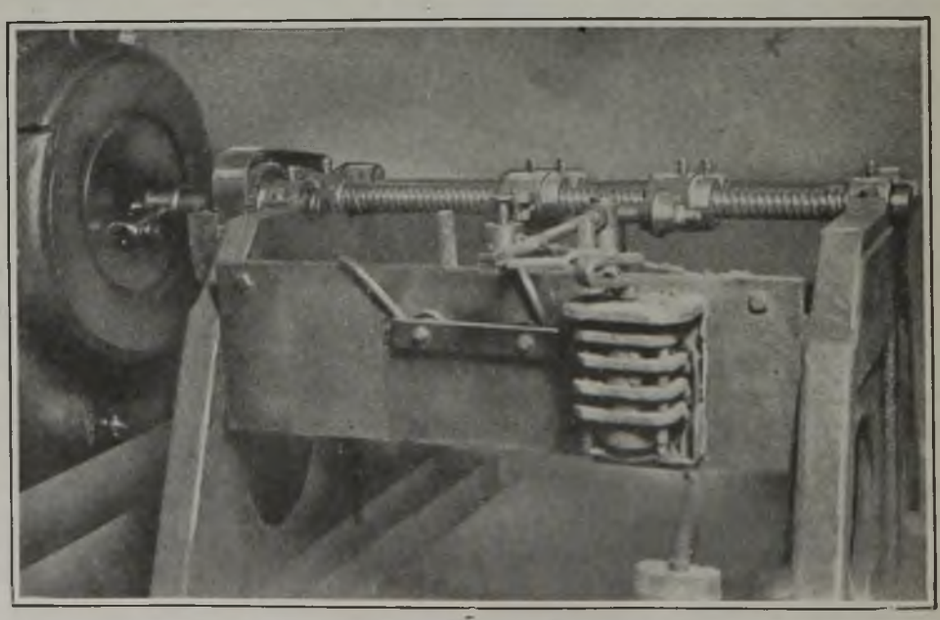


**Fig. 2—Thread Bar Which Operates Gate Control**

The controller which was added to this device is turned to the gate-opening position whenever the cage passes or stops at the surface landing. This controller is simply a reversing switch and normally remains in the position in which it should be for opening the gate.

shaft of the new electric hoist. The controller, with its cover removed, so that this illustration could be made, is mounted on a stand and is essentially a drum-type reversing switch. The cylinder of this controller normally stands in a position which will operate the small motor in the proper direction to lower the gate. When the main hoist is operated the sliding nut on the thread bar moves an arm which turns the

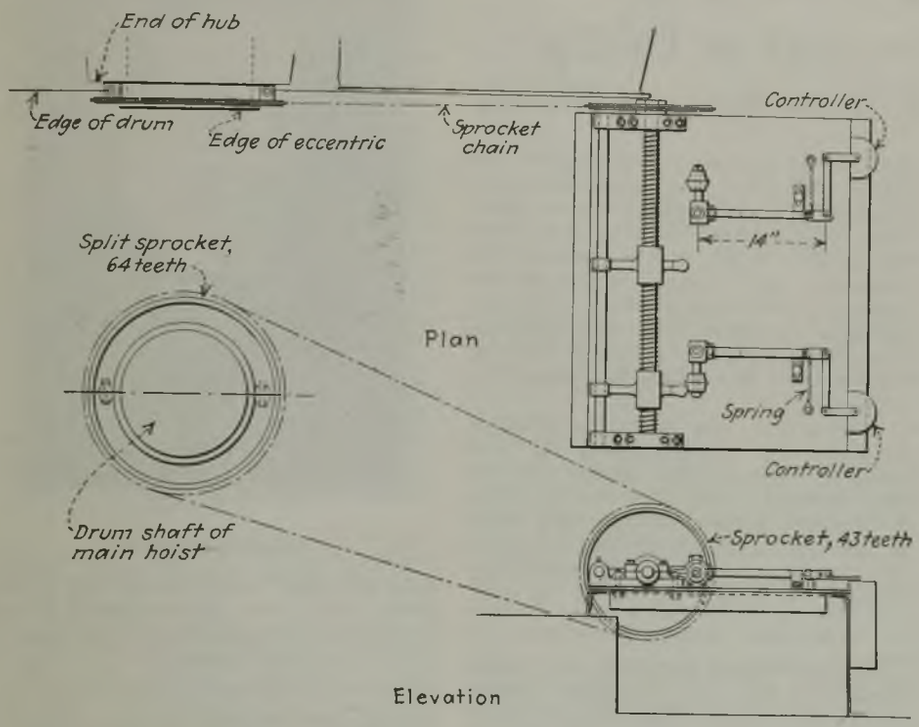



**Fig. 4—Mechanism by Which Electrical Control Is Actuated**

It gets into action at the proper time to open or close the gates, is governed by the position of the cages in the shaft and is positive in its operation.

controller to the gate-opening position when the cage is at the surface landing.

Here is where the time-delay relay, Fig. 1, which is the brain of the device, plays its important part. If the cages do not stop at the landing, as when hoisting coal, the relay does not have time to close during the short time that the reversing switch has been held in the gate-opening position by the passing nut on the thread bar, and hence the gate does not open. If, however, the cage is stopped at the landing, the relay in about one second closes and the motor quickly raises the gate to the desired height, which is controlled by the setting of the limit switch. When the cage is moved a few inches either way from the landing the motor quickly lowers the gate.

The Hillman Coal & Coke Co. recently installed two additional gates at other mines and has replaced the thread bar and reversing controller by a light contact-making device connected to the dial indicator of the main hoist. These gates operate with entire satisfaction.

## Never Confine Transformers In Too Small a Space

In comment on the short article appearing in the "Practical Pointer" section of *Coal Age*, April 22, relative to the placing of transformers in a tank on a steel truck, I would suggest that such an arrangement has the excellent feature that it makes the station portable, but there is danger in too completely inclosing transformers.

I have in mind a vault in which the transformers reached a high temperature and an explosion resulted. Just what happened is a matter of conjecture. Possibly the oil was vaporized until the coils were exposed and, in consequence, the wire reached a red heat or burned in two, igniting the oil vapor. Perhaps it was one of the lead-in wires that was thus burned. However, it is needless to say that a dense oily vapor and electric flashes are a potent combination from which malignant action may be at any time anticipated. An overheated transformer may give off a large quantity of smoke, yet no flame will be emitted. As a result no fire will sever the safety rope, and the men in the mine may be suffocated by smoke.

At the 1924 summer meeting of the Rocky Mountain Coal Mining Institute we endeavored to overheat a 10 kva. transformer until something happened, but the results were not carried to a conclusion and the crowd left before the climax. However, during the demonstration the transformer gave off a large quantity of smoke for about one hour that would have been serious had the experiment been made in a mine. About one-fourth of the oil was vaporized, and had there been a spark above the oil level, I believe the oil vapor would have been ignited.

I have given serious thought to the system of installing transformers in mines that I am about to describe: Set the transformer between the intake and return airways wherever possible, so that smoke may be diverted to the return if some one is fortunate enough to be present to open the door in the return at the time of the burnout. Place an automatic oil circuit breaker on the primary side of the transformer. Provide a thermal relay to open the oil circuit breaker when the temperature of the transformer reaches 75 deg. C.

### Nearly a Catastrophe

The fact that we had placed an electrical installation between the intake and return served us well on one occasion. A synchronous motor that was pretty well filled with coal dust lost its exciting current, gradually overheated and took fire. A dense smoke was emitted that would have passed thirty or forty men but for the presence of mind of some one who opened the door to the return. The motor was still running when this was done. The overload device had failed to work. Wherever possible we eliminate transformers and carry the high voltage (2,200 volts) directly to the motors.

The article by J. H. Edwards on page 561 of the issue of April 22, on the regulation of peak loads by floating storage batteries on the line, shows that W. F. Hossfield, the chief electrician of the By-Products-Pocahontas Co., had every detail in mind when planning the installation. This is the first plant of its kind at a coal mine, at least within my knowledge. The saving is remarkable and should appeal to many mine managers whose contract for power provides for a high demand charge.

D. C. McKEEHAN,
Electrical Engineer.
Union Pacific Coal Co.,
Rock Springs, Wyo.

# News Of the Industry

## British Coal Operators and Miners Consider Peace Proposal as Tie-Up Of Industry Enters Second Week

A peace plan for the settlement of the British industrial strike which it was hoped would prove acceptable to both the government and the trades union leaders was under consideration Monday night, though no decision had been reached at 1.30 a.m., Tuesday. The peace proposal was made by Sir Alfred Mond, prominently identified with the coal mining industry, who with Sir Herbert Samuel, chairman of the Royal Coal Commission, presented the plan to the executive committee of the Miners' Federation. Lord Londonderry and David Davis, leading mine owners, took a prominent part in the negotiations, which lasted until Tuesday morning, to be resumed later in the day.

A compromise is said to have been suggested whereby the miners would take a 10-per cent wage cut if guaranteed that the industry would be reorganized at the same time and if some form of government assistance would be forthcoming during the negotiations. A group of large moderate mine owners are reported to have been conferring with Sir Alfred Mond on a scheme to place the industry on a more efficient basis. This would include closing the poorer mines and an arrangement whereby only mines near the sea coast would produce coal for export.

### Moderates Want Peace

It is uncertain how much chance these peace moves have of success, but it is becoming increasingly evident that moderates both in the government and the General Council of the Trades Union Congress are anxious to end the struggle. David Lloyd George intimated that a majority of the Baldwin Cabinet do not feel that a sweeping victory over the unions is worth the price of economic collapse and inextinguishable class hatred.

The strike's second week began with neither party to the national conflict showing any disposition to retreat from the positions taken when the national walkout started. The number of volunteers to man transport and other essential services is increasing. More trains are running. On Saturday the government began moving foodstuffs from the London docks under the protection of armed convoys, after refusing the offer of the unions to pass food trains and trucks provided with government permits.

Late last week "the second line of defense" of the strikers was called into action. Workers in the gas and electric plants began to desert their posts. Their places were taken by men from the armed forces of the nation. At Liverpool the millers, butchers and building trades workers were called out. Sporadic disorders have been reported from different parts of Great Britain, but, on the whole, there has been little violence.

Interest in the general situation naturally has overshadowed the controversy between the miners and the coal operators which led to the strike. No attempt apparently has been made to operate the mines, but the temper of the men in some of the districts, particularly in Wales, is said to be ugly.

### Coal Issue Comes to Surface

The coal issues, however, were again brought to the fore in a radio address by Premier Stanley Baldwin on Saturday night. In that address the Premier again defined the government's position and reiterated its refusal to be a party to a resumption of negotiations between the operators and the miners until the general strike order had been unconditionally rescinded. The general strike, he declared, was an attempt "to disrupt the life of the nation and to starve it into submission."

The stoppage in the coal industry, said Mr. Baldwin, "followed a nine months' inquiry and negotiations. I did my utmost to secure an agreement upon the basis of the Commission's report, and when the time comes, as I hope it may soon, to discuss the terms upon which the coal industry is to be carried on I shall continue my efforts to see that in any settlement justice is done both to the miners and the owners.

"I wish to make it clear that the government is not fighting to lower the standard of living of the miners or any other class of workers. My whole desire is to maintain the living of every worker and I am ready to press the employers to make any sacrifice to this end consistent with keeping industry in its proper working order.

"There are many people who say: 'I do not hold with the general strike, but I feel a good deal of sympathy with the miners.' So do I, but if Parliament had voted millions to aid the mining industry and had received the report of a very able commission, what else could it do than try to bring about a settlement on a basis on which the industry could be carried on? The government is prepared now, as it has always been, to accept the report and the whole report if the other parties will do so."

*Keystone View Co.*

**Stanley Baldwin**

On the shoulders of the Prime Minister rests the chief burden during the general strike. For more than a month he put forth his utmost efforts to bring the coal operators and miners to an agreement in order to prevent a tie-up.

### Coal a Sore Spot Since War

The labor situation in the British coal industry has been more or less in the public eye since the close of the World War. The immediate dispute between the miners and the owners is a revival of the controversy which threatened a strike last summer. At that time the operators posted notices that wages would be reduced on Aug. 1. The government intervened and promised a subsidy to reimburse the owners whenever the returns from the industry were insufficient to pay the standard wages and profits. This subsidy, which expired April 30, cost the British government over £20,000,000. Without it, declared the Royal Commission appointed to inquire into the situation, 73 per cent of the coal mined in the last quarter of 1925 was produced at a loss.

This Commission, whose report was expected to determine the future course of the industry, submitted its findings early in March. The Commission rejected the miners' proposal—indorsed by the majority of the Sankey commission appointed during the régime of Lloyd George—that the mines be nationalized. It did, however, recommend national ownership of mineral rights. At the present time approximately 88 per cent of the mining operations work on a royalty basis. These royalties,

under the Commission's recommendations, would accrue to the state.

In its consideration of the industry as a whole the Commission recommended amalgamation of existing mines, which could be made compulsory where necessary in the public good. A closer integration of the mining with the larger consuming industries also was proposed. Greater engineering research both in mining and in combustion technique was urged. Government analysis and standards, particularly in the export trade, were suggested. The Commission also favored the adoption of larger railway cars and greater concentration of ownership to replace the present highly scattered private ownership of equipment. Co-operative selling agencies and municipal coal yards received the approval of the Commission.

### Labor Aspects Stressed

On the labor aspects of the problem the Commission held:

(1) The principle upon which recent agreements have been based is sound, but amendments should be made in the method of ascertaining the proceeds upon which wages are fixed, particularly in setting prices on coal sold to associated industries or selling agencies.

(2) The standard working day, which averages 7½ hours underground, should not be altered, but the multiple shift system should be extended.

(3) Joint pit committees should be established generally.

(4) Methods of payment of men not employed at the face should be revised where possible to give them a direct interest in output.

(5) The introduction of a family allowance system is desirable.

(6) Profit-sharing schemes, providing for the distribution to the workmen of shares in the operating companies, should be generally adopted and should be made obligatory by statute.

(7) Proper provision for housing should be a condition of the lease for all new collieries.

(8) The general establishment of pithead baths is necessary.

(9) When prosperity returns to the industry, annual holidays with pay should be established.

"We cannot," concluded the Commission, "approve the proposal of the Mining Association that the gap between costs and proceeds should be bridged by an increase of an hour in the working day, reductions in the miners' wages, some economies in other costs, and a large diminution in railway rates to be effected by lowering the wages of railwaymen.

"If the present hours are to be retained, we think a revision of the 'minimum percentage addition to standard rates of wages' fixed in 1924 at a time of temporary prosperity, is indispensable. A disaster is impending over the industry, and the immediate reduction in working costs that can be effected in this way, and in this way alone, is essential to save it. The minimum percentage is not a 'minimum wage' in the usual sense of that term. The wages of the lowest paid men will be safeguarded by a continuation of the system of subsistence allowances. The reductions that we contemplate will still leave the mine owners without adequate profits in any of the wage-agreement districts, and without any profits in most districts. If trade improves and prices rise, a profit will be earned. If prices do not rise, an adequate profit must be sought in the improved methods, which should in any case be adopted.

"We consider it essential that there should be, as there always has been hitherto, considerable variation in the rates of wages in the several districts. But we are strongly of the opinion that national wage agreements should continue. Such agreements are entered into in all the other British industries of importance.

"We recommend that the representatives of the employers and employed should meet together, first nationally, and then in the districts, in order to arrive at a settlement by the procedure we have previously suggested.

"By a revision of the minimum percentage coal mining would be saved from an immediate collapse, but it seems inevitable that a number of collieries would still have to be closed.

"The subsidy should never be repeated."

The report of the Commission was pleasing to neither miners nor operators. The government, however, announced that it would accept it. Attemps to get the miners and owners together, however, failed. When the owners posted notices of wage reductions, the Miners' Federation declared for a strike. Allied labor organizations asserted that the employers were planning a general assault upon wages and made common cause with the miners.

There have been rumors that miners in other countries would refuse to load coal for Great Britain during the strike. Workers in Germany, the second largest exporter of coal, have been cool to this proposal. In France 60 per cent of the production is not under union domination. Belgian workers have expressed sympathy with the British strikers, but the direct issue of shipping coal to Great Britain has not come to a head. Dock workers at Hamburg have attempted to interfere with the movement of coal and the New South Wales unions are endeavoring to prevent British ships from taking on extra bunker supplies. Antwerp longshoremen also are trying to check the clearance of coal cargoes.

While a number of labor organizations in the United States have expressed sympathy with the British strikers the chances of interference with any export movement are remote. The bulk of the coal that would move in export channels from this country would come from the non-union fields. Moreover, neither the United Mine Workers nor the various railway unions have shown any disposition to engage in sympathetic strikes nor to concern themselves with international labor disputes.

*Keystone View Co.*

**Mine Workers Joining the Strikers**

Two miners and their horse leaving a coal mine at Pontypridd, in the South Wales mining field, when the British strike was called.

## *Lewis Denies Union Seeks Scale Modification*

A report that field agents of the United Mine Workers had been instructed by international union officials to work up sentiment among union miners to demand modification of the Jacksonville agreement is denied by John L. Lewis, international president.

In a letter last week to B. W. Elkins, of West Frankfort, Ill., Mr. Lewis characterized the report that union representatives were agitating for modification as a means of getting a number of idle coal mines in operation and thus giving wider employment as without foundation.

"The officers of the United Mine Workers are opposed to any modification of the existing wage rates set forth in the agreement in the Central Competitive Field or elsewhere in the mining industry," Mr. Lewis said.

## Will Settle British Tie-Up Without Disastrous Results, Is Belief in Washington

By Paul Wooton
Washington Correspondent of *Coal Age*

Since the British people have been called upon to meet crises rather frequently for more than 1,000 years, observers in Washington expect this one to be met without most of the dire possibilities that are being emphasized in the newspapers. The investing class, the merchant, the professional group, executives, farmers, small trades people and unorganized wage earners constitute the great bulk of the population even in Great Britain, where the unions include a larger proportion of the people than in any other country.

The general strike will arouse the emotions and the instincts of this majority who recognize that it is a threat at the government which is their representative. Once thoroughly aroused this majority is expected to lend whatever aid the authorities may need to teach the unions that no minority group is as strong as the government.

Even those who hope and expect the British Government to win a 100-percent victory think the English authorities have done anything but distinguish themselves in the handling of the situation. It is thought something could have been done to put a real share of the burden on the royalty owners and to require the operators to pool their profits. Certainly a way could have been found to close the high-cost mines. Had the £100,000,000 paid out as a subsidy been used to contract with high-cost producers, 30 per cent of the mines could have been closed and the industry trimmed down to the market. There would have been enough left to pay the dole to the workmen who would have lost employment in the process. Had exports been reduced 40,000,000 tons the industry could have increased prices to the point where higher wages could have been paid to fewer men.

### Showdown Thought Inevitable

A very general conclusion is that the whole affair reflects on the ability of both the responsible officials and the labor leaders.

There are some, however, who think this shutdown had to come. While it is unfortunate that it had to come at a time when the British are ill-prepared to meet it, they feel that this ordeal was necessary before the British could regain their industrial position.

In so far as coal is concerned the industry is in an advanced stage of degeneration. It takes 1,100,000 men to produce 300,000,000 tons of coal, whereas in this country 650,000 men produce 500,000,000 tons.

The very low output per man per day—not much over one gross ton per shift—is due partly to natural difficulties and partly to lack of machinery, but an important element is the attitude of the British miner toward the job. It has been brought home to the coal miner through generations of experience that if the piece-rate earnings increase the employer will seek to reduce the piece rate, so that deliberate restriction of output has become one of the means of bargaining. Even when it is not deliberate the established pace has become habitual. A Washington contractor, for instance, has an apartment house under construction in London. He finds the per yard cost of plastering—an operation into which machinery does not enter—is no lower in London, despite the fact that the workmen receive less than half the wage paid in Washington. This applies to most other operations on the building. It is this attitude toward maximum productivity which is at the root of many of Britannia's industrial troubles.

### Men Should Gain by Good Work

The principal problem to be worked out in the settlement of this strike and in the reorganization of coal production in the British Isles is to find some way that the men may profit if they do their best.

Mechanization of the mines is one step that must be taken, all agree, but this and other reorganization cannot be done successfully if the men are forced back into the pits in a sullen humor.

Fundamental changes have been going on which have shrunk the market for British coal. Electrification on the Continent, the distribution of reparation coal and the increased use of oil have made for a situation requiring co-operation and intensive effort which cannot be met with sweated and discontented labor. The government is going to put down the general strike with greater ease than is supposed, but a greater task is to devise a plan that will rehabilitate the industries of the United Kingdom so that the losses and the suffering caused by this strike may not go for naught.

To try to get the mine workers to accept a wage of $7.50 per week is just as vicious as labor's plans to increase employment by reduction of hours and by the "Ca'canny" method. There must be less preaching of Bolshevistic doctrines and more preaching of sound economics. While few in Washington think the strike is likely to encompass Great Britain's ruin, there is a widely held opinion that it can be made her salvation if capital, labor and public will grasp the opportunity to put a new fundation under their industrial structure.

### *Has a Familiar Ring*

Conditions in the bituminous coal industry would not be relieved by a modification of the Jacksonville wage scale, William Green, presiden of the American Federation of Labor, said at Pittsburgh recently.

"The bituminous industry is sick, overdeveloped, overorganized and overmanned," he said, "and the capacity to produce is so far in excess of the normal demand that some of the mines must necessarily be idle. If they were operating they would only need to function on part time to meet the requirements of the trade."

## Union Seeks Injunction to Restrain Open-Shop Work

Injunction proceedings have been brought in the Monongalia County (West Virginia) Circuit Court by the United Mine Workers against the Cleveland-Morgantown Coal Co., the Connellsville By-Product Coal Co., the Arkwright Coal Co. and the Pursglove Coal Co., operating eight mines in the county. The hearing has been set for May 20. This is the first time in the history of the union that it has sought to achieve its aims through an appeal to the courts, it is asserted, and the outcome is awaited with more than the usual interest.

In its petition the union seeks to restrain the four companies named from operating under any other wage agreement than that entered into by the Monongahela Coal Association and the United Mine Workers on March 28, 1924, and which does not expire until March 31, 1927. The petition also asks the court to restrain the defendant companies from employing any but union labor, except as provided for in the agreement dated March 28, 1924, and to stop eviction suits brought against former employees of the companies who did not return to work when the mines were recently opened on a non-union basis.

According to Eugene H. Long, Walter R. Haggerty and U. A. Knapp, counsel for the miners, notices of the injunction proceedings were served upon Edgar B. Stewart and Frank P. Weaver, of Morgantown, as attorneys for the coal companies. Both Stewart and Weaver deny that they are retained by the coal companies as attorneys of record, but that they are sometimes called in to act in special cases.

On these grounds the hearing, which was set for May 7, was postponed until May 20, Judge I. Grant Lazelle ruling that improper service had been made.

According to authoritative statements from coal company officials, the injunctions will be opposed on the ground that none of the companies named, all operating in the Scotts Run field, signed the agreement dated March 28, 1924, as individuals, but that it was signed by the Monongahela Coal Association, by Samuel Pursglove, president.

It is pointed out that the agreement, while binding on the Monongahela Coal Association during its existence, is now void because the association is defunct, it having ceased to function soon after the agreement was entered into.

## Plan New Outlet from Harlan

Coal men from various sections, with the mining and operating end largely in evidence, attended a meeting of the Interstate Commerce Commission held in Lexington, Ky., May 3-6 to hear testimony as to the necessity of the Louisville & Nashville Ry. constructing a branch line from Haggins, Va., to Chad, Ky., to tap the Harlan field. This line a cut-off, would give the L. & N. an outlet to Charleston and to Hampton Roads for Harlan coals over the Carolina, Clinchfield & Ohio and connecting lines. After hearing all evidence the I. C. C. commissioners took the testimony under advisement.

# Attacks on Anthracite Based on Old Prejudices and Misconceptions, Says Merritt; Others to Be Heard

Washington, D. C., May 11.—What the anthracite industry thinks of further legislative action on coal and how that industry proposes to discharge its public obligations will be told to the House committee on interstate and foreign commerce on Thursday. At that time, according to the present plans, Walter Gordon Merritt, counsel for the Anthracite Operators' Conference, will complete the testimony begun a week ago. He had hoped to do that today, but when the anthracite people appeared in the committee rooms this morning they were informed that the hearings would be adjourned until Thursday.

Unless there is another last-minute shift in the committee schedules, however, Dr. George Otis Smith, director, U. S. Geological Survey, and a member of the Hammond Coal Commission, will go on the stand tomorrow. Other government officials familiar with coal also probably will be heard. In addition, the committee has promised to hear Ira Cochran, commissioner, American Wholesale Coal Association, and Edgar Wallace, legislative agent, American Federation of Labor, but no specific time has been set.

### Senate Favorable to Copeland Bill

On the Senate side the committee on education and labor has taken favorable action on the revamped Copeland bill. This bill gives the Bureau of Mines the broadest kind of fact-finding powers, including the right "to copy any book, account, record, paper or correspondence relating to any matter the bureau is authorized to investigate."

Title II of the bill authorizes the President to create mediation boards and makes it the duty of employers and employees in the coal industry "to exert every reasonable effort" to make and maintain agreements and to settle all disputes in connection therewith "in order to prevent unreasonable restraints upon or interruptions of interstate commerce." Title III covers emergency distribution and operation. It re-enacts the Federal Fuel Distributor law, but practically makes it obligatory for the Interstate Commerce Commission to follow the recommendations of the Federal Fuel Distributor. The second section of this title empowers the President in times of emergency to take over and operate directly or by lease any and all coal properties which the chief executive deems desirable or necessary.

Ill-advised action by Congress, Mr. Merritt warned the committee in opening his case on May 4, might encourage the development of a situation as serious as that now confronting Great Britain. Most of the attacks made upon the anthracite industry are based upon old prejudices and misunderstanding of the facts. If hard coal has failed to measure up to accepted commercial standards, how is it, he asked, that no one doing business with the industry has appeared to complain?

Ninety per cent of the complaints received by Congress, Representative Wyant (Pennsylvania) interrupted, come from the domestic consumers. Retailers, suggested Congressman Newton (Minnesota), may be silent because they fear complaint would jeopardize their coal supply. This suggestion the witness vigorously repudiated. The householder, he conceded, is objecting because his coal costs more.

The dominant problem in the industry, asserted Mr. Merritt, is labor relationships. Far from being the oppressed toiler intimated by some of the preceding witnesses, the anthracite mine worker enjoys greater protection from oppression, tyranny and abuse than any other toiler. He is a member of the strongest union in the country. Since 1903, when the Board of Conciliation was established, he has had a tribunal to which he could take any grievance, however trivial it might be, arising during the life of a contract.

### Says Labor Oppresses Capital

If oppression exists, it is the oppression of capital by labor. The operators, Mr. Merrit pointed out, quoting from the report of the U. S. Coal Commission, are inadequately organized to protect their rights under wage agreements with the United Mine Workers.

"The operators," he said, "have made the mistake of continuous concessions in the face of illegal strikes and the threat to strike instead of insisting that disputes be referred to the conciliation board." These evils the industry must itself cure by promoting better industrial relationships. Progress along that line, however, has not been encouraging. To grant the check-off, he told Congressman Huddleston (Alabama), would afford no permanent solution to the button strike.

Answering the Alabaman's insinuation that the recent strike was a plot upon the part of the operators to destroy the union, Mr. Merritt retorted that "the operators' record for twenty years has been one of sympathy, tolerance and co-operation with the United Mine Workers." Later he emphasized the employers' repeated offers to arbitrate as proof that the "union-busting" accusation was groundless.

Wages, he explained, absorb 75 per cent of the revenue received by the mines from the sale of coal. The annual wage bill of the industry approximates $320,000,000 and the average wage is over $2,000. Contract miners taking full advantage of the opportunities for employment can make $3,000. The average wage for all industries is $1,300. Since 1914 anthracite wages have increased 192 per cent, as compared with an increase of 141 per cent on the railroads, 129 per cent for manufacturing industries and 111 per cent for the building trades.

Sketching the background of the wage disputes since 1920, the witness suggested that the strike habit had grown upon the union, which once proclaimed the virtues of arbitration, because victories in small things had whetted the organization's desire to resort to direct action, and political interference had hampered sound settlements. It was a perversion of terms, however, to say that the operators were insisting upon compulsory arbitration. There may be a six months' strike before an agreement is written under economic pressure, but such an agreement does not mean involuntary servitude for the miners. So, too, a fight to bring about the acceptance of arbitration does not mean compulsory arbitration.

Walter Gordon Merritt

Mr. Merritt did not deny that, if the operators were in the saddle, their attitude toward arbitration might be different—as it was in 1902. But capital is more easily reached by government pressure because property is a hostage to society. Capital yielded to President Roosevelt in 1902—labor declined to yield to President Harding in 1922. The operators now stand committed to arbitration. They are willing to let the public decide. They might even be willing to arbitrate prices if the public would underwrite an agreement to take the coal at the prices fixed.

"It would be a travesty on justice to say you will take the mines away from the operators and strip them of their rights when the operators are ready to submit to the President, and do nothing to the group that refuses. I am not asking or urging the regulation of the union. But why take our mines away to do something which we already are willing to do?"

Mr. Merritt denied that there was any monopoly in anthracite in the legal sense. If there was monopoly it was in the sense that the supply was limited. There might be, he told Congressman Newton, bankers in New York who owned a substantial interest in two or more producing companies, but the operating companies, he declared, were independent in operation, in management and in their price-fixing policies. The largest producer in the region shipped 15 per cent of the anthracite sold, as compared with 20 per cent for the largest copper-producing company, 50 per cent in iron ore and pig iron and 16 per cent in zinc. The anthracite industry enjoys no special privileges, has

no tariff to shield it from competition and exercises no powers of eminent domain.

Nor can regulation be supported on the theory that the anthracite industry is a public utility. If the government were to fix mine prices, it would be compelled to double the aggregate profit of the industry to avoid confiscation. Even if the constitutional barriers set out in the *Wolff case*, 262 U. S. 522, could be hurdled, insurmountable legal and practical difficulties would remain. Anthracite is distributed to more than 20,000 communities and the sale to the household consumer in those communities is a purely intrastate transaction which cannot be reached by Congress: *Missouri vs. Kansas Gas Co.*, 265 U. S. 298.

The key to an understanding of the price situation is the percentage of steam sizes produced. Taking the extreme cases, this will vary from 15 to 20 per cent in the northern field to 50 per cent in the southern. These sizes are sold at an average annual loss of $75,000,000. This loss must be absorbed in the prices on domestic sizes. Therefore, a wage increase that the northern field might bear would destroy the market of the southern district. To support this argument, Mr. Merritt submitted the accompanying table, showing the results of the yield from 100 tons of average anthracite sold at the average prices reported for 1924 by the Geological Survey.

In addition, Mr. Merritt submitted exhibits showing how the consumer dollar paid for stove coal in Boston, New York and Philadelphia was divided on the basis of 1924 wholesale and retail prices. The f.o.b. mine price used was $8.75. This was made up of an allocated labor cost of $6.09; supplies, $1.38; general expenses, 76c., and an operator's margin of 52c. In arriving at these figures that portion of the cost of production of the steam sizes not covered in the realizations received was allocated to the profit-paying larger domestic sizes on a percentage and value basis. The exhibits showed retail gross margins per long ton of $4.67 at Boston, $4.21 at New York and $3.80 at Washington.

### Valuations Vary Widely

Estimates of the valuation of the anthracite properties, the witness pointed out in his testimony on May 5 and 6, differ widely. Congressman Jacobstein had offered $400,000,000; engineers employed by the Coal Commission had valued the plants and operated lands at $843,500,000 and the reserve acreage at $146,400,000; book values, as determined in co-operation with the Department of the Treasury, approximated $640,000,000. For taxation purposes within the state, Pennsylvania tax authorities had claimed from $700,000,000 to $1,000,000,000. These tax valuations, some of which are in litigation, in many cases represent estimates which are substantially less than the tax authorities maintain is the full value of the properties.

The aggregate net earnings of the industry in 1924, as revealed in the report of the Treasury Department to the Senate under the La Follette resolution (*Coal Age*, Feb. 11, 1926, p. 238), were equivalent to a return of 4.86 per cent on the Jacobstein valuation, 3.65 per cent on the $640,000,000 estimate and 2.25 per cent on the engineers' valuation. Mr. Huddleston questioned the weight of these estimates in the absence of an explanation of what constituted net earnings. The witness referred him to the regulations of the Bureau of Internal Revenue and to the practices of accountants.

**Roderick Stephens**

Vice-president of the Stephens Fuel Co., New York City, represented the retailers in the House committee hearings.

At another point in the hearing the gentleman from Alabama wanted to know why the operators had failed to reduce prices on April 1. Mr. Merritt replied that they could not afford it, in view of the heavy strike losses, and that in recent years this reduction had been found inadequate to accelerate buying. The total reduction, he continued, would have been only $6,000,000. He thought this a small price for the public to pay for the fight that had been waged in their behalf by the operators.

Mr. Merritt derided the accusation of Congressman Jacobstein that the low-cost mines could drive the high-cost operations out of business by speeding up production. Most of the reserves, he pointed out, were held by the high-cost mines. To develop the mines in the northern field to take care of all the demand would mean doubling breaker capacity and higher development and amortization charges because of the more rapid exhaustion of the coal. These things, it was contended, would so increase costs at the low-cost mines that the differential would vanish and the public would gain nothing.

High-cost mines controlled the price situation, said the witness; not because the low-cost mines "want to hold an umbrella over their competitiors" but because of economic law. That law is that the price of the entire supply of a commodity will be regulated by the cost of producing that portion of the necessary supply which is produced at the greatest expense. But the low-cost mines, continued Mr. Merritt, did not take full advantage of this law, because their prices were less than those of the high-cost mines.

"No government agency," asserted the witness in his discussion of proposals for emergency operation, "played any part in the settlement of the last anthracite strike." The administration's policy of non-interference, however, has been most helpful. The operators, he said, had been willing to have the President intervene, but the President probably feared that he would be rebuffed by the United Mine Workers, as was President Harding in 1922.

Mr. Merritt did not wax enthusiastic over the reputed merits of publicity as a corrective agency. In 1922, for example, it had been agreed that the operators and miners write their next contract in the light of the findings of the Coal Commission, but the recommendations of that body were thrust aside in the framing of the 1923 agreement. The present British situation cannot be charged to a lack of facts. With the action of the committee on the Watson-Parker bill, it seemed inconsistent to seek to impose upon the coal industry a tribunal comparable to that the committee proposed to abolish in the railroad world.

"The government," interrupted Congressman Cooper (Ohio), who presided on May 6 in the absence of Chairman Parker, "always makes a mess of it when it attempts to interfere with the natural processes of capital and labor."

Unlike some of the earlier witnesses, Mr. Merritt in his testimony last week did not emphasize constitutional barriers to compulsory fact-finding. His opposition, he stated, was subject to qualifications. He believed that a way might be found by which Congress could compel the production of all the information it desired. He would not agree, however, that Congress might tie up fact-finding with a licensing scheme. Where there was nothing immoral or deleterious in the commerce itself, Congress, it was his opinion, could not impose restrictions upon the right to engage in interstate commerce.

### Average Realizations and Costs on Anthracite

(From Exhibit Submitted to House Committee by Walter Gordon Merritt)

| Sizes | Tons | Mine Price | Realization | Average Cost per Ton | Gain or *Loss* per Ton | Total Gain or *Loss* |
|---|---|---|---|---|---|---|
| Lump and broken | 2.7 | $7.91 | $21.36 | $6.25 | $1.66 | $4.38 |
| Egg | 14.3 | 8.45 | 120.83 | 6.25 | 2.20 | 31.46 |
| Stove | 21.8 | 8.74 | 190.53 | 6.25 | 2.49 | 54.28 |
| Nut | 26.3 | 8.58 | 225.65 | 6.25 | 2.33 | 61.28 |
| Pea | 8.2 | 5.59 | 45.84 | 6.25 | *.66* | *5.41* |
| Buckwheat | 12.3 | 2.93 | 36.04 | 6.25 | *3.32* | *40.84* |
| Rice | 6.7 | 1.93 | 12.93 | 6.25 | *4.32* | *28.94* |
| Barley | 6.7 | 1.28 | 8.58 | 6.25 | *4.97* | *33.30* |
| Other sizes | 1.0 | 1.45 | 1.45 | 6.25 | *4.80* | *4.80* |
| Totals and averages | 100.0 | 6.63 | 663.21 | 6.25 | .38 | 38.21 |

Figures in *italics* indicate losses.

(The average cost, $6.25, includes approximately $4.62 for direct labor costs, $1.05 for supplies and 58c. for overhead.)

## Lewis Refuses to Consider Wage Cut in Southwest, Correspondence Reveals

Failure of an attempt to obtain a readjustment of wages in the coal fields of Kansas, Missouri, Arkansas and Oklahoma is revealed in correspondence between officials of the Southwestern Interstate Coal Operators' Association and John L. Lewis, president of the United Mine Workers, made public May 7 by W. L. A. Johnson, general commissioner of the association, Kansas City, Mo. Mr. Johnson's release of the complete correspondence followed announcement by officials of District 14 (Kansas) of Mr. Lewis' refusal to accede to the operators' request for an investigation to determine the possibility of an early reconsideration of the terms of the present contract, which expires April 30, 1927.

The operators' letter, signed by Mr. Johnson and George J. L. Wulff, of St. Louis, president of the association, declared competition with fields having lower production costs and with mines which, operating open shop, are paying less than the 1924 wage scale, necessitated an immediate reconsideration of the contract. The letter, dated April 23, was addressed to Mr. Lewis, Matt Walters, president of District 14, United Mine Workers; William Dalrymple, president of District 21, and Arch Helm, president of District 25.

The operators' letter reveals that production in the Southwest fell from 20,136,365 tons in 1920 to 10,959,000 tons in 1925. Of the 10,959,000 tons produced in the four southwest states in the latter year, the operators' letter said, "only 5,586,183 tons was produced by association members, employing union men, the remaining 49 per cent being produced by non-association, non-union and so-called co-operative mines, operating mostly under less than the 1924 scale.

### Few Union Mines Working

"In Arkansas and Oklahoma, one-half our association territory, less than a half dozen mines are operating with union men, and these only a day now and then, the market having been taken over by open-shop and so-called co-operative mines, working for less than the 1924 scale.

"In the last few months, competition from West Virginia, Kentucky, Alabama, Colorado and New Mexico has made serious inroads in the southwestern markets," the letter continued.

Declining a reconsideration of the contract at this time, Mr. Lewis, wrote in part on May 1:

"The conditions in the coal industry of which you complain largely exist in all other bituminous producing districts, including the non-union territory. Certain factors, more or less local in nature, have operated to the disadvantage of the industry in the Southwest. The demoralizing effect of such influences cannot be properly charged to the wage rates set forth in the Southwestern agreement. It is obvious to the members of your association that the United Mine Workers could not agree to a modification of the existing rates in the Southwest without agreeing to similar modifications in the wage structure throughout the entire United States. It is equally obvious that a general lowering of wage levels throughout the industry would not place the southwestern districts in any more advantageous position than they now occupy."

## *Lewis Orders Expulsion of Communists from Union*

John L. Lewis, international president of the United Mine Workers, has issued a warning, through a letter to district presidents, against members of the organization joining the Communists or any affiliated organizations. The penalty is expulsion from the union. His action is the result of the authorization of such procedure by the international board at its last meeting.

Mr. Lewis's letter in part follows:

"Much evidence has been adduced to indicate that the activities of the officers, agents and members of the various Communist organizations constitute an unwarranted attempt to pervert the policies and change the laws of the United Mine Workers and to set up within the mine workers a dual organization. In view of these facts, the board of directors has authorized the following statement:

" 'That it be the ruling of the board that the Communist party and all its affiliated organizations be declared dual to the United Mine Workers, and that membership in such organizations lays a member of the Mine Workers' union liable to expulsion under the laws of the United Mine Workers, Art. 14, Sec. 2.'

"Your district is hereby authoritatively notified of this action in order that the machinery of our union may be utilized for its protection when necessary."

## Berwind-White Co. Wins Suit Against Government

A jury in U. S. District Court at Philadelphia on May 3 brought in a verdict of $1,015,560 against the government in favor of the Berwind-White Coal Mining Co. for coal sequestered for Navy use under Presidential order. After the Navy Department had taken thousands of tons of fuel from the company under executive orders of the late President Wilson the government and the company were unable to agree upon a "fair compensation," the Fuel Board fixing the amount of $740,851, while the company claimed $1,591,580.

Under the special war legislation the government paid the Berwind-White company $555,638, or 75 per cent of the $740,851, and the company sued for the difference between the amount paid and the amount claimed. So many complexities were involved in the suit that both sides agreed to submit the matter to E. L. Carpenter, coal expert, on whose testimony the award was made.

## Open-Shop Operation Starts At Gilbert-Davis Plant

Open-shop operations have been begun at the large plant of the Gilbert-Davis Coal Co. in the Scotts Run field of West Virginia. This is the last large company with mines active that operated under an agreement with the union in West Virginia. Three cars of coal were loaded under the new conditions by the company on May 5, following the posting of notices at the mine on May 1 to the effect that on that date a 15 per cent wage reduction would become effective.

There was to have been a conference between officials of the Gilbert-Davis company and officials of the United Mine Workers before any definite action was taken. The parley was not held, however, according to an official of the union as the company posted notices of the wage reduction several days before the date set for the conference.

Progress is being made by the two other companies in the Scotts Run field —the Cleveland-Morgantown Coal Co. and the Connellsville By-Product Coal Co., controlled by the Pursglove and Paisley interests, respectively—in loading coal, these companies having recently ceased to operate their mines under an agreement with the union. By the middle of last week the Cleveland-Morgantown company was loading coal at the rate of three cars a day, with the Connellsville By-Product company loading a somewhat smaller tonnage. Union tonnage in the Scotts Run section has now dropped to nothing.

## Would Deny Virginian Lease To Norfolk & Western

Examiner Davis, of the Interstate Commerce Commission, has recommended in Finance Docket 4973 that the Commission should deny the application of the Norfolk & Western Ry. for a lease of the Virginian Ry., on the ground, as he explains, that it has not been shown to be in the public interest. The examiner takes the position that under the provisions of paragraph 2, Section 5, of the Interstate Commerce Act, the burden is upon the N. & W. to establish the fact that the proposed lease would be in the public interest. He feels that the N. & W. has failed to sustain this burden and therefore the Commission should enter an order denying the application.

The Chesapeake & Ohio Ry. opposed the application of the N. & W., and while the C. & O. has not yet attempted to lease the Virginian Ry. itself, it made considerable capital out of the fact that in the general consolidation plan set up by Professor Ripley the Virginian is assigned to the C. & O.

## Amend Mine Leasing Act

An act amending the General Federal Land Leasing Act of 1920 to limit the extent of leases and permits in states of holdings of coal, phosphate and sodium was signed early last week by President Coolidge. Under it no lease for any of the minerals cited can be held in one state for more than 2,560 acres.

# News Items From Field and Trade

## ALABAMA

**The Stith Coal Co.** is putting in a new slope, to cost $250,000, at its mines near Aldridge, which will be completed by September. The output of this company now is 800 tons daily. The new slope will increase the output to 2,000 tons daily.

**To Increase Output.**—The Alabama By-Product Corp., which recently resumed operations at its Ruby Mine, in Wilker County, is reported to be making preparations to increase the ouput there from around 800 to 2,000 tons per day. This opening is on the Mt. Carmel, or upper bench of the Mary Lee seam and is located on the Southern Ry. near Cordova.

**"Teach Others."**—During May, the slogan of the Alabama chapters of the Joseph A. Holmes Safety Association is "And Teach Others," adopted from a safety essay written by Alex Mitchell, a negro convict at Aldrich Mines. This essay was the prize winner in a safety essay contest held at Aldrich in March, 1926. The Alabama Mining Institute is distributing copies of the essay to all mining men in Alabama, and it will be discussed at all meetings of the Joseph A. Holmes safety chapters throughout the district.

## ALASKA

A coal lease on public lands in the Matanuska field, requiring an investment of $143,000, has been awarded by the Interior Department to the Alaska-Matanuska Coal Co. It covers 1,440 acres. During the first five years of the lease the company will pay the government a royalty of 2c. per ton, mine-run, on coal produced.

## ILLINOIS

The St. Clair County Board of Supervisors now has four applications for the office of county mine inspector, which will be filled at the board's reorganization meeting. The four are J. L. Nevener, Harry S. Maitland and Peter Nool, of Belleville, and Fred W. Collins, of East St. Louis. Collins now holds the position.

**To Sell Willis Properties.**—A decree for the sale of the properties of the Willis Coal & Mining Co. was granted Conrad Raab and C. H. Krause, receivers for the company, by Judge Walter C. Lindley in the federal court at East St. Louis on May 3. The sale will include four large coal mines, 14,000 acres of coal and 3,000 acres of surface lands in Perry and Randolph Counties, Illinois, having a value of about $800,000.

A. B. Lewis, director of the Illinois Department of Mines and Minerals, has announced the following itinerary for the Illinois Miners Examining Board in May: Benton, 13th; Duquoin, 14th; Centralia, 15th; Staunton, 17th; Springfield, 18th; Taylorville, 19th; Danville, 20th; Farmington, 21st, and Peoria, 22d.

Judge Walter C. Lindley, presiding in the U. S. District Court at East St. Louis, on May 3 ordered the sale of the property and assets of the Willis Coal & Mining Co. in Randolph and Franklin counties. The properties are valued at $2,250,000. Conrad Reeb, president of the Southern Illinois National Bank, and C. H. Krause, St. Louis, Mo., receivers for the corporation, asked the order for the sale.

Mine No. 10 of the Indiana & Illinois Coal Corp., at Nokomis, probably will be reopened June 1, when the rebuilding of the tipple is expected to be completed. The structure recently was destroyed by fire, throwing about eight hundred miners out of work.

## INDIANA

Articles of dissolution of the Western Indiana Mining Co., as agreed on at a special meeting of the stockholders in Terre Haute, last February, have been filed. G. Ed Talley was president and John C. Templeton secretary of the corporation. The document cites that all debts and obligation of the corporation have been paid and the surplus distributed among the stockholders.

## KENTUCKY

**The Dudley Coal Co.**, operating mines at Carbon Glow, on Rockhouse Creek, near Blackey, is building a number of additional miners' homes and making other improvements.

**Benjamin Ford**, Cincinnati, president of the Ford-Elkhorn Coal Mining Co., Robinson Creek, and president of the Ford-Elkhorn Coal Sales Co., filed a voluntary petition in bankruptcy recently in the U. S. District Court at Cincinnati, listing his liabilities at $130,586 and his assets at $36,348.

The Louisville retail firm of Cummings & Eglan, operating the C. & E. Coal Co., at Brook and Eastern Parkway, has quit business, and the yard has been taken over by the Black Creek Coal & Mining Co., of which Homer Blades is president. The latter company has been operating a yard at Brook and Bloom Streets, which has been abandoned in favor of the better new location.

News that Charles F. Heidrick and his associates has sold their interest in the Cumberland & Manchester R.R. to the Louisville & Nashville and that the line will be operated as a branch is interesting to seven or more large companies operating 44 mines in that section of southeastern Kentucky. The 10c. differential from the line will be done away with and the Jellico rate will apply, it is said. More extensions seem in order, judging from the engineering crews at work. This line would tap some of the large coal properties in the Clay County region owned by Henry Ford.

**Operators Expand Retail Outlet.**—The Liberty Coal & Coke Co., Louisville, operators with mines in the Pineville section of eastern Kentucky, now operating a retail yard in Louisville, at Eleventh and Maple Streets, has a deal on for leasing the Edward J. Hackett Coal Co. yard, at 2938 Portland Avenue, which would give the company an excellent distributing yard in the western section of the city.

**Charles Pitman**, of Harlan, has been indicted by the Grand Jury of Harlan County in connection with destruction of a tipple of the Verda Harlan Coal Co. He was released under bond of $5,000.

**The Flat Top Mining Co.**, at Hazard, has taken over and started operation of the Eden Coal Co. mines, at Blackey, on Rockhouse Creek.

## MINNESOTA

**The Zion Coal Co.**, Henderson, of which Thomas Baskett is manager, will rebuild its tipple which was recently damaged by fire to extent of $20,000.

**The Berwind Fuel Co.** has moved its general offices in Minneapolis from the Plymouth Building, where they have been for a number of years, to the new Baker Building, just being completed.

The matter of a license fee for retail fuel dealers in Minneapolis has been up in the Council again. Now it is proposed to reduce the fee from $50, heretofore placed on all dealers, to $25. for the main office and a lesser fee for branches.

**Head of Lakes Set for 50 Cargoes.**—Fifty cargoes of coal are included in the season's opening movement to Duluth-Superior docks from Lake Erie ports. They were distributed as follows: North Western, 20; Inland, 11; Berwind, 3; Carnegie, 4; Pittsburgh, 2; Zenith, 2; Duluth, Missabe & Northern, 2; Northern, 2; Great Lakes, 2; Reiss, 1, and Philadelphia & Reading, 1.

## MISSOURI

Large increases in the tax valuation of steam-shovel mines in Barton County brought such vigorous protest from the owners that the board of equalization cut the increase but still left the figures much higher than last year. The Clemens plant, formerly assessed at $75,000, was raised to $106,000 and finally placed at $90,500. The Mulberry Coal Co. operation was raised from $35,000 to $60,000 and finally placed at $47,500. These are typical of the adjustments made on the valuations of the thirteen steam-shovel mines involved.

**The Howard County Mining Co.,** which has 1,300 acres of coal land near Higbee underlaid with a bed averaging 3 ft. thick with 25 ft. of overburden, is reported to have closed a contract to put in a plant that will cost about $300,000 and produce the coal at the rate of about 500,000 tons per year. Contracts are said to have been closed with large consumers in Kansas City, Mo., covering a period of years.

The Watson coal mine on the Richmond-Henrietta Road, has been closed for repairs. The shaft at the mine has caved in making it impossible to run the cages in the shaft. The mine will resume operation as soon as the repairs are completed.

The mine of the Trenton Mining Co., at Trenton, has closed down. The company expects to resume operations by July 1 at the latest.

## NEW YORK

**The Tuttle-Burger Coal Co., Inc.,** on May 1 moved into new offices at 110 East 42d Street, New York City.

**The Pittsburgh Coal Co.** announces the removal of the office of its Eastern sales agent to 1 Broadway, New York City; telephone, Whitehall 5144.

The New York office of the Clinchfield Coal Corporation were removed April 29, to the Evening Post Building, 75 West Street.

A coke dry-quenching plant is under construction by the Rochester (N. Y.) Gas & Electric Corporation and it is stated that it will be the first of its kind in America, the system having been perfected by the brothers Sulzer of Switzerland. The cooling of coke is carried on in the new plant by circulating inert gases through it and the heat resulting will be used to generate steam. It is expected that 400 hp. will thus be obtained daily..

## NORTH DAKOTA

The Supreme Court of North Dakota has handed down a decision affecting the discretion of the state board of administration in the matter of coal purchases. The Washburn Lignite Coal Co. went into court to compel the award of the entire purchase of coal for state institutions, alleging that as the lowest bidder it was entitled to the contract. The board distributed the business to several concerns, on the ground that heat units and commercial value as well as service of delivery and other factors justified it. The District Court upheld the award as within the discretion of the department of administration. Now the Supreme Court holds that "the board exercised its honest judgment, even though the method followed in determining the lowest bidder was not that contemplated by the statute."

**Mine No. 5, Columbus Mining Co., Allais, Ky.**

This mine, which is in the Hazard field, is designed for a maximum capacity of 3,500 tons per day. The coal comes to the tipple on button conveyors from the Flag Seam and the 5A Seam, on opposite sides of the valley. The mine is equipped with picking tables, loading booms, etc.

## OHIO

A deed for 5,798 acres of Belmont County coal land from the Allen Coal Co. to the Monongahela & Ohio Co. has been filed at St. Clairsville. The consideration is not given other than the nominal sum of $100.

After an absence from the Cincinnati market of over a year the Chesapeake & Virginian Coal Co., of Lynchburg, Va., has reopened a branch office there in the Union Central Building, in charge of Cadwalader Jones.

It is reported that Zanesville and Crooksville capital has purchased the Fleming farm between Crooksville and New Lexington for the purpose of developing the coal deposits. A company will soon be organized to start development work.

The Lewis Hale Coal Co., started some time ago in Huntington, W. Va., now has a Cincinnati outlet, the company having opened an office at 605 Mercantile Library Building. N. A. Lewis, formerly in Cincinnati for the Federal Coal Co. and later with the Hooper Mankin Coal Co., of Huntington, is in charge.

The No. 7 mine of the Neffs Coal Co., located near Neffs, has been closed down for want of orders. The mine had been working at full time for months. The mine is located in the heart of Pittsburgh No. 8 field.

**The Lorain Coal & Dock Co.,** of Columbus, is operating only two of its mines in Pittsburgh No. 8 field, and these are on part time, two having been closed down indefinitely several weeks ago. The mines that are operating are the Crescent and Blaine mines while Stanley and Lincoln mines have been closed.

## PENNSYLVANIA

**The Shannopin Coal Co.,** a subsidiary of the Jones & Laughlin Steel Corporation, has started the development of a new coal field consisting of several thousand acres located near Taylortown. The company plans to ship the field's production by water, the first such attempt, on a major scale, in that territory. The company's plans call for the opening of two mines, construction of a narrow-gage railroad from Taylortown to Poland, three miles distant, building of a dock at Poland, from which coal may be shipped on the Monongahela River and erection of 250 houses at Taylortown for miners.

**Safe Timbering Explained.**—Officials of the Hudson Coal Co. recently staged demonstration of the proper method of standing timber under dangerous roof. The demonstration took place at a dinner at the Eagles' Club, Wilkes-Barre, attended by 650 employees of the company's Pine Ridge mine. A model of a gangway was erected on the stage with one section of timber already in place. Two miners then proceeded to erect a new section of timber in the manner approved by the company, which provides the greatest degree of protection to the workers from falling roof. As the workmen went through the task of timbering the place, John Green and William May, officials of the company, explained how and why the timber was prepared and placed in that manner.

A bill in equity has been filed with the county court in Ebensburg, Cambria County, by W. A. Sheeler and J. D. Keiper against the Rowena Coal Co., asking the appointment of a receiver. The bill sets forth that the company own land and operations in Somerset County and has assets of $192,000 and liabilities of $147,516.92. The petitioners allege that the company has notes and obligations which it is unable to meet and that numerous wage claims have been filed. The petitioners are stockholders and the principal place of business of the Rowena concern is in Johnstown.

In a recent speech delivered at Wilkes-Barre Mayor Dan Hart of that city went after Governor Pinchot of Pennsylvania for the part he played in trying to settle the anthracite strike. Mr. Hart said that he had been told by a prominent anthracite operator the strike would have ended around Christmas but for the governor's intervention.

**Equip Mine with Self-Rescuers.**—The Penelec mine of the Penn Public Service Corporation, at Robindale, near Seward, is said to be the first mine in central Pennsylvania to introduce self-rescuers as part of the mine equipment. The self-rescuers are in a compartment within easy reach of the men in the event of a fire or an explosion. Men who travel about from place to place in the mines are provided with individual rescuers, which they carry with them.

**A loss of $75,000** was caused at North Avoca recently when fire destroyed the washery owned by the Hillside Coal & Iron Co. The washery had been in service ten years and gave employment to fifty men. Fire companies from Duryea and Old Forge helped the Avoca companies in fighting the flames, thereby preventing other buildings in the neighborhood from being damaged.

## UTAH

A tract of public coal land in Sevier County will be offered for lease at public auction on June 1. The terms call for a 15c. royalty to the government and the expenditure of $1,000 in three years to bring the property to a minimum production of 550 tons. The lease will be awarded to the bidder offering the highest premium over the fixed terms.

**The Columbia Steel Co.** has plans under way for erecting more homes at its coal operation. It is stated that quite an extensive program will be carried out in order to meet the growing needs of the town.

## VIRGINIA

As the result of a conference between Governor Byrd, Lee Moore, Auditor of Public Accounts; John M. Purcell, State Treasurer; members of the purchasing commission and Charles A. Osborne, purchasing agent, on the one hand and a committee of Virginia operators on the other, including C. B. Neel, secretary of the Virginia association; D. Terpstra and Dan Pierson, it has been announced that new specifications for fuel to be used by Virginia state institutions will be issued soon, which will permit Virginia operators to bid on requirements amounting to approximately 70,000 tons a year.

## WASHINGTON

**Snoqualmie Coke Plant Opens.**—The California-Alaska Corp. opened the Snoqualmie coal mine and coke ovens, near Snoqualmie, late in April with ceremonies. Prof. Joseph Daniels, representing the University of Washington and the state development committee of the Seattle Chamber of Commerce, spoke on the significance of producing high grade metallurgical coke as the first step toward steel manufacture in the Northwest. Since taking over the project last July, the corporation has expended $100,000 in developing the mine and installing a coal cleaning plant. The property contains large beds of coking coal. A new 1,500-ft. tunnel makes possible 600 tons daily output. Fifty ovens can handle 100 tons and 100 ovens will be added within two years.

## WEST VIRGINIA

**George H. Shehl,** 44 years old, assistant mine foreman at the Mount Claire mine of the Hutchinson Coal Co., was crushed under a fall of slate and rock in the mine May 7. He is survived by his widow and eight children. Mr. Shehl had been employed by the company for 11 years.

Within a few more weeks all electrical wiring will be removed from the Consolidation Coal Co.'s mines No. 86, at Carolina, and No. 87, at Idamay, if the present plans to equip all cutting machines as well as haulage motors with storage batteries are carried out. The change is partly a safety measure and also is in the nature of an experiment, it is said.

**The Island Creek Coal Co.,** reports for the quarter ended March 31, 1926, net profit of $597,804 after depreciation, depletion and federal taxes, equivalent after allowing for dividend requirements on the $6 preferred stock to $4.40 a share earned on 118,801 outstanding shares of $100 par common stock.

Coal companies in which John Laing, of Charleston, is interested re-elected officers recently as follows: Wyatt Coal Co.—President, John Laing; vice-president, James Martin; secretary-treasurer, T. J. Robson; McAlphin Coal Co.—President, John Laing; vice-president, A. W. Laing; secretary-treasurer, T. J. Robson; Morrison Coal Co.—President, John Laing; vice-president, A. W. Laing; secretary-treasurer, T. J. Robson; Wyatt Coal Sales Co.—President, John Laing; vice-president and treasurer, T. J. Robson; secretary, O. H. Heiserman.

The state Department of Mines has announced that it will hold its annual foremen and firebosses' examinations as follows: Morgantown, Mechanical Hall, West Virginia University, July 26; Elkins, Central School Building, July 29; Welch, High School Building, Aug. 9; Williamson, High School Building, Aug. 12; Beckley, Junior High School Building, Aug. 16; Charleston, Central Junior High School Building, Aug. 19; Logan, High School Building, late in August; Wheeling, High School Building, Sept. 2. It requires two days to take the examinations and the date announced is when each examination begins in the particular town.

**The Island Creek Coal Co.** has acquired about 12,000 acres of coal land in the vicinity of Elk Creek, a tributary of Pigeon Creek, in Mingo County, and will undertake extensive development. Surveys are now being made for the necessary railroad sidings, town site and plant on which more than $1,000,000 will be expended. It is stated that $350,000 will be expended on a public road nine miles in length to connect the new town with Holden, general operating headquarters of the company. It will be possible to ship the coal out either on the Logan side over the Chesapeake & Ohio Ry. or over the Norfolk & Western Ry. by way of Pigeon Creek branch.

Lesser union officials in West Virginia are showing considerable dissatisfaction over a recent cut in wages, equal to a 50 per cent reduction in some instances, to permit an expansion of union endeavor in this field and the doubling of the organization force while conducting an intensive drive among the non-union miners. Organization work is being directed chiefly toward the negro miners in the Fairmont region now. Union heads announced at a recent mass meeting that practically every effort of the union is now being directed to that end.

The Coal River Collieries Co. is planning to remove its main offices to the Brotherhood of Locomotive Engineers' Building in Cleveland within the next 60 or 90 days, according to reports. The traffic and purchasing departments will be removed to Charleston.

**Mines, Long Shut, Reopen.**—The Melrose Coal Co.'s plant at Enterprise has resumed operations with a full complement of workers after being shut down two years. A new tipple and new machinery have been installed. The plant of the Winchester Coal Co. at the same place also has resumed operations after a long suspension.

A charter was granted late in April to the **Gulf Roan Smokeless Coal Co.,** with headquarters in Clarksburg, W. Va. The concern, which has an authorized capital of $300,000, was organized to mine coal, manufacture coke and coal briquets. The incorporators are Levi W. Keaster, George G. Lynch, Walter Elliott, Mamie Lee Morris and Dennis S. McIntyre, all of Clarksburg.

## CANADA

During the last few weeks there has been a great deal of staking of coal claims on the Mattagami River near Smoky Falls. It is understood that practically 100 square miles have been taken up. While it is commonly reported that there is no prospect of coal in Ontario, it has been known for many years that there were about 11,000,000 tons of low-grade lignite on the Mattagami River. It is stated that drilling operations have located a better grade of coal at a little greater depth, which is the cause of the excitement. The area is about 40 miles from the end of the T. & N. O. branch line north of Cochrane.

**Hamilton May Have Big Coal Dock.**—A project to establish dock facilities with a capacity of 1,000,000 tons of soft coal each season is under consideration by the harbor board of Hamilton, Ont., which has become an important center for the coke manufacturing industry. The cost is estimated at between $225,000 and $400,000.

**Canadian Coal Output Declines.**—Output of coal from Canadian mines during February was 13 per cent less than for the preceding month and 14 per cent less than the average for February in the past five years. The production was 1,068,184 in February, compared with 1,225,988 tons in January, and the five-year average of 1,305,367 tons. February imports totaled 825,503 tons, as against 968,475 tons in January and the five-year average for February of 1,169,603 tons. Anthracite was imported to the amount of 29,565 tons, which was 45,865 tons less than the January figure. Exports amounted to 35,517 tons in February as compared with 65,047 tons in January.

# Among the Coal Men

**Joseph J. Walsh,** Secretary of Mines of Pennsylvania, will be the chief speaker at the annual banquet of the Pennsylvania Coal Mining Institute, Johnstown, to be held on May 20. Four hundred mining men of Cambria and contiguous counties are expected to be present. Short addresses are scheduled to be given by Past President Charles Enzian, of Windber, and President-elect Archie Miller, who is expected to outline his schedule of meetings for the ensuing year.

**D. A. Stout** has been appointed chief engineer of mines of the Colorado Fuel & ron Co., having charge of engineering and exploration in connection with raw materials, with office at Pueblo, Colo. The office of manager of the fuel department has been abolished and **R. L. Hair** appointed general superintendent in charge of production, with headquarters at Pueblo.

**Hugh Washburn,** formerly with the Louisville office of the Southern Coal Co., of Memphis, until that concern withdrew from Louisville a few weeks ago, has gone with the Southwestern Fuel Co., under resident manager G. H. Sowards.

**E. J. McGrew,** coal-mine operator of Lexington, Mo., has been elected secretary of the Missouri State Highway Commission to fill the vacancy caused by the resignation of E. S. Austin, of Jefferson City, last May. The post pays $3,000 annually. McGrew has been an active good roads advocate for many years.

**Noah H. Swayne,** of Philadelphia, formerly president of the American Wholesale Coal Association, has accepted an invitation to act as toastmaster at the banquet in connection with the association's annual meeting, at Toledo, Ohio, June 7, 8 and 9.

The position of general superintendent of the Oliver & Snyder Steel Co. coal and coke plants Nos. 1, 2 and 3, near Uniontown, Pa., made vacant late last January by the death of John H. Lane, is being filled by **Charles H. Hinsey,** of Uniontown, Pa., formerly chief engineer and assistant general superintendent. Mr. Hinsey has been with the company for many years and is an old resident of Uniontown.

**Will Huffman,** general superintendent of the Fordson Coal Co. (Henry Ford interests) is suffering from a nervous breakdown at his home in Richmond, Va., according to reports. **Joseph Helms** is in charge of the plants in the Pond Creek field at Stone, Peg, Hardy and McVeigh, Ky.

In the statewide primary on May 4, **Oma Hart,** well-known coal operator of Boonville, Ind., was defeated for the Republican nomination for Sheriff of Warrick County.

**J. W. Galloway** was re-elected president of the Maryland Coal Co. of West Virginia and of the Maryland Coal Co. of Maryland at recent annual meetings of stockholders.

**John A. Posey,** of Rockport, Ind., who has invented a coal loading machine, received the nomination on May 4 for Prosecuting Attorney of Spencer and Perry Counties, Indiana, on the Republican ticket. Mr. Posey's father, the late Congressman Frank B. Posey, of Evansville, Ind., for many years before operated coal mines at Blackburn, Petersburg, Lincoln City and Yankeetown, Ind.

Alexander Howat

The former president of the Kansas miners' union, Alexander Howat, is in Scotland on his way to Russia to attend the Communist International convention to be held this spring, according to information from Pittsburg, Kan. Howat, accompanied by his wife, sailed from New York April 10. He plans to sit as a delegate in the convention, it was stated in what seemed to be an authoritative source. Howat's personal attorney has denied the report, however, stating that the deposed union official is simply accompanying his wife and father-in-law to the latter's old home in Scotland.

**Van A. Bittner,** chief international representative of the United Mine Workers in northern West Virginia, returned to the local offices at Fairmont May 3 after an absence due to illness. Bittner, who was suffering from an attack of tonsilitis, went to his home in Pittsburgh more than a week ago.

**John Stafford,** mining engineer and supervisor of state coal mines in Queensland, Australia, has been appointed Chief Inspector of Coal Mines of that state. Previous to entering the service of the Queensland Government as an inspector of mines, Mr. Stafford was for several years connected with the coal mines of the Ipswich district, Queensland, and occupied every position in a coal mine from trap boy to general manager.

**J. W. Littlejohn,** formerly superintendent of mines for the Utah Fuel Co. at Sunnyside, Utah, and more recently, with his brother, William Littlejohn, lessee of the company's property at Clear Creek, has disposed of his interests there and moved to California, where he will make his future home.

Reports in Scranton, Pa., are that **Frank Benjamin,** owner of the Benjamin Coal Co., of that region, will sell his interests in the Hotel Jermyn and devote his entire time to the coal industry and his banking interests. He also is a member of the Lackawanna County Bar.

**John Laing,** of Charleston, W. Va., who has been on a tour in the Mediterranean, has gone to Belgium to undergo treatment by a nerve specialist. Mr. Laing is president of the Wyatt, McAlpin and Morridon Coal companies and the Wyatt Coal Sales Co., in Charleston, W. Va.

**R. L. Suender,** only son of E. H. Suender, general manager of the Madeira, Hill & Co., Frackville, Pa., recently married Miss Elizabeth Beisel, of Pottsville, Pa. The younger Mr. Suender is employed as a mining and mechanical engineer at one of the Madeira, Hill & Co. properties at Pottsville.

**Robert W. Hunter,** of the Hunter Coal Co., mine operators of Providence, Ky., and also chairman of the Republican State Central Committee, has announced that he is moving his family to Louisville, where he will make his home. Mr. Hunter is interested in the automobile business and also in oil operations as well as coal.

**J. W. Bunting,** formerly with the Chesapeake & Ohio Coal & Coke Co. at Norfolk for a number of years and more recently a member of the staff of W. M. Stone & Co., shipping agents, has accepted a position with the General Coal Co., effective April 19. He is one of the best known coal men in tidewater Virginia.

## Obituary

**Dennison B. Smith,** well known in the coal trade of the Twin Cities for more than 40 years, died last week at his home in Minneapolis, after a brief illness. He was born in 1854 in Toledo, Ohio, and went west as a young man, spending most of his life in Minneapolis. He had long been connected with the local dock trade, being with the M. A. Hanna Coal Co. for many years.

**William H. Bergenroth,** 68, coal-mine operator, died at his home in Troy, Ind., May 3. Early in life Mr. Bergenroth with his brothers operated a coal mine at Hawesville, Ky., going later to Troy to continue their coal operations. Mr. Bergenroth was operating a coal mine near Tell City at the time of his death.

**James H. Mays,** former Congressman from Utah, died at his Idaho ranch last week. Mr. Mays was stricken while sitting in his chair and died the next day. He held title to about 2,000 acres of coal land in Utah and had devoted considerable attention at times to the development of his holdings, which are located in Emery County. Mr. Mays was born in Tennessee in 1868 and went to Utah in 1902.

# Production And the Market

## British Strike Indirectly Affects Soft-Coal Trade On This Side; Lake Opening Raises Hope

The effects of the British strike upon the bituminous coal markets of the United States during the past week were indirect in character. There was an increase in inquiries from buyers who normally depend upon Great Britain for fuel and a sharp upturn in the asking prices on low-volatile West Virginia coal at Hampton Roads. This was reflected in a strengthening in prices for inland western delivery. But there was no feverish bidding along the Atlantic seaboard.

There has been a slight appreciation in quotations on central Pennsylvania coals, but no broad indications of the secondary reactions which would force up prices on American fuels generally because foreign demand was drawing upon production in this country. As a matter of fact, capacity has been so rapidly developed in the non-union fields in recent years that it probably would take much foreign buying pressure to duplicate—even on a small scale—the runaway market of 1920.

### Opening of Lake Trade Welcomed

Another factor of encouragement in the present bituminous situation is the opening of the long-delayed lake shipping season. Several cargoes of bituminous and one of anthracite were discharged at Milwaukee in the past week and over fifty vessels had been loaded for the Head of the Lakes. Railroad facilities at the lower ports, however, are still congested and movement is controlled by the embargo situation. The question of prices continues a sore point with many producers.

During the week ended May 9 there were 343,553 tons of cargo bituminous and 34,714 tons of vessel fuel dumped at the lower ports. The total for the season to that date was 1,598,158 tons, as compared with 2,725,344 tons a year ago and 1,764,525 tons in 1924.

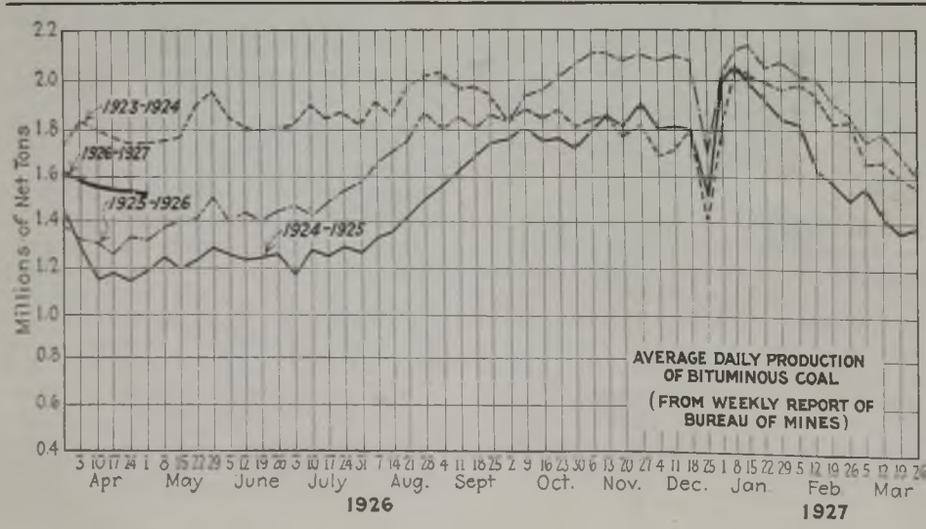
The efforts of the operators to trim output to demand are going steadily forward. During the week ended May 1, production was estimated by the Bureau of Mines at 9,137,000 net tons, as compared with 9,271,000 tons the week preceding. Even with this continued curtailment, the machinery of production is unbalanced because the demand for the different sizes is very uneven. This is particularly true in the Middle West, where "no bills" of domestic coal are the rule. Kentucky also is struggling with this problem and West Virginia is not wholly free.

### Spot Prices Move Upward

*Coal Age* Index of spot bituminous prices has moved upward again. As of May 10 the index figure stood at 161 and the corresponding price was $1.95. The week preceding the figures were 159 and $1.92. The increase in the prices on low-volatile West Virginia coals was the major contributing factor to this advance. In the Middle West the price levels remained constant.

Notwithstanding the general complaint that the hard-coal consumer is backward in storing coal, anthracite production for the week ended May 1 totaled 2,098,000 net tons—a new high record for the year. How much of this production may be credited to a fear that prices would advance cannot, of course, be stated, it is a fact, however, that producers are meeting greater resistance in the sale of their product. Premiums, except on pea, have been shrinking for some time. The slaughter of values in steam sizes by those without facilities for storage goes merrily on.

The spot market in Connellsville coke is dull. Furnace ovens now are reducing their output faster than the merchant operations. Spot furnace coke is weaker.




### Estimates of Production

(Net Tons)

| | 1925 | 1926 |
|---|---|---|
| **BITUMINOUS** | | |
| April 17 | 7,515,000 | 9,306,000 |
| April 24 (a) | 8,030,000 | 9,271,000 |
| May 1 (b) | 7,987,000 | 9,137,000 |
| Daily average | 1,331,000 | 1,523,000 |
| Cal. yr. to date (c) | 162,376,000 | 187,453,000 |
| Daily av. to date | 1,580,000 | 1,822,000 |
| **ANTHRACITE** | | |
| April 17 | 1,522,000 | 2,086,000 |
| April 24 | 1,880,000 | 2,087,000 |
| May 1 | 1,926,000 | 2,098,000 |
| Cal. yr. to date (c) | 29,387,000 | 19,574,000 |
| **BEEHIVE COKE** | | |
| April 24 | 189,000 | 228,000 |
| May 1 (b) | 169,000 | 221,000 |
| Cal. yr. to date (c) | 4,108,000 | 4,968,000 |

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

### Middle Western Markets Calm

A midsummer quiet has settled down upon the markets of the Middle West. Southern Illinois producers decided that May 1 was not a propitious day to advance domestic prices and other Illinois and Indiana operators followed their lead. On the steam side of the market, the undercurrent of strength is increasing. Unless the demand for coarse coal should show early improvement, advances in the prices on screenings are not unlikely. In fact, some mines are crushing mine-run to take care of steam obligations.

The British tie-up induced some high-volatile shippers to Chicago territory to talk higher prices, but buyers declined to be interested. The low-volatile shippers, however, have withdrawn quotations, asserting that they are booked up for the next few days. What little coal is seeping through is offered at $3@$3.25 for lump and egg and $2 for mine-run.

Cool weather has helped small-lot business in the medium grades in the local St. Louis market. There is little activity in the Illinois and Indiana mining districts. Under present conditions the stripping operations have the edge on the shaft mines. Outside of the Duquoin area there is little railroad tonnage moving. All districts report "no bills."

### Kentucky Business Backward

The backwardness of the lake season is still embarrassing the Kentucky operators. Mines in both parts of the state have produced faster than the markets would absorb the tonnage. Nevertheless, the shippers seem to have the situation well in hand. Notwithstanding reports that there are hundreds of unbilled loads at the mines, offers of distress lots at terminal points are few and far between.

Spot quotations on western Kentucky screenings are slightly stronger; as high as $1.25 is asked in some quarters and very little tonnage can be had under $1.10. Prices on other sizes show no material change from those prevailing in recent weeks. Western Kentucky mine-run is $1.10@$1.40; lump, egg and nut, $1.35@$1.65; 6-in. block, $1.65@$1.85. Eastern Kentucky slack is $1@$1.10; mine-run, $1.35@$1.65; lump, egg and nut, $1.75@$2; 4-in. block, $1.85@$2.25, with occasional sales of Jellico and Straight Creek at $2.50.

### Heavy Movement to Northwest Likely

Heavy movement to the docks this season is forecast by the fact that the vessel sheets a week ago showed 50 cargoes of bituminous had been marked up for the Head of the Lakes. Stocks on hand as of May 1 were estimated at 1,750,000 tons. No loading of hard coal was reported up to last Wednesday, but there are practically no stocks left on the docks and it is estimated that approximately 1,000,000 tons of anthracite will be shipped.

Shipments from the docks to con-

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

| Low-Volatile, Eastern | Market Quoted | May 11 1925 | April 26 1926 | May 3 1926 | May 10 1926† |
|---|---|---|---|---|---|
| Smokeless lump | Columbus | $2.85 | $2.60 | $2.60 | $2.75@$3.00 |
| Smokeless mine run | Columbus | 1.85 | 1.90 | 1.90 | 1.90@ 2.10 |
| Smokeless screenings | Columbus | 1.45 | 1.20 | 1.20 | 1.15@ 1.35 |
| Smokeless lump | Chicago | 2.85 | 2.60 | 2.60 | 3.00@ 3.25 |
| Smokeless mine run | Chicago | 1.85 | 1.80 | 1.80 | 2.00 |
| Smokeless lump | Cincinnati | 3.00 | 2.75 | 2.85 | 3.00 |
| Smokeless mine run | Cincinnati | 2.00 | 1.85 | 1.80 | 1.75@ 1.90 |
| Smokeless screenings | Cincinnati | 1.50 | 1.35 | 1.35 | 1.25@ 1.50 |
| *Smokeless mine run | Boston | 4.25 | 4.10 | 4.30 | 4.50@ 4.75 |
| Clearfield mine run | Boston | 1.95 | 1.85 | 1.80 | 1.75@ 2.10 |
| Cambria mine run | Boston | 2.15 | 2.15 | 2.10 | 2.00@ 2.25 |
| Somerset mine run | Boston | 2.05 | 1.95 | 1.90 | 1.85@ 2.15 |
| Pool 1 (Navy Standard) | New York | 2.55 | 2.65 | 2.60 | 2.50@ 2.75 |
| Pool 1 (Navy Standard) | Philadelphia | 2.60 | 2.80 | 2.80 | 2.65@ 3.00 |
| Pool 1 (Navy Standard) | Baltimore | 1.95 | 1.95 | 1.95 | 1.90@ 2.00 |
| Pool 9 (Super. Low Vol.) | New York | 1.95 | 2.10 | 2.05 | 2.00@ 2.25 |
| Pool 9 (Super. Low Vol.) | Philadelphia | 2.00 | 2.35 | 2.35 | 2.20@ 2.50 |
| Pool 9 (Super. Low Vol.) | Baltimore | 1.85 | 1.75 | 1.75 | 1.70@ 1.80 |
| Pool 10 (H.Gr.Low Vol.) | New York | 1.85 | 1.85 | 1.85 | 1.70@ 2.00 |
| Pool 10 (H.Gr.Low Vol.) | Philadelphia | 1.70 | 2.05 | 2.05 | 1.90@ 2.25 |
| Pool 10 (H.Gr.Low Vol.) | Baltimore | 1.70 | 1.60 | 1.60 | 1.55@ 1.65 |
| Pool 11 (Low Vol.) | New York | 1.50 | 1.60 | 1.60 | 1.50@ 1.75 |
| Pool 11 (Low Vol.) | Philadelphia | 1.55 | 1.70 | 1.70 | 1.55@ 1.85 |
| Pool 11 (Low Vol.) | Baltimore | 1.45 | 1.45 | 1.45 | 1.45@ 1.50 |
| **High-Volatile, Eastern** | | | | | |
| Pool 54-64 (Gas and St.) | New York | 1.50 | 1.45 | 1.40 | 1.30@ 1.55 |
| Pool 54-64 (Gas and St.) | Philadelphia | 1.45 | 1.45 | 1.45 | 1.35@ 1.55 |
| Pool 54-64 (Gas and St.) | Baltimore | 1.50 | 1.25 | 1.25 | 1.25@ 1.30 |
| Pittsburgh sc'd gas | Pittsburgh | 2.40 | 2.30 | 2.30 | 2.25@ 2.40 |
| Pittsburgh gas mine run | Pittsburgh | 2.15 | 2.05 | 2.05 | 2.00@ 2.15 |
| Pittsburgh mine run (St.) | Pittsburgh | 1.95 | 1.95 | 1.80 | 1.75@ 1.90 |
| Pittsburgh slack (Gas) | Pittsburgh | 1.50 | 1.55 | 1.55 | 1.50@ 1.60 |
| Kanawha lump | Columbus | 2.10 | 2.05 | 2.05 | 1.85@ 2.25 |
| Kanawha mine run | Columbus | 1.40 | 1.55 | 1.55 | 1.40@ 1.75 |
| Kanawha screenings | Columbus | 1.20 | 1.05 | 1.00 | .90@ 1.15 |
| W. Va. lump | Cincinnati | 2.05 | 1.80 | 1.85 | 1.75@ 2.00 |
| W. Va. gas mine run | Cincinnati | 1.45 | 1.50 | 1.50 | 1.50@ 1.65 |
| W. Va. steam mine run | Cincinnati | 1.30 | 1.40 | 1.40 | 1.35@ 1.50 |
| W. Va. screenings | Cincinnati | 1.15 | 1.00 | 1.00 | .90@ 1.10 |
| Hocking lump | Columbus | 2.25 | 2.35 | 2.35 | 2.25@ 2.50 |
| Hocking mine run | Columbus | 1.40 | 1.55 | 1.55 | 1.40@ 1.75 |
| Hocking screenings | Columbus | 1.30 | 1.15 | 1.05 | 1.00@ 1.15 |
| Pitts. No. 8 lump | Cleveland | 2.25 | 2.20 | 2.20 | *1.80@ 2.55* |
| Pitts. No. 8 mine run | Cleveland | 1.90 | 1.80 | 1.80 | 1.80@ 1.85 |
| Pitts. No. 8 screenings | Cleveland | 1.45 | 1.40 | 1.40 | *1.30@ 1.40* |

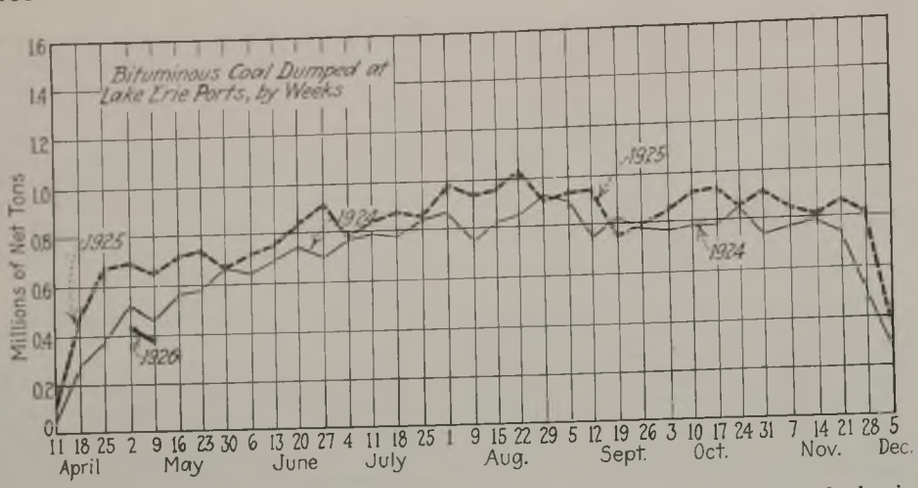
| Midwest | Market Quoted | May 11 1925 | April 26 1926 | May 3 1926 | May 10 1926† |
|---|---|---|---|---|---|
| Franklin, Ill. lump | Chicago | $2.60 | $2.60 | $2.60 | $2.60 |
| Franklin, Ill. mine run | Chicago | 2.35 | 2.40 | 2.40 | 2.35@ 2.50 |
| Franklin, Ill. screenings | Chicago | 2.10 | 1.90 | 1.90 | 1.85@ 2.00 |
| Central, Ill. lump | Chicago | 2.35 | 2.30 | 2.30 | 2.25@ 2.40 |
| Central, Ill. mine run | Chicago | 2.10 | 2.05 | 2.05 | 2.00@ 2.15 |
| Central, Ill. screenings | Chicago | 1.85 | 1.50 | 1.55 | 1.50@ 1.65 |
| Ind. 4th Vein lump | Chicago | 2.60 | 2.40 | 2.40 | 2.25@ 2.60 |
| Ind. 4th Vein mine run | Chicago | 2.35 | 2.15 | 2.15 | 2.10@ 2.25 |
| Ind. 4th Vein screenings | Chicago | 2.00 | 1.80 | 1.80 | 1.75@ 1.90 |
| Ind. 5th Vein lump | Chicago | 2.25 | 2.15 | 2.15 | 2.00@ 2.35 |
| Ind. 5th Vein mine run | Chicago | 1.95 | 1.95 | 1.95 | 1.85@ 2.10 |
| Ind. 5th Vein screenings | Chicago | 1.60 | 1.35 | 1.35 | 1.30@ 1.45 |
| Mt. Olive lump | St. Louis | 2.50 | 2.50 | 2.50 | 2.50 |
| Mt. Olive mine run | St. Louis | 2.25 | 2.15 | 2.15 | 2.15 |
| Mt. Olive screenings | St. Louis | 1.75 | 1.40 | 1.40 | 1.40 |
| Standard lump | St. Louis | 2.25 | 2.50 | 2.50 | 2.50 |
| Standard mine run | St. Louis | 1.80 | 1.80 | 1.80 | 1.75@ 1.85 |
| Standard screenings | St. Louis | 1.70 | 1.15 | 1.15 | 1.15@ 1.20 |
| West Ky. block | Louisville | 1.65 | 1.75 | 1.75 | 1.65@ 1.85 |
| West Ky. mine run | Louisville | 1.35 | 1.25 | 1.25 | 1.10@ 1.40 |
| West Ky. screenings | Louisville | 1.20 | 1.05 | 1.05 | 1.00@ 1.20 |
| West Ky. block | Chicago | 2.00 | 1.75 | 1.75 | 1.65@ 1.85 |
| West Ky. mine run | Chicago | 1.30 | 1.15 | 1.15 | .80@ 1.50 |
| **South and Southwest** | | | | | |
| Big Seam lump | Birmingham | 2.40 | 2.00 | 2.15 | 1.90@ 2.40 |
| Big Seam mine run | Birmingham | 1.75 | 2.00 | 2.00 | 1.75@ 2.25 |
| Big Seam (washed) | Birmingham | 1.85 | 2.00 | 2.00 | 1.75@ 2.25 |
| S. E. Ky. block | Chicago | 2.25 | 2.25 | 2.40 | 2.10@ 2.75 |
| S. E. Ky. mine run | Chicago | 1.65 | 1.65 | 1.65 | 1.50@ 1.85 |
| S. E. Ky. block | Louisville | 2.20 | 2.00 | 2.05 | 1.85@ 2.25 |
| S. E. Ky. mine run | Louisville | 1.30 | 1.50 | 1.50 | 1.35@ 1.65 |
| S. E. Ky. screenings | Louisville | 1.20 | 1.05 | 1.05 | 1.00@ 1.10 |
| S. E. Ky. block | Cincinnati | 2.20 | 2.10 | 2.50 | 2.00@ 3.00 |
| S. E. Ky. mine run | Cincinnati | 1.35 | 1.55 | 1.50 | 1.35@ 1.75 |
| S. E. Ky. screenings | Cincinnati | 1.15 | 1.05 | 1.00 | *.75@ 1.10* |
| Kansas lump | Kansas City | 4.25 | 4.25 | 4.00 | 4.00 |
| Kansas mine run | Kansas City | 2.85 | 2.85 | 3.00 | 3.00 |
| Kansas screenings | Kansas City | 2.60 | 2.50 | 2.50 | 2.50 |

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**; declines in *italics*.

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

| | Market Quoted | Freight Rates | May 11, 1925 Independent | May 11, 1925 Company | May 3, 1926 Independent | May 3, 1926 Company | May 10, 1926† Independent | May 10, 1926† Company |
|---|---|---|---|---|---|---|---|---|
| Broken | New York | $2.34 | ..... | $8.05@$8.60 | ..... | $8.25@$9.25 | ..... | $8.25@$9.25 |
| Broken | Philadelphia | 2.39 | ..... | 8.60 | $9.25 | 9.00@ 9.25 | $9.25 | 9.00@ 9.25 |
| Egg | New York | 2.34 | $8.50@$8.85 | 8.35@ 8.60 | 9.00@ 9.50 | 8.75@ 9.25 | 9.00@ 9.50 | 8.75@ 9.25 |
| Egg | Philadelphia | 2.39 | 8.60@ 9.30 | 8.40@ 8.60 | 9.25@ 9.85 | 9.15@ 9.25 | *9.25@ 9.75* | 9.15@ 9.25 |
| Egg | Chicago* | 5.06 | 7.86@ 8.50 | 7.44@ 8.18 | 8.48 | 8.13 | 8.48 | 8.13 |
| Stove | New York | 2.34 | 8.75@ 9.25 | 8.85@ 9.10 | 9.25@ 9.75 | 9.25@ 9.50 | 9.25@ 9.75 | 9.25@ 9.50 |
| Stove | Philadelphia | 2.39 | 9.20@ 9.75 | 8.85@ 9.00 | 9.60@10.10 | 9.35@ 9.50 | *9.60@10.00* | 9.35@ 9.50 |
| Stove | Chicago* | 5.06 | 8.22@ 8.70 | 7.92@ 8.10 | 8.84 | 8.33@ 8.58 | 8.84 | 8.33@ 8.58 |
| Chestnut | New York | 2.34 | 8.50@ 8.75 | 8.35@ 8.60 | 9.25@ 9.50 | 8.75@ 9.15 | 9.25@ 9.50 | 8.75@ 9.15 |
| Chestnut | Philadelphia | 2.39 | 8.60@ 9.45 | 8.50@ 8.60 | 9.25@ 9.75 | 9.00@ 9.15 | *9.25@ 9.50* | 9.00@ 9.15 |
| Chestnut | Chicago* | 5.06 | 8.14@ 8.35 | 7.69@ 8.00 | 8.71 | 8.38@ 8.58 | 8.71 | 8.38@ 8.58 |
| Pea | New York | 2.22 | 5.00@ 5.50 | 5.00@ 5.60 | 6.50@ 7.25 | 6.00@ 6.25 | 6.50@ 7.25 | 6.00@ 6.25 |
| Pea | Philadelphia | 2.14 | 5.40@ 5.75 | 5.00@ 5.40 | 6.50@ 7.00 | 6.00@ 6.50 | 6.50@ 7.00 | 6.00@ 6.50 |
| Pea | Chicago* | 4.79 | 4.91@ 5.36 | 4.69@ 5.00 | 6.03 | 5.65@ 5.80 | 6.03 | 5.65@ 5.80 |
| Buckwheat No. 1 | New York | 2.22 | 2.00@ 2.60 | 2.50 | 1.85@ 2.50 | 3.00@ 3.50 | 1.85@ 2.50 | 3.00@ 3.50 |
| Buckwheat No. 1 | Philadelphia | 2.14 | 2.25@ 2.75 | 2.50 | 2.25@ 2.75 | 2.50@ 2.75 | *2.00@ 2.50* | 2.50@ 2.75 |
| Rice | New York | 2.22 | 1.75@ 2.10 | 2.00 | 1.50@ 2.25 | 2.00@ 2.25 | *1.50@ 2.00* | 2.00@ 2.25 |
| Rice | Philadelphia | 2.14 | 1.90@ 2.00 | 2.00 | 2.00@ 2.25 | 2.00@ 2.25 | *1.75@ 2.25* | 2.00@ 2.25 |
| Barley | New York | 2.22 | 1.40@ 1.60 | 1.50 | 1.00@ 1.50 | 1.50@ 1.75 | 1.00@ 1.50 | 1.50@ 1.75 |
| Barley | Philadelphia | 2.14 | 1.50 | 1.50 | 1.50@ 1.60 | 1.75 | 1.50@ 1.60 | 1.75 |
| Birdseye | New York | 2.22 | 1.40@ 1.60 | 1.60 | 1.00@ 1.50 | 2.00 | ..... | 2.00 |

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




sumers over the Northwest are on a seasonable basis. Contracting for the year's supplies by the utilities and larger industrial plants is expected to begin in a substantial way before the end of the month. Further stiffening in the prices on smokeless lump is the only change in dock quotations.

Warm weather has killed any demand for domestic coal in the Twin Cities. Steam-coal buyers persist in their attitude of indifference toward contracting, but producers are not pressing them with offers of concessions. Prices in Illinois and western Kentucky coals are unchanged.

Arrivals of the first fleet from the lower ports kept docks at Milwaukee busy last week. Up to May 6 a total of 135,605 tons of bituminous and 5,000 tons of anthracite was received. Up to Map 6, 1925, bituminous receipts had totaled 227,313 tons, and anthracite, 153,208 tons. There have been some sharp revisions of retail prices. Pocahontas declined $3, and coke, $2.10.

### Kansas Fields Mark Time

Little coal is moving in the Southwest. Many mines are down and those working are averaging only a few days a week. This condition prevails not only in Kansas but also in Oklahoma and Arkansas. Paris (Ark.) semi-anthracite lump is quoted at $5.50 for May, $6 for June and $6.50 for July. McAlester lump is $5.60; nut, $4.60, and screenings, $2.50. Lump and nut from the Wilburton mines are 75c. less, with slack $2.50. Henryetta is asking $3.50 for lump, $3.25 for nut, $3 for mine-run and $2.25 for screenings.

Season and temperatures considered, Colorado mines are enjoying a fairly steady demand. Nut is the size most favored by the retailers. Activity in the sugar, steel and copper industries is absorbing all the steam tonnage available. Walsenburg and Canon City domestic lump is quoted at $4.50, mines; washed nut, $4.25, and chestnut, $3; Trinidad domestic lump and nut $2.85; Crested Butte bituminous lump, $4.50; nut, $4.25. Colorado domestic anthracite coals are $6.50@$8.

Dawson district (New Mexico) 6-in. lump and 6x3 egg are $3.20; nut, $3.10; pea, $2.85. Kemmerer and Rock Springs (Wyoming) lump, grate and nut are $3.50. The ruling price on Wyoming steam sizes is $1.25 in the Denver market, but slack is 50c. higher at Salt Lake City. Utah mines are not averaging over two days a week and buying is on a hand-to-mouth basis. Curtailed production is keeping the steam market strong.

### Cincinnati More Buoyant

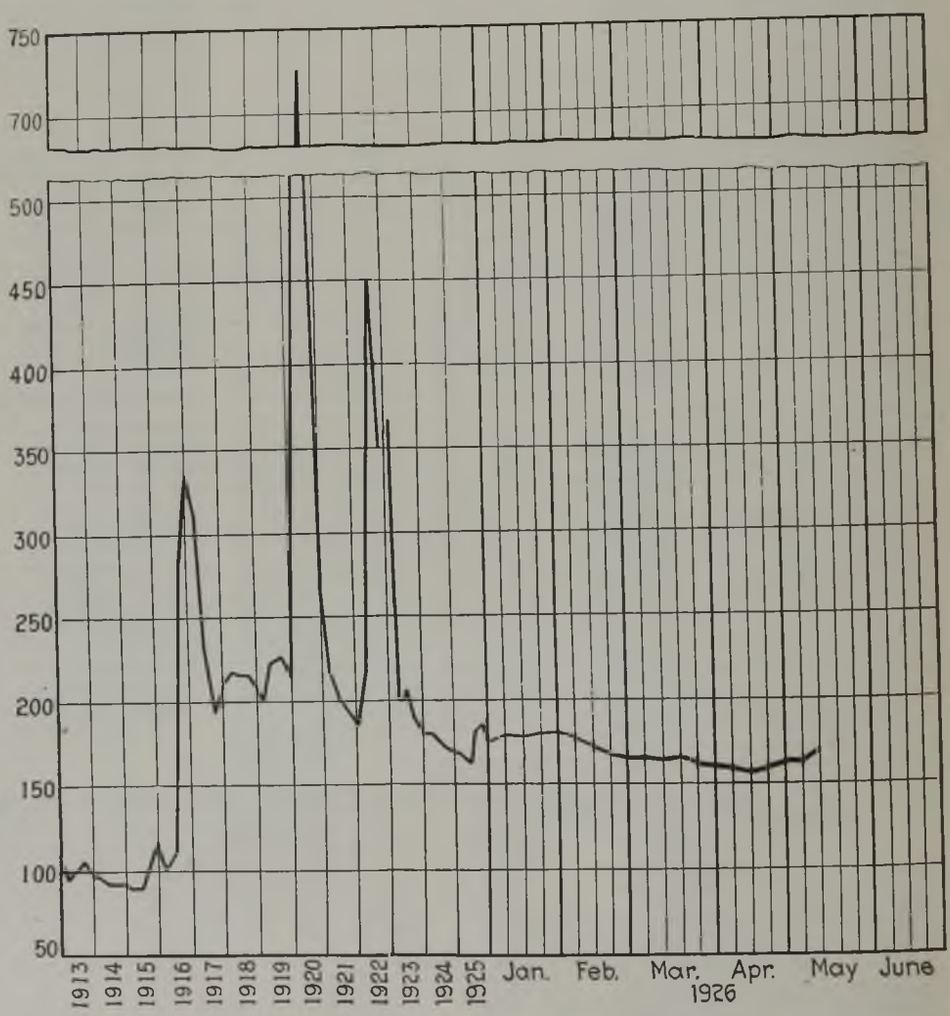
The Cincinnati market wears a livelier aspect. Trade interests now feel that the abbreviated lake season will be a blessing in disguise and they also are counting upon an increased demand as a result of the British strike. Low-volatile coals are stronger, particularly lump and egg, and there is little spot tonnage offering. Slack, however, still lags; quotations are $1.25 @$1.50, but little is going above the minimum figures.

There is a slight improvement in the demand for high-volatile domestic block and lump, but egg is erratic. Better grades of mine-run now command $1.50 and the average is about $1.40. Slack was strong until the B. & O. embargo lake shipments to Toledo. Some of the tonnage caught in the jam sold at 75@ 90c., but most of the coal is held for 90c.@$1.10.

The local retail trade at Cincinnati is unusually active for this season of the year. Coal movement through the Cincinnati gateways, according to the latest figures of the American Railway Association, is increasing, not only because of lake shipments but because general business also is expanding.

### No Life in Ohio or Pennsylvania

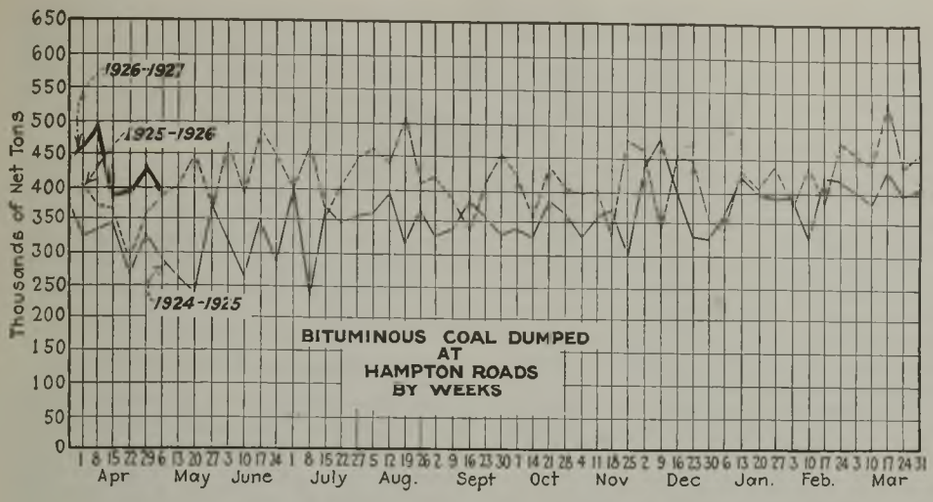
As for weeks past, sluggishness characterizes the spot-coal markets in Ohio and Pennsylvania. In central and southern Ohio business has been awaiting the opening of the lake season. Lake buyers hold to $1.50, while sellers are hoping that the late start of ship-




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

| | 1926 | | | | 1925 | 1924 |
|---|---|---|---|---|---|---|
| | May 10 | May 3 | April 26 | April 19 | May 11 | May 12 |
| Index | 161 | 159 | 159 | 158 | 166 | 169 |
| Weighted average price | $1.95 | $1.92 | $1.93 | $1.92 | $2.01 | $2.05 |

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




ping may mean higher prices. The number of loaded cars on the tracks to the Sandusky and Toledo piers runs into the thousands.

Central Ohio steam trade lags. Contracting is backward because spot prices are so depressed. Screenings, however, are firm, but mine-run is a drug on the market. Only a few storage orders have been placed by the retail distributors. Southern Ohio production is running between 15 and 18 per cent of normal.

If there was any change in the northern Ohio situation last week it was a change for the worse. Production is declining and prices are further depressed. Slack coal has dropped 5 to 10c. per ton. Retail trade at Cleveland is light. During the week ended May 1 the No. 8 field produced 189,000 tons, or approximately 27 per cent of capacity. Compared with the preceding week this was a loss of 31,000 tons. Lake Shipments up to May 3 exceeded 1,000,000 tons, but Ohio had a very small share in the business.

### Pittsburgh in the Doldrums

There is no cheer in the reports from commercial operations in the Pittsburgh district. The Pittsburgh Coal Co. has sold some tonnage to the lakes. In general, however, mines operating on the 1917 scale find it no easy matter to move coal; the difficulties confronting the union operations are still greater. Prices are unchanged. Stripping mines willing to crush mine-run are holding prices on slack in check.

Central Pennsylvania is living on hopes. April production was only 55,965 cars, as compared with 82,648 in February and 70,245 cars in March. Some tentative inquiries have been received from foreign sources, but at best the central field looks for nothing but a reflected demand. Current quotations are: Pool 1, $2.50; pool 71, $2.20@$2.25; pool 9, $2@$2.15; pool 10, $1.85@$2; pool 11, $1.65@$1.75, and pool 18, $1.60. Compared with the preceding week, the general list is stronger.

No changes worthy of chronicling marked the Buffalo bituminous market last week. Demand, generally speaking, holds up, but prices yield no profit to the sellers. In the domestic trade a quiet struggle is going on between anthracite and coke. Lake movement of anthracite has started, with the clearance of 12,500 tons for Chicago and 10,200 tons for Duluth and Superior.

### No Strike Reaction in New England

There has been no real reaction to the British strike in the New England market. Buying is very quiet and the volume of spot tonnage sold shows no appreciable gain. Prices on cars at Boston are somewhat firmer because of diminished receipts, but at other New England distributing points previous levels have been undisturbed.

Several of the shippers at Hampton Roads are holding out for $4.75 gross, but there are not many sales for New England delivery at that figure. Practically all the shippers have coal at the terminals and there are occasional reports of placements at prices more nearly approximating the average of a fortnight ago. On cars at Providence and Boston, Navy Standard commands $5.50@$5.75.

No change has developed in the all-rail market for central Pennsylvania coals. Quotations are on a minimum basis, governed by the cost of mining. In no direction is there more than a scattering demand for this fuel and shippers are canvassing the territory assiduously for orders.

### British Strike Has Little Effect

The British strike to date has left only a faint impress upon the bituminous markets of the Atlantic seaboard. Pier prices advanced sharply at Hampton Roads last week, but quotations at New York were weaker on the whole and unchanged at Philadelphia. More bunker coal was taken on by vessels clearing from New York, but the number of clearances was less. There also has been an increase in the number of inquiries from foreign sources, but not many actual orders.

New York is still troubled with distress Pennsylvania coal and some lots have been sold as low as $1.75, mines. There has been no change in the nominal quotations on fresh-mined coal. Bargain hunters, however, are able to pick up odd lots at attractive figures.

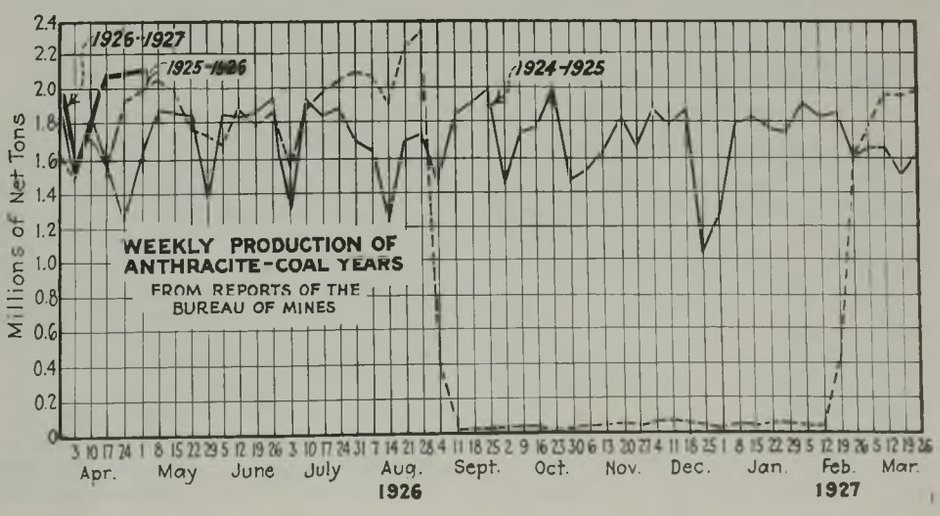
Philadelphia jogs along at an unhurried pace. Demand is fairly constant and prices show no appreciation. The optimists are hoping that industrial buying will expand as summer approaches. Little store is set by the British trouble. There are rumors that France may look to the United States for fuel, but these tales do not square with late reports from the Continent. Railroads pursue their much-criticized buying policy. At Baltimore, coal men are discussing foreign prospects, but the local situation is unchanged.

The situation at Birmingham is on all fours with that prevailing for several weeks past. Medium- and high-grade steam coals move readily in the contract and spot markets, but only restricted production prevents a surplus of the low-grade fuels. The rapid absorption of the better grades of domestic coal on season contracts has created a slightly stronger market for lower quality white-ash coals. Domestic coke demand is lifeless, but spot foundry is strong at $6@$6.50. Larger users, however, are covered by contracts at $5.50@$6.

### More Anthracite Buying at New York

Anthracite consumers at New York are beginning to buy more freely, but activity still is somewhat subnormal. Independents must work hard to get 25 to 50c. above company circulars, but company tonnage is moving readily. Stove now leads in demand and is used to encourage the sale of egg and nut. Pea maintains its strength. There has been a slight improvement in barley, but the steam situation as a whole is sluggish.

The Philadelphia market is more backward and there have been numerous requests to delay shipment on orders already placed. This is credited to consumers' resentment at the failure of the producers to make the usual spring reductions. Nut has become heavy and some independents are using



## Car Loadings and Supply

| | Cars Loaded — All Cars | Coal Cars |
|---|---|---|
| Week ended April 24, 1926 | 973,304 | 166,586 |
| Preceding week | 964,935 | 167,249 |
| Week ended April 25, 1925 | 959,225 | 147,330 |

| | Surplus Cars — All Cars | Coal Cars | Car Shortages All Cars | Coal Cars |
|---|---|---|---|---|
| April 23, 1926 | 286,203 | 126,959 | ..... | ..... |
| April 16, 1926 | 284,396 | 130,152 | ..... | ..... |
| April 22, 1925 | 344,198 | 173,455 | ..... | ..... |

pea as a bait to move the larger size. Steam coals are dragging. Large producers are putting coal in storage and smaller shippers are offering concessions to buyers. Barley probably is the strongest in demand, but even that is slipping. There is only a moderate demand for hard coal at Baltimore.

### Connellsville in Lake Market

The Connellsville district has sold considerable coal for lake shipment on a mine-run basis of $1.50. This coal is screened at the mines and yields slack and lump in about equal proportions. The rate to the lakes is a few cents higher than from the Pittsburgh district.

There is practically no spot demand for furnace coke and very little for foundry. Miscellaneous buying is light. Spot foundry coke is $4@$4.50, but furnace grades have weakened to $3 flat.

Production during the week ended May 1, according to the Connellsville *Courier*, was 169,410 tons, an increase of 110 tons over the output for the preceding week. Merchant-oven production, 72,010 tons, was 1,910 tons greater, offsetting the loss of 1,800 tons in furnace-oven output. The total for the latter ovens was 97,400 tons.

## Export Order Rapidly Loaded

The Western Maryland Ry. loaded a 5,000-ton cargo of coal for export on a vessel at Baltimore on May 6, 100 hours after the order had been placed at the mines at Fairmont, W. Va., by a New York broker. The 100 hours included the time required for mining the coal, loading it in cars, moving it approximately 350 miles to tide and reloading on the waiting vessel at the Port Covington pier of the railroad. The coal, destined for Italy, was moved in a train of 100 cars as far as Cumberland, Md., and then to Baltimore in a train of two sections.

## New York Anthracite Prices For May, 1926

(Per Gross Ton, f.o.b. Mine)

| | Broken | Egg | Stove | Chestnut | Pea |
|---|---|---|---|---|---|
| Hudson Coal Co. | $9.00 | $9.00 | $9.35 | $9.00 | $6.00 |
| Phila. & Reading Coal & Iron Co. | 9.15 | 9.15 | 9.40 | 9.15 | 6.25 |
| D., L. & W. Coal Co. | 8.25 | 8.75 | 9.25 | 8.75 | 6.00 |
| Lehigh & Wilkes-Barre Coal Co. | 8.25 | 8.75 | 9.25 | 8.75 | 6.00 |
| Lehigh Valley Coal Sales Co. | 8.50 | 9.00 | 9.35 | 9.00 | 6.00 |
| Lehigh Coal & Navigation Co. | 9.25 | 9.25 | 9.50 | 9.10 | 6.25+ |
| M. A. Hanna | 9.00 | 9.25 | 9.50+ | 9.25 | 6.50 |

Steam sizes: Buckwheat No. 1, $3@$3.50; rice, $2@$2.25; barley, $1.50@$1.75; birdseye, $2.

## Open Navy Coal Bids May 20

Bids for supplying 166,000 tons of semi-bituminous steaming coal, for delivery at New York, Philadelphia, Hampton Roads and Charleston, S. C., during the fiscal year beginning July 1 next, will be opened by the Bureau of Supplies and Accounts, Navy Department, Washington, D. C., May 20.

On the same date the Bureau will open bids for the supply of 12,650 tons of anthracite for delivery, in varying amounts, to navy yards and stations in the East and on the Great Lakes during the coming fiscal year.

The Bureau also will open bids on May 20 for approximately 374,800 tons of bituminous coal for power-plant purposes, for delivery at the various yards and stations during the fiscal year. These three openings will cover practically all of the Navy's coal needs for the fiscal year 1927.

## Railroad Contracts Placed

According to reports the Big Four railroad has let its contract for railroad fuel for the present coal year. It is said that $1.50@$1.60 is being paid for mine-run, and that operators in the Logan field and along the Norfolk & Western Ry. got some of the business. The bulk of the tonnage, according to reports, was placed in eastern Kentucky.

The Chesapeake & Ohio Ry. let its contracts for railroad fuel last week, according to a letter issued to coal operators, which indicates that the company's entire fuel requirements for the coal year will approximate 1,200,000 tons. The price paid was $1.65 and the company has directed the coal to be screened, according to its specifications.

**Hard-Coal Stocks Low.**—On April 1 Massachusetts coal dealers had 292,427 net tons of domestic anthracite on hand, compared with 725,037 tons on the same date a year ago. Receipts during the last coal year totaled 3,800,218 tons, as against 5,117,176 tons in the preceding year. Total deliveries of domestic anthracite during the year ended March 31 last were 4,233,344 tons, showing a pronounced decline from the preceding year's total of 5,115,717 tons.

# Traffic News

## Coke Rates from St. Louis to Missouri-Kansas Too High

Freight rates on coke from St. Louis, Mo., to Missouri River cities and to destinations in southwestern Missouri and southeastern Kansas are found unreasonable and unduly prejudicial as compared with the rates from Chicago, Ill., and Birmingham, Ala., to the same destinations, in a decision by the Interstate Commerce Commission dated April 14 issued on April 29.

The rates are held prejudicial to St. Louis to the extent that the difference between St. Louis rates and Chicago rates is less than 72c. and to the extent that the difference between St. Louis and Birmingham rates to the lower Missouri River cities is less than $2.04 per ton, and to the extent that the difference between St. Louis and Birmingham rates to destinations in southwest Missouri and southeast Kansas is less than $1.80.

The roads were ordered to effect new rates on or before July 14. From St. Louis to Missouri River points the new rates must not exceed $3.25 per net ton and to points in southwest Missouri and southeast Kansas not to exceed $3.49 per ton.

## Rate Hearing Dates Changed

Further hearings in connection with the Interstate Commerce Commission's investigation of freight rates on anthracite to stations in upper New York, recently set for June 28 and July 14, at Syracuse, N. Y., have been re-assigned for June 14 at Syracuse before Examiner Koch.

Consideration of the establishment of permanent rates on bituminous coal and coke from mines in Virginia, West Virginia, Pennsylvania, Ohio and eastern Kentucky to points in the Middle Atlantic and New England States where no joint through all-rail rates are now in effect, which had been set for June 7 at New York, has been deferred until June 21 at Atlantic City, N. J., before Examiner Koch. The hearing will be devoted particularly to the rates and charges, including tidewater and trans-shipment rates and charges, for the interstate transportation of bituminous coal and coke and semi-anthracite.

The commission also has issued two supplemental orders broadening the scope of the anthracite rate investigation, as reopened, upon petition of the Central Pennsylvania Coal Producers' Association and upon request for joint rates from the upper Potomac fields in Maryland to Eastern destinations.

## Orders Investigation Into Intrastate Rates

An investigation into the rates from Illinois mines to East St. Louis has been ordered by the Interstate Commerce Commission. The rates in question were fixed by the Illinois Commerce Commission on Feb. 8 and are lower than those established by the Interstate Commerce Commission on interstate traffic. The inquiry is instituted for the purpose of determining whether the Illinois rates unduly prefer intrastate traffic and unduly prejudice interstate business. No date for a hearing has been set.

## Illinois Commission Order on Collinsville Rate Reversed

Judge David M. Brothers, in Circuit Court of Chicago, last week reversed on appeal an order of the Illinois Commerce Commission reducing the rate on coal from Collinsville to Chicago from $1.85 to $1.65 per ton. The Chicago Eastern Illinois Ry. appealed the case. The Lumaghi Coal Co., of Collinsville, located in the Danville district, which pays a rate of $1.85 per ton, obtained consent of the commission in 1923 to fix its technical location in the Springfield zone, which pays a rate of $1.65.

# Foreign Market And Export News

## Great Rush to Move Coal In Week Preceding Strike; Welsh Docks Hard Pressed

The Welsh steam-coal business during the week preceding the general strike was almost entirely made up of small lots for bunkering or for completing small cargoes for dispatch before April 30, said the report from the London (England) correspondent of *Coal Age* under date of April 27. On paper most of the collieries were booked up until the middle of May and there was very little coal available for sale in small lots. The Welsh docks seldom have been so active and vessels were waiting to get away with their cargoes before any industrial trouble occurred. Sellers were able to obtain much higher prices, but so little coal was available that the prices realized did not affect the average for all sales to any appreciable extent.

Forward business was conspicuous by its absence since neither purchasers nor operators would enter into fresh deals until they had some idea of the outcome of the negotiations between Prime Minister Baldwin, the operators and the miners. Had these negotiations succeeded, May would have been a very slack month, as most home and foreign consumers would be existing on the large stocks already accumulated.

The Newcastle market was at a complete standstill and the operators would not quote for any sorts. The usual customers for North of England coal were getting all they needed from America and Germany.

### Industrial Coals Active On French Market

Paris, France, April 27.—Production of industrial coals is moving without difficulty, but there is little demand for domestic sizes, either from the retail distributors or from the consumers.

Coal production is very active because of the conditions existing in the British coal industry and because of a decline in imports following further depreciation of the franc. Buying of industrial fuels is strong in anticipation of a possible shortage in British supplies, although large stocks are being accumulated in the Ruhr.

During the first seventeen days of the month the O. H. S. received 224,000 metric tons of coal, 157,000 tons of coke and 12,500 tons of lignite briquets from the Ruhr. Effective May 1, advances of from 5 to 7 fr. on industrial coals and 6 to 11 fr. on domestic sizes have been announced.

As a result of increased transportation charges and import duties, the price of indemnity coke has been fixed at approximately 171 fr., f.o.b. Sierck. Protests of French metallurgical interests have developed nothing but a notice that from June 1 to Aug. 31 the price will be increased still further.

French imports of coal, coke and briquets during March totaled 1,951,000 metric tons while O.R.C.A. coke receipts from April 1 to 20, inclusive, amounted to 179,000 metric tons, according to a cable to the Department of Commerce from Acting Commercial Attaché R. C. Miller, Paris.

### Belgian Market Steady

Brussels, Belgium, April 29.—Aside from a slight improvement, due to threats of a British strike, no important change has taken place in the Belgian market. There was more French inquiry in the Borinage district and a decrease in British imports, but fluctuating exchange rates to a great degree offset these favorable factors. As a matter of fact, some collieries were compelled to further restrict production.

Effective May 1, it is announced that there will be general increases in the prices on German reparation fuels. Bituminous coals will be advanced 3 to 10 fr.; gas and semi-bituminous coals, 5 to 10 fr.; lean coals, 4 to 6 fr.; furnace coke, 17 fr.; lignite briquets, 5 fr. As a result of this announcement quotations on Belgian coals are firmer.

During March Belgium produced 2,132,180 metric tons of coal, 434,810 tons of coke and 190,770 tons of patent fuel. The prewar averages were 1,903,400, 293,580 and 217,220 tons, respectively.

### United States Joins Importers Of German Coal

The German coal industry has made strenuous efforts during the last year to extend it radius of sales activity. These efforts have been rewarded in a moderate degree in a number of overseas markets like the Dutch Indies and South and Central America. In the figures on foreign business in January and February, 1926, however, the United States appears for the first time as an importer of German bituminous coal.

These imports amounted in January to 38,128 tons and in February to 48,474 tons. In the case of coke the German shipments to the United States are even more striking. Starting in January with 9,200 tons, shipments in February increased to 42,000 tons out of a total of 406,000 tons. In the February German export returns the United States figures as the third largest consumer of German coke; being surpassed only by Luxemburg and Alsace-Lorraine, which in Germany are not considered as foreign markets having long-standing relations of interchange of coke against steel products with the German interior.

Coal imports by Germany during January and February showed a continued decline.

### Japanese Coal Firm at Shanghai

Shanghai, China, April 6.—At Shanghai the market for Japanese coal is firm. There is a strong demand from native dealers, especially for dust coal, due principally to the growing shortage of supplies from the various mines in China owing to the interference with the railways by military authorities.

For Kaiping coal military operations at and around Taku (near Tientsin) have further increased the difficulties of the traffic situation, though shipments continue at irregular intervals from Tongku. The shortage of certain grades has caused the cessation of household deliveries until more regular supplies are again received.

### Export Clearances, Week Ended May 6

FROM HAMPTON ROADS

| | Tons |
|---|---|
| For Jamaica: | |
| Nor. Str. Certo, for Kingston | 3,194 |
| Amer. Str. Levisa, for Kingston | 2,630 |
| For Canada: | |
| Br. Str. Emperor of Fredericton, for Montreal | 2,470 |
| For New Brunswick: | |
| Br. Schr. Cashier, for St. John | 872 |
| For Italy: | |
| Ital. Str. Vincenzo Florio, for Genoa | 9,710 |
| For Trinidad: | |
| Nor. Str. Fram, for Port of Spain | 3,753 |
| For Brazil: | |
| Br. Str. Vestalia, for Rio de Janeiro | 7,313 |
| Br. Str. Goldenway, for Pernambuco | 4,222 |
| Br. Str. Mombassa, for Rio de Janeiro | 5,768 |
| For Cuba: | |
| Nor. Str. Odland I, for Havana | 1,954 |
| For Martinique: | |
| Br. Str. Grelbank, for Fort de France | 6,976 |

FROM BALTIMORE

| | |
|---|---|
| For Italy: | |
| Ital. Str. Girlia, for Venice | 4,955 |
| For British Columbia: | |
| Swed. Str. Frost, for Vancouver | 1,574 |
| For Algeria: | |
| Gr. Str. Penelope, for Algeria | 800 |

### Hampton Roads Coal Dumpings*

(In Gross Tons)

| | Apr. 29 | May 6 |
|---|---|---|
| N. & W. Piers, Lamberts Pt.: | | |
| Tons dumped for week | 159,421 | 165,662 |
| Virginian Piers, Sewalls Pt.: | | |
| Tons dumped for week | 112,559 | 63,740 |
| B. & O. Piers, Newport News: | | |
| Tons dumped for week | 113,812 | 123,987 |

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

### Pier and Bunker Prices, Gross Tons

PIERS

| | May 1 | May 8† |
|---|---|---|
| Pool 1, New York | $5.50@$5.75 | $5.50@$5.75 |
| Pool 9, New York | 5.00@ 5.20 | *4.95@ 5.20* |
| Pool 10, New York | 4.75@ 5.00 | *4.70@ 4.95* |
| Pool 11, New York | 4.50@ 4.75 | *4.40@ 4.70* |
| Pool 9, Philadelphia | 5.10@ 5.40 | 5.10@ 5.40 |
| Pool 10, Philadelphia | 4.80@ 5.15 | 4.80@ 5.15 |
| Pool 11, Philadelphia | 4.25@ 4.50 | 4.25@ 4.50 |
| Pool 1, Hamp. Roads | 4.25 | **4.75@ 5.00** |
| Pool 2, Hamp. Roads | 4.15 | **4.50@ 4.75** |
| Pool 3, Hamp. Roads | 3.75 | **4.00** |
| Pools 5-6-7, Hamp. Rds. | 4.10@ 4.15 | **4.50** |

BUNKERS

| | | |
|---|---|---|
| Pool 1, New York | $5.75@$6.00 | $5.75@$6.00 |
| Pool 9, New York | 5.25@ 5.45 | *5.20@ 5.45* |
| Pool 10, New York | 5.00@ 5.25 | *4.95@ 5.20* |
| Pool 11, New York | 4.75@ 5.00 | *4.65@ 4.95* |
| Pool 9, Philadelphia | 5.35@ 5.65 | 5.35@ 5.65 |
| Pool 10, Philadelphia | 5.05@ 5.40 | 5.05@ 5.40 |
| Pool 11, Philadelphia | 4.50@ 4.75 | 4.50@ 4.75 |
| Pool 1, Hamp. Roads | 4.35 | **4.75@ 5.00** |
| Pool 2, Hamp. Roads | 4.25 | **4.50@ 4.75** |
| Pools 5-6-7, Hamp. Rds. | 4.15 | **4.50** |

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

Quotations by Cable to *Coal Age*

| Cardiff: | May 1 | May 8† |
|---|---|---|
| Admiralty, large | 27s.6d. | No |
| Steam smalls | 18s.3d. | quotations |
| Newcastle: | | on |
| Best steams | 16s.3d. | account |
| Best gas | 20s. | of |
| Best bunkers | 17s.6d. | strike. |

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

## Coming Meetings

**National Retail Coal Merchants' Association.** New Willard Hotel, Washington, D. C., May 17-19. Resident vice-president, Joseph E. O'Toole, Transportation Bldg., Washington, D. C.

**Electric Power Club.** Convention at The Homestead, Hot Springs, Va., May 24-27. Secretary, S. N. Clarkson, B. F. Keith Bldg., Cleveland, Ohio.

**The American Mining Congress.** Annual Exposition of Coal Mining Equipment, May 24-28, at Cincinnati, Ohio, with operating conference. Assistant secretary, E. R. Coombes, Washington, D. C.

**International Geological Congress.** Fourteenth congress, Madrid, Spain, May 24, 1926. Secretary, E. Dupuy de Lome, Plaza de los Mostenses, 2, Madrid, Spain.

**Midwest Retail Coal Merchants Association.** Annual meeting, May 25 and 26, at Kansas City, Mo. Secretary, James P. Andriano, St. Joseph, Mo.

**Pennsylvania Retail Coal Merchants' Association.** Annual meeting, York, Pa., May 27 and 28. Secretary, W. M. Bertolet, Reading, Pa.

**Western Canada Fuel Association.** Annual meeting at Winnipeg, Manitoba, Can., May 27 and 28. Secretary, W. H. Morrison, Winnipeg.

**West Virginia Coal Mining Institute.** Annual meeting, June 1-2, Bluefield, W. Va. Secretary, R. E. Sherwood, Charleston, W. Va.

**American Wholesale Coal Association.** Annual meeting at Toledo, Ohio, June 7-9. Treasurer, R. B. Starek, Union Fuel Bldg., Chicago, Ill.

**Association of Iron & Steel Electrical Engineers.** Exposition and convention at Hotel Sherman, Chicago, Ill., June 7-10. Secretary, J. F. Kelly, 1007 Empire Bldg., Pittsburgh, Pa.

**Coal Operators' Association of 5th and 9th Districts of Illinois.** Annual meeting, St. Louis, Mo., June 8. Secretary, O. L. Lumaghi, St. Louis, Mo.

**Southwestern Interstate Coal Operator's Association.** Annual meeting, Kansas City, Mo., June 8. Assistant Secretary, George Manuel, Kansas City, Mo.

**National Coal Association,** June 9-11, at Drake Hotel, Chicago, Ill. Executive secretary, Harry L. Gandy, Southern Bldg., Washington, D. C.

**American Society for Testing Materials.** Convention at Haddon Hall, Atlantic City, N. J., June 21-25. Secretary, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

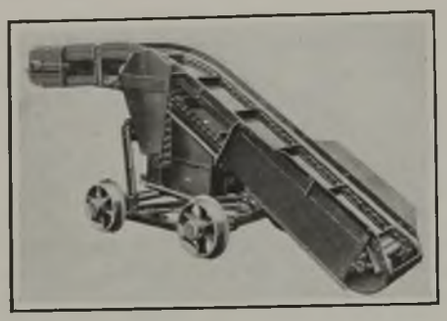
**American Institute of Electrical Engineers.** Annual convention, White Sulphur Springs, W. Va., June 21-25. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

**Illinois Mining Institute.** Annual summer meeting on steamer "Cape Girardeau," leaving St. Louis, Mo., June 24 and returning June 26. Secretary, Frank F. Tirre, Central National Bank Bldg., St. Louis, Mo.

# New Equipment

## Loader Shovels the Coal But the Machine Lifts It

Tests and experience alike have demonstrated that most of the work of loading a mine car is consumed in raising the coal over the side of the car. The accompanying illustration shows the new machine recently developed and placed on the market by the Chicago Automatic Conveyor Co.,



**Low Lift Lessens Loading Labor**

With one of these machines the loader at the face has to raise coal only a few inches, whereas without it he has to throw it clear over the side of the car.

Old Colony Bldg., Chicago, Ill., for loading coal into cars underground. This machine does not supplant hand shoveling, but it does materially lessen the labor of loading coal by decreasing the height to which the workman must raise his shovel. Several of these machines are already in use and are said to be giving excellent results.

This machine is built low so that it may be used in comparatively thin beds. It is mounted on a truck and can be readily moved from place to place. It is particularly adapted for use in entries and other narrow work.

Equipped with this new machine a miner is said to be able to handle with ease twice as much coal as he can load without its aid. It has a capacity of approximately 60 tons per hour, which is more than any two ordinary men can shovel even though they have to lift it only a few inches. If desired the machine can be built to move under its own power. This materially decreases the labor necessary to push it from place to place.

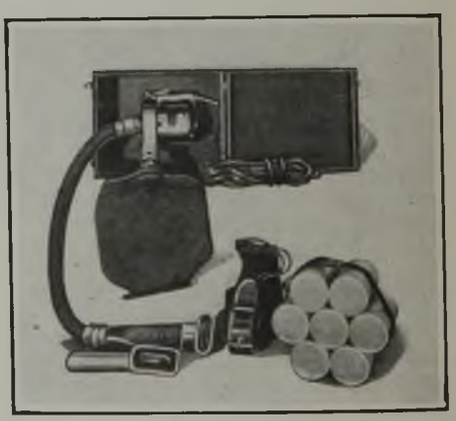
## Samples Dust On Floor, Roof and Rib by Use of Vacuum

An interesting device for the more efficient collection of samples of coal dust and of mixtures of coal and rock dust has been developed by J. E. Jones, of the Old Ben Coal Corporation. This sampler has been perfected and placed on the market by the Mine Safety Appliances Co., of Pittsburgh, Pa. It is entirely distinct from this firm's rock-dust testing kit, which has been in use for some time.

Too much attention cannot be given to this phase of rock-dusting. It has been recognized that the coal operator has been prone to neglect taking samples properly or with adequate frequency. The method commonly in use at present consists of collecting all the coal and rock dust from a 6-in. strip or zone on the roof and ribs, and separately from the floor, by means of a brush and pan. One can readily appreciate the difficulty experienced in this process in catching or retaining all the dust. This is particularly true on the main intake haulageways, where the velocity of the air current is high. The very fine dust, or that possibly most efficient in the propagation of explosions, and therefore that which it is most desired to sample, is just the material that escapes and defies collection.

With this in mind, the new sampling outfit was designed on the vacuum principle. Instead of brushing, with the inevitable agitation of the mixture and consequent escape of the fine particles, the opposite extreme is attained. The finer particles are those most easily collected because the suction produced naturally picks up these more easily. The particles that will not participate in a coal-dust explosion—those over 20-mesh in size—are totally excluded from the sample by means of a screen placed over the orifice through which the dust is sucked.

The apparatus itself is simple. The



**Rock-Dust Sampling Outfit**

This kit consists of the sampler proper, which much resembles a little vacuum carpet sweeper; a short length of suction hose, two collecting nozzles, a dust bag, a waist belt, suitable means for connecting the machine to the trolley, a carrying case and a variable number of tin cans for preserving the samples taken.

suction is produced by a 4-in. fan operated by means of a small 250-volt direct-current motor. As is the nature of fans, a suction is produced in the center and a blowing effect at the tips of the vanes. An aluminum casting surrounding the fan provides for the entrance of the dust at the fan inlet and its collection at an exit on the periphery. The dust is gathered by a nozzle suitable for use upon either rough or smooth mine surfaces and passes through a collection hose into the fan. It then is forced into a small bag which is easily detached and the sample removed. Means are provided for connecting to the trolley wire as

**Taking a Sample from Rib**

This shows the sampler in operation. The black streak on the rib above the collection nozzle illustrates with what effectiveness the air suction removes the dust from the mine surfaces. Pieces larger than 20-mesh are automatically strained out of the sample and left behind.

well as for grounding to the rails. The whole apparatus weighs but 12 lb. and is easily carried on a belt without in any way interfering with the work of the sampler. Naturally this equipment is limited to use where power is available. Extension cable of reasonable length is provided.

The advantages of this new outfit as claimed by the builder are as follows: A more efficient and representative sample is obtained, as the fine particles are all collected. The process of sampling is made far less laborious, as screening of the sample is entirely obviated. Coning and quartering the sample down to a proper quantity (about ¼ lb.) is in most cases not necessary. Samples from the roof are taken with as great facility as from the ribs, something almost impossible by the brush-and-pan method.

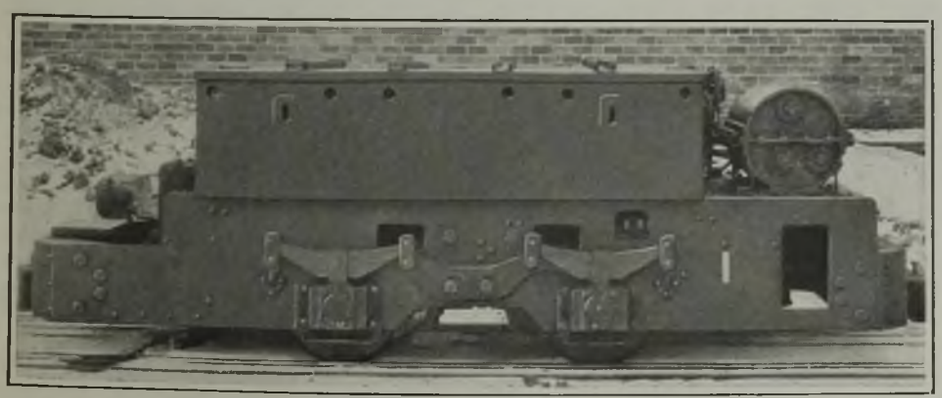
## Approved Battery Locomotive For Use On Rough Roads

Government approval No. 1513 recently was granted by the U. S. Bureau of Mines to the General Electric Co., of Schenectady, N. Y., covering a permissible storage-battery locomotive for use in gaseous mines. This machine has a rated weight of 6 tons and is intended for gathering service. It is of outside-frame construction with its weight supported from the journal boxes on heavy semi-elliptical equalized springs. The motors are of the box-frame type, spring-suspended from the locomotive frame. The axles are driven through single reduction spur gearing.

The control equipment is of the progressive series-parallel, magnetic contactor type. It consists of three units; namely, master controller, contactor group and protective relays and a resistor. The master controller—small, compact and easily operated—is of the drum type and handles control current only on the main cylinder and full motor current on the reverse cylinder. Six solenoid-operated contactors are used to make or break connections in all power circuits when current is on.

Overload protection is provided by two relays, one placed in each side of the line. These are reset by a switch contained in the master controller, which also contains another switch for controlling the headlight circuits. The resistor is made up of cast grids inclosed in a permissible compartment.

The type of control on this locomotive is particularly advantageous because it operates reliably with a minimum of inspection, an important consideration with totally inclosed equipment.



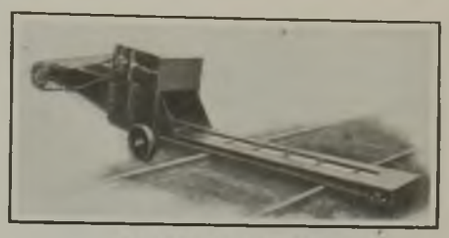
**Permissible Storage-Battery Locomotive for Gassy Mines**

This locomotive is fitted with outside frames and with equalized, spring-supported journal boxes. It is thus enabled to traverse uneven track with ease. The control is unusual and effective.

## Unloads Hopper-Bottom Cars; Feeds Elevating Conveyor

The accompanying illustration shows the new car unloading machine recently developed and placed on the market by the Chicago Automatic Conveyor Co., Old Colony Bldg., Chicago, Ill. This machine is intended for the unloading of sand, gravel, crushed rock, coal or other granular materials from hopper-bottom cars and in such work does away with practically all shoveling. In use it is pushed under the car and across both rails and, with the aid of a second conveyor, if necessary, delivers the material from the opened gates to trucks, bins or to open storage.

Tests of this machine made under exacting conditions show that it will handle the contents of a 50-ton car in less than an hour and there is no reason why it could not be speeded up to handle twice this amount. The receiving end is only 3 in. high above the rails and consequently does not interfere in any way with the drop bottoms. Its sturdy construction will permit it to receive without injury any outrush of material even though the doors are opened wide.



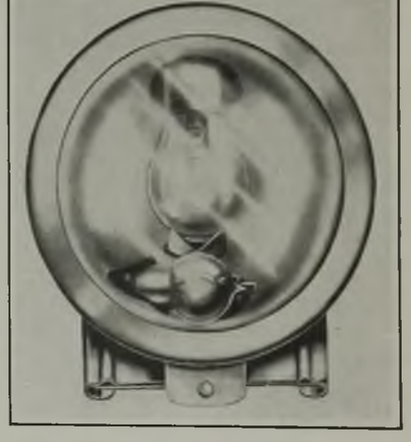
**No Pit Necessary**

This machine, or rather the receiving end of it, is so low that it can be pushed across the track under a car without in any way interfering with the action of the hopper doors. It delivers to a second conveyor, which can discharge either to a truck or to storage.

No pits and no spotting of cars are necessary. The discharge end is elevated to a height that will allow delivery to a second conveyor without any big lumps rolling backward. The machine is mounted on wheels and may thus be readily transported. The makers assert that it is both economical and flexible in operation and that it will do much to ease the labor and lessen the expense of unloading hopper-bottom railroad cars.

## More Light for Dark Mines

It is now possible to obtain the safety inherent in the use of the electric cap lamp with the degree of illumination afforded by the open-flame lamp, for the Super-Wheat electric safety mine lamp made by the Koehler Mfg. Co., of Marlboro, Mass., which gives a beam of 15 candlepower has been approved by the U. S. Bureau of Mines.

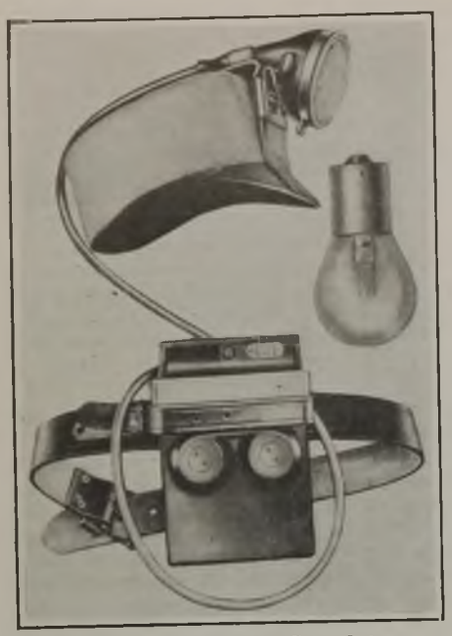


**Beam Gives 15 Candlepower**

Like other lamps made by this manufacture this one is provided with two bulbs. One of these is intended for regular and the other for emergency use.

In size and appearance the bulb of this lamp is practically identical with that of an automobile headlight. It is gas filled, has a tungsten filament and possesses all the other advantages peculiar to this type of electric bulb. The light that the lamp emits is said to be far in excess of that given by former equipment. Lamps have hitherto been considered good if they gave a beam candlepower of 6, but the manufacturer declares that this lamp gives 15, as shown by test.

An emergency bulb is placed within the reflector with the main illuminator. This is of standard size, type and light-



**New Lamp Outfit Complete**

The battery will supply current to the regular lamp for 13 to 15 hr. or to the emergency bulb for 24 hr. The total weight is normal for an outfit of this kind and repairs have been facilitated by the new design.

giving power. A switch on the headpiece makes it possible for the wearer to use either bulb desired. This is particularly advantageous in case of a bulb burn-out or an accident to the headpiece.

The battery was designed to supply current to the super-bulb for 12 hours. In practice, however, it will furnish current for from 13 to 15 hours. It will energize the emergency bulb, which gives a beam candlepower exceeding 6 for a period of 24 hours either continuously or intermittently.

The increase in illuminating power provided by this lamp has been obtained without any excessive increase in weight. In fact this new lamp is lighter than some now on the market. The average weight of the outfit complete is only 5 lb. 3½ oz. It is well balanced and can be worn for hours with comfort. Like all other lamps of this kind, it can be repaired and made as serviceable as new in the mine lamphouse by the regular mine lampman. Even this individual's work, however, has been lightened, for the filler plug holes are on the outside. All Wheat racks and other charging equipment now in use can be easily adapted to charging the new battery.

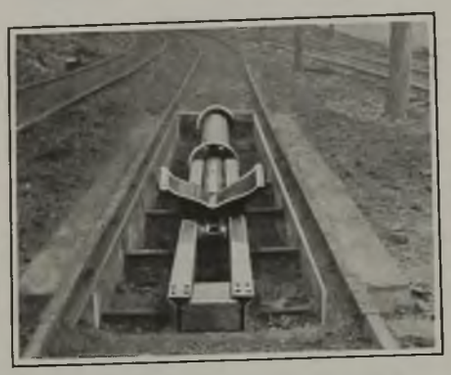
## Feeds Heavy Trips with Ease

Cars may be fed to dumps that work intermittently by either electrically driven chains or by plungers or pistons working within cylinders. A new device of the latter type recently was placed on the market by the Car-Dumper & Equipment Co., of Chicago, Ill. This feeder is built and shipped as a unit that can be electrically welded or otherwise permanently fastened into a section of the track. The feeder shown in the accompanying illustration is in daily use at a mine in Pennsylvania, handling trips of as many as 100 cars at a time and feeding them to the dump at the rate of 10 to 11 per minute.

By a special construction of the carriage or cross-head embodying a fork that engages the car axles close beside the bearings, the bending stress imposed on these members is negligible. This permits the handling of heavy trips with the same action as is afforded by a double chain feeder, so far as engagement with the car is concerned.

In this feeder the main pushing cylinder works in one direction. The feeder plunger itself is hollow and acts as the return cylinder. This device operates under power in both directions, yet a minimum quantity of air is consumed in returning the device to the starting position. This represents a decided economy over the older types of air-actuated feeders. Another advantage claimed for this feeder is the fact that no finished parts are exposed at any time during the operation of the cylinder.

Naturally a device of this kind can-



**Pneumatic Feeder in Place**

In this instance the device is built into the concrete slabs supporting the rails instead of being welded to them. The forked crosshead engages the axles near the journal boxes, thus throwing but slight bending stress upon these car members even though heavy trips are moved.

not compete with an electric feeder which affords continuous movement of the trip. Where intermittent movement only is desired, however, as in feeding cars to a rotary or crossover dump or to hoisting cages, this device answers the purpose excellently.. Several installations have been made during the past year and all are reported as giving entire satisfaction.

## Trade Literature

**Capacitors.** General Electric Co., Schenectady, N. Y. GEA-352. Pp. 10, 8x10½ in.; illustrated. Describes how much power can be obtained over the same line.

**Waugh Products for Contracting, Quarrying, Mining and Other Industries.** Denver Rock Drill Mfg. Co., Denver, Colo. Bulletin No. 150. Pp. 23; 6x9 in.; illustrated. The Waugh drill, drill steel sharpeners, comparascope, automatic air-line oilers, Leadville column hoists, electric scraping hoist, circulating fan are some of the products described in this bulletin.

The Crouse-Hinds Co., Syracuse, N. Y., has issued Bulletin No. 2083, 11 pp., 3½x6 in., illustrating and describing its **Short Range Imperial Floodlight Projectors.**

**Mica Undercutting Machines,** Types Nos. 2, 6 and 9. The Hullhorst Micro Tool Co., Toledo, Ohio. Pp. 7; 8½x11 in.; illustrated. Capacity, operation, costs, weight, etc., of these cutters are covered in this bulletin.

**The Pittsburgh Vibratory Screen.** The Pittsburgh Coal Washer Co., Pittsburgh, Pa. Bulletin 25. Pp. 10; 8½x11 in.; illustrated. Describes how, by vibrating the entire surface of the screen cloth, efficiency in finer separation of materials is obtained.

**Keystone Expulsion Type Lightning Arresters.** Electric Service Supplies Co., New York City. Bulletin No. 220. Pp. 22; 6x9 in.; illustrations.

**Vizabledg Safstep.** Irving Iron Works Co., Long Island City, N. Y. Folder illustrating and describing this all-steel, ever-wearing permanently non-slipping safety step.

**The Maxim Industrial Silencer.** Maxim Silencer Co., Hartford, Conn. Descriptive folder of this device for quieting air, steam and gas noises from exhausts, intakes or discharges.

Graybar Electric Co., New York City, successor to the Supply Dept. of the Western Electric Co., has issued a 1926 **Fan Catalog** covering fans for alternating- and direct-current circuits, including non-oscillating, oscillating, ceiling and ventilating (exhaust) fans. The booklet has 47 pp., 3x6 in.; illustrated.

**De Laval Mine Pumps.** De Laval Steam Turbine Co., Trenton, N. J. Pp. 20; 8½x11 in.; illustrated. Instructions are given for the design of piping and the calculation of friction head power required.

## New Companies

**The Wheeler Coal & Coke Co.,** of 8 East Broad St., Columbus, has been incorporated with a capital of $50,000 to mine coal in the Hocking Valley (Ohio) field and to do a general jobbing business. The incorporators are W. E. Wheeler, C. E. Wheeler, Etta A. Wheeler, Ralph E. Marburger and Edwin B. Pierce.

**The Stramer Fuel Co.,** Charleston, W. Va., having a capitalization of $25,000, was recently chartered. The incorporators are George E. Merryman, H. N. Greenlie and Charles G. Peters, all of Charleston; F. A. Strabley and J. P. Bess, of Seacoal, W. Va. The operations will be at Coal Bloom and Seacoal, in Boone County, W. Va.

**The Kanawha Block Coal Co.,** Wheeling, W. Va., has been organized with 200 shares of no-par value stock, with 20 shares subscribed and $500 paid in. The incorporators are John D. Thomas, Cecil H. Riggs, W. C. Gardner, H. O. Wells and J. Styche, all of Wheeling.

**The Harrison Coal Co.,** Cincinnati, Ohio, has been chartered with an authorized capital of $10,000 to mine and sell coal. Operations will be in the Kentucky field. Incorporators are: Robert E. Harrison, Anna C. Burns, George J. Hagee, Robert K. Main and David V. Attig.

**The Coke Oven Co. of Canada, Ltd.,** of Hamilton, Ont., has been incorporated by Charles H. Leggott, Ernest G. Hathway, and others, with a capital stock of $10,000, to produce coke and gas.