

COAL AGE

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Preventing Substitution in Marketing Coal

COMMENT WAS MADE in a recent editorial on the evils of substitution in marketing coal and its unfortunate repercussions on the producer, wholesaler and retailer. No one in the industry can regard such practices with indifference even though his own practice is in every way honorable. A communication was received from George R. Pratt of *Coal Truth* in which he describes the means by which the Government of the Province of Alberta endeavors to establish fair-trade conditions in coal marketing. The foundation of these methods is fair price, high coal quality, consumer satisfaction and good will.

A special act called the Coal Sales Act of 1925 provides for registering the trade names of the coals which the several mines produce. No coal can be advertised or sold except under its registered trade name, and the invoices and shipping bills must give the name of the mine, the coal field in which it is located, the size of coal shipped and the registered trade name of the coal.

Every dealer is required to keep a record of his coal purchases whether from Alberta or outside sources. This record is open to inspectors who have the power to inspect invoices and shipping documents, and, where these do not conform to the coal in question, they may stamp upon the document a statement to that effect. A penalty is provided for failure to comply with the law or for false statements in the invoice documents.

In advices to the retail coal dealer the following excellent rules are offered for his adoption: That the value of the coal shall be equal to the advertised value; that in the event of dispute of value no rebate in money (unless a contract to the contrary has been made) shall be given but the offer shall be made to remove the coal within 24 hours and to refund the purchase money; that the Golden Rule shall govern in all dealings between dealer and consumer.

It is recognized that where the "quality first" dealer pays the price for quality coal and sells in competition with second-quality coal sold at the quality price, the result is a buying public dissatisfied with the price, dissatisfied with the quality and of critical mind toward all engaged in the industry. Advertising and selling efforts enhance coal values, but by supplying coal below the established quality standard, or of different sizes, or by substituting coals of different class, inferior to the promised standard and rebating to one customer out of ten who complains forcefully enough, good will and confidence are undermined.

To overcome the difficulty of the few dealers who do not wish to deal on the square, the government office offers to all dealers who agree to observe the foregoing rules the privilege of attaching a seal to each customer's delivery slip and supplies the seals to the dealers. The

seals are about the size of a postage stamp and contain the words—"Coal on the Square."

Evidently the Alberta coal industry has worked out a practical method to insure satisfactory trade practice in distributing their product. No doubt other methods would serve the same ends but similar problems arise in many coal-distributing centers and need the attention of producers, wholesalers and retailers in establishing "coal on the square" practices.

Water on Cutter Bits

RAPID PROGRESS is being made in the application of jets of water to the bits of cutting machines, the purpose being to keep down coal dust which would otherwise be suspended in the air and carried considerable distances out by the face. Where places are wetted down by a hose and a waterline is therefore convenient the spray pipe of the cutting machine should, of course, be connected to the line. Absence of this last provision in the majority of mines should not retard the spread of bit sprinkling, for it is entirely practicable to carry a tank of water on a trailer truck, to which pressure may be applied by a small air compressor. In other cases a pump may be used.

At the last meeting of the Coal Mining Institute of America, Inspector E. Girod of the Twenty-third Bituminous District, part of the coke region of Pennsylvania, stated that five mines in his territory during the last ten months of 1925 adopted this measure. He added that he expected a rapid growth in the practice. Solely as a safeguard against the danger from coal dust, it ought to be regarded as being worth while but those not so strongly influenced by this safety feature should be won over by the pecuniary gain which might possibly accompany it.

A jet of water playing on the bits not only lays the dust but dissipates the heat generated during cutting. When the material cut is hard the temper within the pointed section of the bit is likely to be lost at least to skin depth by extreme rises of temperature, and the effectiveness of the tool may soon become lessened by the greater rate of wear of the cutting edge. Mining men generally, including several manufacturers of cutting machines and cutter-bit steel, say that this action does not take place. Their contention as applied to the absence of such action in bits made of alloy steel is no doubt true. However, are they even reasonably sure that their contention rests on solid ground as regards carbon steel, of which practically all the bits now in use are manufactured?

No scientific studies of the problem have yet been made, for which reason a positive opinion should be withheld. Already several manufacturers' engineers have withdrawn their adverse criticism to the suggestion and, after hearing the other side of the argument,

have taken a neutral stand. The very fact that alloy steel is admitted to be far superior to carbon steel in the use to which cutter bits are put casts a shadow of suspicion on the ability of the latter substance to retain its temper in cutting the harder coals. The few metallurgists who have been interested in the discussion are one in the opinion that hard cutting could draw the temper in a bit of carbon steel. The stand which they take, in view of their knowledge, should be considered with some deliberation, and the argument should be definitely decided one way or the other.

It may be found that bits of carbon steel are not likely to be fatigued and fractured by shock when a uniform low temperature is maintained. The sprinkling attachment may after all be the means by which the time lost in the frequent changing of bits may be retrieved; also it might enable the bits to cut coal at greater speed.

Limiting the Peak

PEAK LOADS are always to be avoided regardless of whether power for mine operation is purchased or generated. If current is purchased the peak load "sets the pace," that is, determines the demand charge paid for power for the month during which the peak occurred as well as in many instances for the eleven succeeding months as well. If power is generated the peak throws a heavy and usually an unnecessary load on the power-generating equipment.

In order to avoid high momentary peaks, especially where power is purchased various expedients have been employed. At one large mine in southern Illinois the present production of which is well below its demonstrated capacity and where consequently it is not necessary to hoist steadily throughout the entire shift in order to raise the day's output, a plainly visible indicating meter is placed near the hoist engineer's platform. This is marked with a predetermined peak load which is not to be exceeded. The hoistman watches this meter closely and when this maximum demand is approached hoisting is suspended until the demand subsides when it is again resumed.

Certain other mines are employing circuit breakers so arranged that when the total load reaches a predetermined value the breakers controlling one or more of the feeder circuits will kick out. These breakers will automatically reclose when the total demand has decreased to a predetermined level. This arrangement is extremely handy and effective possessing the marked advantage that it is automatic in operation, thus requiring no attendance.

Conservation in mine costs is a dominant trend in the coal industry today. Of course what all mine operators most desire is a means for materially lowering the major expense involved in coal production, namely the cost of loading, but advantage should be taken, nevertheless, of all other possibilities by which the cost of mining may be reduced, even though the reduction be small. Not allowing the power demand to exceed a predetermined amount is one means of accomplishing the desired result.

The time has passed in which the superintendent called for power, more power, regardless of the way in which it was used. He now tries to make his uses fit a certain definite hourly supply. He trims his power bills just as he has long limited his supply requisitions.

Substance and Shadows

HOW FUTILE the hope that Congress can guarantee the public an uninterrupted flow of coal is unblushingly revealed in the frank statements of international officers of the United Mine Workers before the House committee on interstate and foreign commerce. Organized labor in the coal industry is firmly opposed to compulsory arbitration. In that opposition the mine workers have the tacit or open support of the majority of the country. Raise the cry, as union leaders have done, that compulsory arbitration means enforced labor, and only a small minority will have either the courage or the desire to embrace that uncertain strike preventive.

The United Mines Workers, however, goes still further in fighting the suggestion that the federal government should have the power to intervene in times of emergency. The union objects to anything and everything that smells of arbitration. Mediation and conciliation it is ready to accept—possibly because they already are written into the Department of Labor law. Any proposal that the President be authorized to create a fact-finding agency with power to inquire into wage disputes and make public the results of its investigations is wholly unacceptable to the men who direct the destinies of the mine workers' organization.

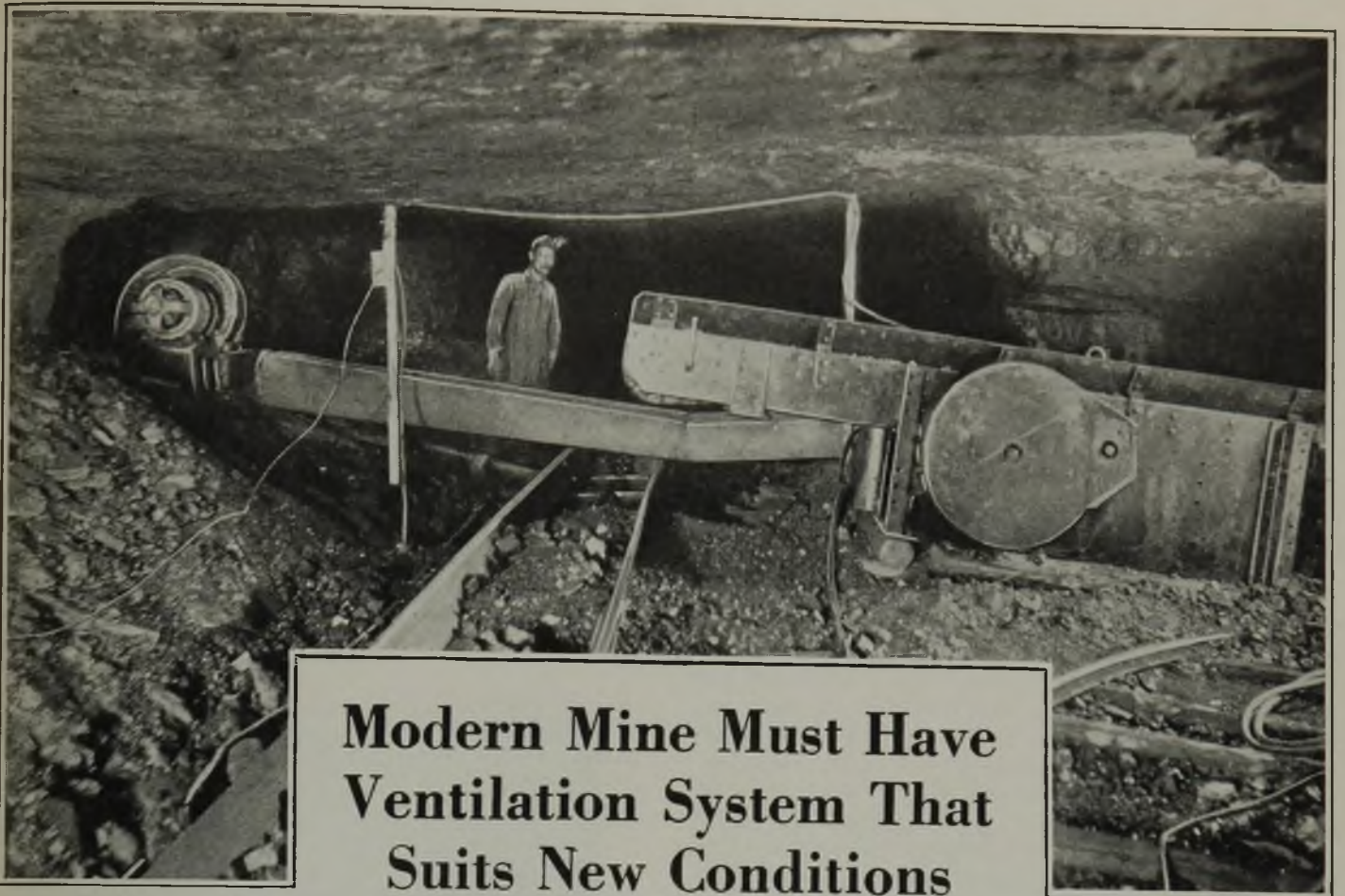
Academic discussion of compulsory arbitration is beside the point. It is obvious that such compulsion is repugnant to the nation when the surface of industrial relations is reasonably calm. Congress does not intend to consider that question. The United Mine Workers, apparently, has no intention of viewing favorably any of the various half-steps proposed in the many "emergency control" bills which have been referred to the House committee. That Congress, of its own volition, will risk battle against a minority as effectively and vociferously organized as union labor upon an issue in which there is little present public interest is unlikely. Thus the chief excuse for federal regulation of the coal industry falls of its own weight.

Fire Will Build, Not Burn, Our Homes

PRINCIPAL AMONG the changes of the twentieth century is the tendency to build fireproof structures, and, strange to say, fire has a part in the manufacture of nearly all fireproof material—lime, cement, brick, tile, terracotta and steel—and in the formation in geologic time of granite and therefore of its reconstructed materials, sandstone and slate.

The coal industry will necessarily benefit in this movement and should foster it. There is no reason why the present heavy yearly loss from fire should be sustained. From the progress in the use of steel for schoolhouses, factories and dwellings, the coal industry may draw much help in the future. Unfortunately dwellings not entirely standard make it difficult to construct the great variety of shapes needed for residence construction. But the oxy-acetylene field welding apparatus will probably enable the architect to turn rigid standard forms into the shapes required by the eccentricities of home construction and to do it with as much ease as a woman can remodel a bonnet with a few deft touches.

The fireproof era will be one in which fire and therefore coal will have increased use. Fire will be more active in the building and less active in the burning of our homes.



Modern Mine Must Have Ventilation System That Suits New Conditions

Dead Ends Best Ventilated by Blowers and Canvas Tubing—Air Is Static in Wide Places—Sometimes a Fan Can Deliver More Air Than Mine Will Pass at Water Gage Provided

By Carl H. Trik

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Carl H. Trik

IN ALL the studies of the mining of coal by mechanical cutters, loading devices, conveyors and other means, commonly designated as "concentrated mining," little has been written as to the effect of these new methods of "harvesting coal" by machinery on the ventilation problems at the working face. Is it not high time to consider the effect of these changes on the ventilation of the mine?

value to the practical man, and empirical data are so far difficult to find. However, enough information is now available to allow anyone to arrive at certain definite conclusions.

Ventilation has, for instance, definitely divided itself into two parts, a primary and a secondary system to be compared aptly with the ventilation of a metal mine which has its gangways and tunnels ventilated by a primary system and its "dead ends" such as blank stopes and raises requiring secondary systems supplied with air drawn from the main, or primary, air current. In those states that permit the driving of a single entry for any number of feet without a crosscut, the problem of secondary ventilation is simply, if not always cheaply, solved. These "minor faces" must have air while they are being driven to open up a panel or block. As they receive conveyors, it will be well to name them "conveyor headings," or "conveyorways," though "development headings" would be an equally satisfactory term.

Judging by the number of companies using the small auxiliary blower and flexible canvas tubing, as compared with those using brattice cloth to conduct air to the face of these conveyor headings, the former method must be the best means of ventilating these minor faces. In fact, operators who have installed fans and tubing declare that this method of providing air is less costly by far than the erection of brattice cloth. Many operators would gladly adopt these fans in preference

What effect will they have on the quality and quantity of the air delivered to the face? How will it modify the mine resistance? What effect will it have on the fan and on the cost of operation? Let us consider each of these matters in turn. Theoretical discussion is of little

Headpiece shows a fan delivering air to a "minor face." This face is being served by a sectional conveyor which brings the coal to another conveyor on the entryway of the panel. The blower is set on the opposite side of the main conveyorway from the narrow place or room, so that the air returning from the place will not enter the fan and be redelivered to the working face.

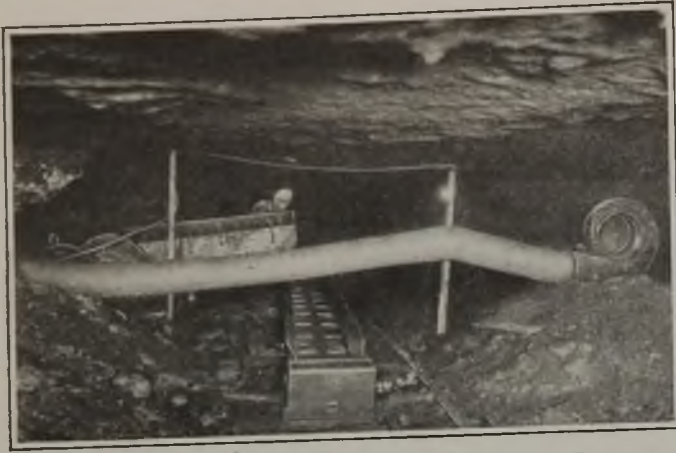


Fig. 1—Opposite View of Conveyor, Fan and Canvas Tubing Shown in Headpiece

Twelve-inch diameter tube delivering air to a minor face. The conveyor, being empty, its construction can readily be discerned. An electric lamp strung from the supports of the canvas tube lights up the conveyor and adds to the safety of the operation.

to older devices if the laws of the states in which they are operating would permit. They believe that these laws should be revised so as to be in harmony with changing conditions. Of course, there are those who object to the small blower, and they present many reasons for their opposition. But there are also many who take exception to the use of the brattice line, and they have just as many and as cogent reasons for the stand they take. Be that as it may, the conveyor headings must be ventilated. That is true regardless of the system of secondary ventilation that is adopted. Certainly this ventilation will not be as expensive as in those fields where the state laws and state inspectors insist on having a crosscut driven every 60 to 100 ft. Even when such rulings are obeyed the operator is left without anything that could be dignified with the term "secondary system."

When the decrees of such legislatures and inspectors are followed the resistance of the airways varies greatly according to the degree of their development, and the main current has to be regulated to suit the frictional losses of the most resistant entries. The ventilation is consequently uneconomical and not appreciably safer than when the small blower is used.

AUXILIARIES OR HIGH WATER GAGE

The headpiece of this article shows the method of setting the blower that one operator adopted when driving a single entry to connect up with another entry parallel to the one down which we are looking in the picture. The fan is set across the entry so that it will not recirculate the air as it returns from the conveyor heading. Here it is entirely out of the way.

A few inspectors have severely criticized the small blower as a source of danger declaring that with it the air might be recirculated. I have even heard one man state that he knew of a small fan handling nothing but gas between the fan inlet and the face. This may be true, it could easily happen, but I fail to see the logic in condemning the small blower. Rather should the operator be taken to task who was so utterly lax as to install a fan in such a position as to permit this to occur. Every tubing company makes right-angle bends of tubing to obviate this very condition. If these were used even the probability of recirculation would be eliminated so long as the main fan continued in operation.

After the narrow conveyor headings or the double

entries, if these are driven, are completed and connected with each other so as to form a continuous working this section becomes "a major face" and a part of the primary ventilation system in that a true circuit or current is established which can be considered as a separate split of the main current passing to the return or being carried back to the intake air current, diluted and used again, all depending on local conditions. Many operators mining a large acreage on a continuous face (really consisting of a series of small faces *en échelon*) find themselves forced to consider one of the blocks as a separate split, the law of the state under which the operator is working limiting the number of men allowed on each split.

We are now ready to consider the ventilation of those working places which, for obvious reasons, we have termed "major faces." In a block consisting of a single face or a series of staggered faces, the conveying and haulage problems may be more or less intricate but the ventilation will be plain sailing from this point on, so that the old cry, "No air at the working face" will become a thing of the past.

We have all heard of operators who have been all



Fig. 2—Looking Along Conveyorway Toward Fan

The canvas tubing naturally straightens itself and gives a fair passage for the air current. Resting on the floor of the roadway it requires no support. Note how large a capacity the conveyor provides.

too eager to get out coal and who in their mad dash for production have dug themselves in until their airways, especially on the return, are mere dog holes and the air current is so feeble that it cannot travel against the high resistance of the mine. But with concentrated mining systems we shall probably hear of them no longer.

Under the new system the ventilation should be much superior to that of the average mine under the old plan, and that is proved by the experience of many companies throughout the land. There is an "if," however, in this, as in every flat statement and that is "if the main airways, both intakes and returns, are

FIG. 3

Work in Good Air

Each man has about 25 ft. of face. Despite the absorption of light by the coal, six men can be seen at work on about 125 ft. of face. The photograph was taken with a flashlight, a testimony to the excellence of the ventilation due to the generous current that can be made to sweep a straight face.



kept free and clean and the sectional area is ample for the volume required."

When cutting begins on a major face, the current of air flows past the men working along it in a clean uncontaminated stream. Fig. 3 shows how pure the air is at one of these faces. This flashlight photograph reveals about 125 ft. of face. Six loaders can be distinctly seen through the clean air. Fig. 4 shows another face immediately after shooting. The air has rapidly swept away all fumes and smoke.

In fact, at some mines, as cutting proceeds and more and more coal is removed, the space between the working face and the gob increases to such an extent that the air is likely to become sluggish due to the greater increase in area. Plenty of air may be passing, but the area over which it travels is so wide that the speed will decline unless some means be taken to guide the air to the place in which its scouring effect is needed.

PUTTING BRATTICE CLOTH BEHIND THE MEN

The best method is to line brattice cloth between the men and the gob at such a distance as will cause the air to travel along the face at the requisite speed. This, in no case, should exceed 500 ft. per minute nor be less than 50 ft. In fact 75 ft. per minute would be the preferable figure.

However, it will be found that in most mines the roof will have fallen shut practically up to the props or cribbing, and the air will now slow down so much

as to make the use of brattice cloth necessary. Although the roof is down and loose rock is piled up to the rear line of props, the gob is not tight and the air will work its way through and around the caved area, which is as it should be. When the coal is mined out to the barrier pillar and the last cut has been taken, the entire area may be sealed off and forgotten so far as entering into the scheme of ventilation is concerned.

NEW METHODS LOWER MINE RESISTANCE

From the foregoing it is apparent what a remarkable effect this will have in reducing the water gage, or mine resistance. This is what every conscientious manager is seeking, and this new method of operation will commend itself to him from this reason alone.

We have now seen the effect of the new methods of mining on the quality of the air and the resistance to its passage. It next behooves us to consider its effect on the fan. It is well known to ventilation and fan specialists that fully 80 per cent of the fans ventilating coal mines today are working below their true or normal capacity, for the water gage is higher than that for which the fan is designed.

The reasons for this condition are many, chief among them being that the mine manager oftentimes when ordering a fan, orders that it be built to afford "plenty of capacity" and he gets it *in the fan*, but he fails to live up to his end of the bargain, in that he does not give the fan a mine that will permit the normal capacity

FIG. 4

After a Shot

Immediately after shooting, the men are able to resume work. The conveyor in any event does not need loading by hand, for it is already well-loaded by the effects of the shot. Much of the coal is above the conveyor and does not have to be raised. The work is that of lowering coal rather than of lifting it as in loading a mine car.



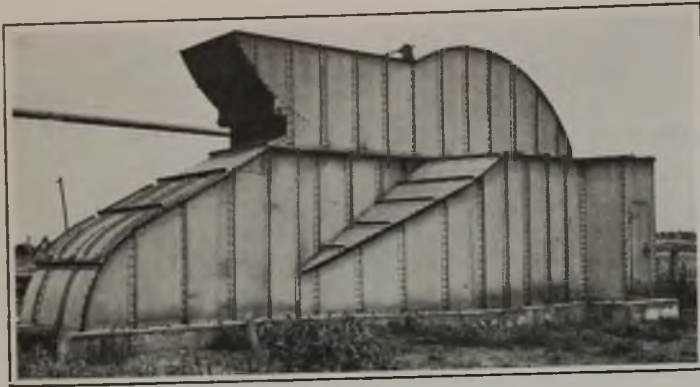


Fig. 5—Fan Makes More Air Than Mine Will Take

Always consider the mine wholly apart from the fan. Given a certain water gage and a certain resistance the mine will pass a certain quantity of air. The duty of the ventilating unit is to create that water gage. How much air must it thus compress? Just as much as, and no more than, the mine will take at that pressure.

of the ventilating unit to flow through the mine workings except at a water gage entirely out of all reason.

Again one finds at mines, fans that "fit" the mine conditions the first few years of their operation, but as time has passed the operator has been too optimistic as to his ability to keep down the resistance of the mine to the stated water gage, and as the workings develop the fan becomes more and more unsuited to the work it is required to perform. It is now too large and is able to deliver more air altogether than can pass through the aging mine at the original water gage. As retreating begins, of course, the fan is gradually brought up to capacity and operates more efficiently.

Fig. 5 shows a 12-ft. blowing reversible fan, the normal capacity of which is about 300,000 cu.ft. per minute. When the mine resistance is equal to 3 in. of water gage the fan is 75 per cent efficient mechanically and the brake horsepower required is 140. But the mine will only permit 200,000 cu.ft. per minute to pass with a 3-in. water gage. As a result 140 hp. is required to obtain this result.

By cleaning up the airways and otherwise relieving the restriction, the fan could be brought to efficiency and made to deliver the desired 300,000 cu.ft. of air per minute without a single additional revolution per minute, but this is exceedingly difficult and expensive to do once the airways throughout the mine have been allowed to become cluttered with roof falls.

CHARACTERISTIC CURVES OF MULTIVANE FAN

Fig. 6 shows the characteristic curves of a modern multivane fan of practically any standard make when running at constant speed. It will readily be seen that with the fan running at normal capacity it operates at a peak efficiency of 75 per cent delivering 150,000 cu.ft. per minute at 3.5-in. water gage. Should roof fall in the aircourses so as to restrict the air passing through the mine to one-half that volume, the water gage, as will be noted from the graph, will show a slight increase, but the efficiency of the fan will be reduced to about 58 per cent. Yet, its speed will have remained unchanged. The constant-speed curve illustrates clearly the important economy effected by operating a multiblade fan at ranges reasonably within its normal capacity.

Fig. 7 shows a small modern all-steel fan 5 ft. in diameter replacing a wooden fan of 20-ft. diameter. This substitution saved the operator about \$3,000 a year in his power bills, because the new fan was operated at peak efficiency. Not so much of this trouble

will be experienced in a mine that has introduced the new systems of mining, for the fan will be over- rather than underloaded. As most fans are underloaded the change to more modern methods of extracting coal, which will increase the load, will be favorable to greater mechanical efficiency.

What about the effect of this change on the cost of ventilation? My data, observation and experience lead me to the conclusion that ventilating cost will be materially reduced, particularly in those states permitting the driving of entries more than 80 ft. without a crosscut. The elimination of the driving of many crosscuts and of the building and maintenance of many stoppings will result in an important reduction of cost. A positive decrease in the cost of ventilation is assured because of the reduction in the resistance of the mine. The power required to drive a mine fan varies as the square of the pressure and increases, or decreases, as the cube of the volume, the velocity or the number of revolutions per minute of the fan.

If a mine needs 200,000 cu.ft. of air per minute and the water gage is 4.5 in. a 250-hp. motor is needed to ventilate it. The operation of the fan will cost about \$25,000 a year, estimating the cost on the basis of a 24-hr. day, 300 days in the year, a 60-per cent overall efficiency and 2c. per kilowatt-hour. This figure will be about \$19,200 a year with energy at 1½c. per unit. This is to run the fan alone.

OPERATOR SAVES \$13,000 YEARLY

Should the same mine be able to reduce its resistance to 2 in. of water gage for the same quantity of air, the power bill for the operation of the fan will be cut to \$11,300 on a basis of 2c. per kilowatt-hour and to \$8,500 if the cost of energy is only 1½c. per unit. It

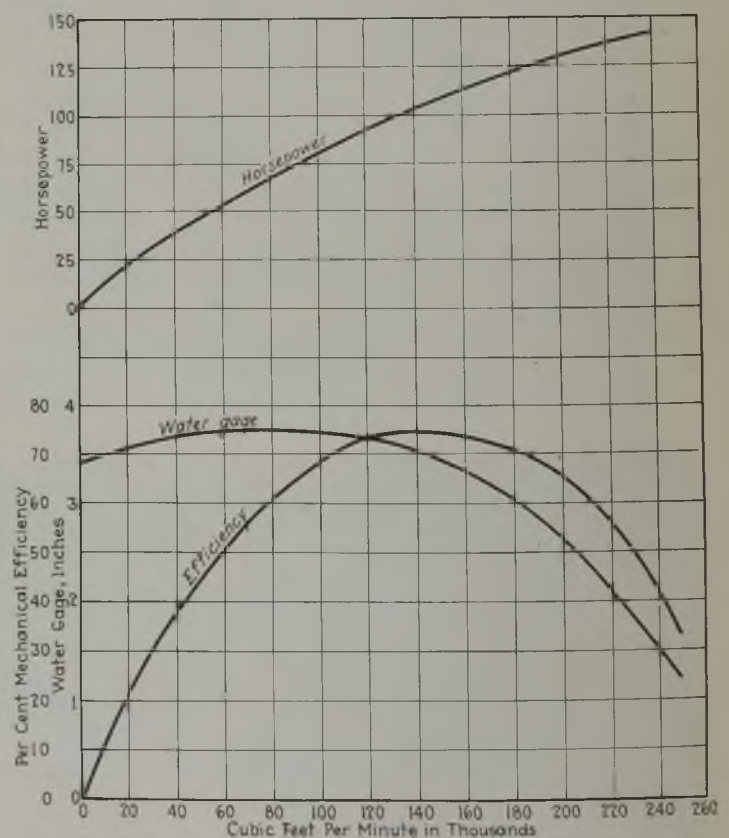


Fig. 6—Characteristics of Mine Fan Running at Constant Speed

The greatest water gage is not found at the point of maximum efficiency. If the mine demands the higher water gage the fan will furnish it in some degree but at a loss of capacity. If it demands less pressure more air will be delivered but at a lowered efficiency. As far as possible the mine should fit the fan and the fan the mine, but that fact is rarely understood.

is quite evident, therefore, that if the permanent airways are kept clean and open, under the new system, the ventilation cost, in so far as power bills are concerned, will be reduced appreciably. The company using this system of mining successfully should be able to show a saving in the cost of production per ton over its former system, and if it can achieve a saving of 25c. a ton on the mining alone, it is inclined to regard any saving in the cost of ventilation as so much "velvet."

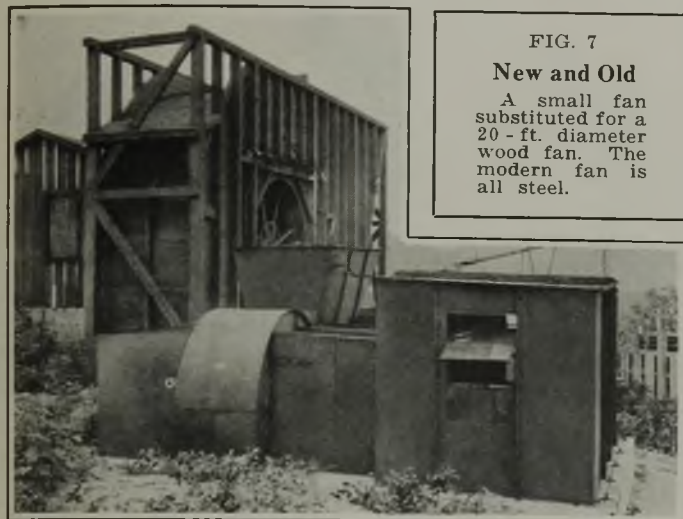


FIG. 7
New and Old
A small fan substituted for a 20-ft. diameter wood fan. The modern fan is all steel.

Royalties Are Low in Southern Illinois

Investigations made by L. D. Tracy, a coal-mining engineer of the U. S. Bureau of Mines, show that since 1910 the average royalty in Williamson County in southern Illinois has gradually increased from about 3c. per ton for run-of-mine coal to about 6½c. In Franklin County, which is adjacent to Williamson and in the same state, during the same period the royalty has risen from about 1½c. to 5c. per ton.

In normal times a piece of coal land in Williamson County brings about 8c. per ton royalty. This presupposes that all conditions as to mining, shipping and quality are favorable and that it will be mined in the course of the normal development of the field. In Franklin County the probabilities are that a slightly lower royalty would be asked than in Williamson, although royalties as high as 10c. per ton have been received. Surface options, as given in leases in this district, indicate the surface as valued at \$85 per acre. General inquiry would indicate that from \$50 to \$75 per acre was a fair price for the surface and \$100 to \$125 per acre for the big seam, No. 6, without surface.

Formerly no mention of surface subsidence was made in coal leases, but in later years about 52 per cent of the leases in Williamson County and 37 per cent of those in Franklin County contain a clause which expressly releases the lessee from all liability for damages to the surface by subsidence caused by removing the underlying coal. No difference in the royalty appears to result from incorporating such a clause.

There are no recent figures at hand of royalties in other fields of the country but George H. Ashley gives a few as of 1910. However, comparing the average royalty in Franklin and Williamson as of 1923 with those in the coal fields as given by Ashley it would appear that southern Illinois coal is valued at a much lower figure by comparison.

As far back as 1910, Pittsburgh coal royalties ranged from 10 to 15c. per ton of run-of-mine coal. Hocking

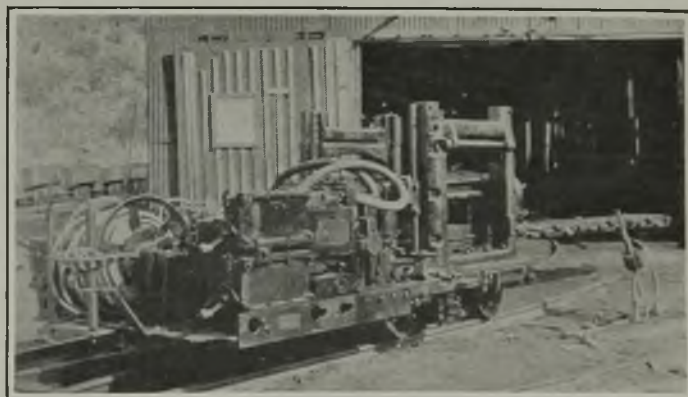
The ventilation of the working faces under various systems of concentrated mining presents problems all having the same physical aspects but though these aspects are alike they cannot all be solved in the same manner. The operator in one state may have clear sailing, whereas his neighbor across the state line may be hampered in many ways by the laws with which he is obliged to conform. One state will be found progressive and alive to what these new methods can do and in framing its legislation will give all reasonable assistance to its mining men. Another will be found to cling to laws made for a system of mining that is surely, but, of course, gradually, doomed to give place to a new order, the state being nevertheless unwilling to recognize this fact.

I refer, of course, to those states that bar the use of the small auxiliary blower with canvas tubing for ventilating minor faces and which do not permit an entry to be driven without making a crosscut every 60 or 80 ft. The last thing in my mind is to recommend a step backward or to undo any good practice already established, but the reader will surely agree that without jeopardizing the lives of the men employed, a mining code may be so framed and worded as to give progressive operators a chance to work their mines efficiently by one of the many systems of concentrated mining now receiving extended application.

Valley, Ohio, coal brought 8c. per ton; Kanawha, W. Va., 5½ to 10c., Routt County, Colo., 8 to 10c. and Boulder County 8 to 27½c. These figures of fifteen years ago are higher than those of Williamson County which averaged a little over 6c. per ton or those of Franklin County that run from about 4 to 7c. per ton for the past few years. There does not seem to be any definite reason for this seeming discrepancy in values.

The highest price of Williamson and Franklin County coal land, is \$125 per acre for coal and \$75 per acre for surface, or a total of \$200. The average thickness of the principal bed is given as 9.2 ft., and the average thickness mined as 7½ ft. These figures will give an approximate acre-foot value of \$21.50 and \$26 respectively.

Comparing Ashley's maximum acre-foot values of fifteen years ago: Pittsburgh coal is \$110 to \$170; Kanawha district \$6 to \$60; Pocahontas district \$10 to \$40; Colorado \$23 to \$60. And probably in none of those places does the surface value play as large a part as in the Illinois acre-foot value.

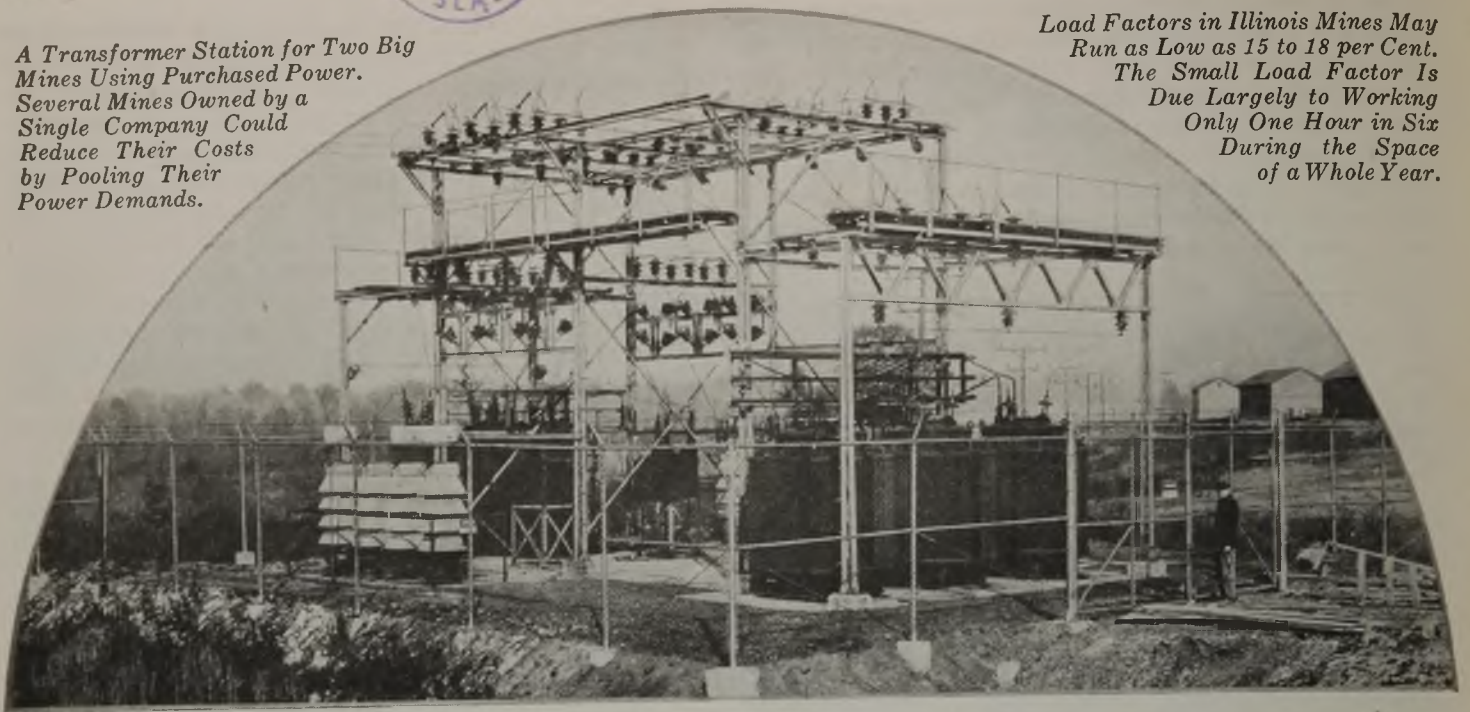


This Top Cutter Overcomes Obstacles

Turret machine with 3-ft. cutterbar is used by the Phelps Dodge Corp. for special cutting in 35-ft. rooms where faces slant at an angle of about 32 deg. The revolving cutting mechanism is self-propelling within its working area, maintaining contact with the nearest power line by means of a cable reel.

A Transformer Station for Two Big Mines Using Purchased Power. Several Mines Owned by a Single Company Could Reduce Their Costs by Pooling Their Power Demands.

Load Factors in Illinois Mines May Run as Low as 15 to 18 per Cent. The Small Load Factor Is Due Largely to Working Only One Hour in Six During the Space of a Whole Year.



Why Illinois Uses Purchased Power Extensively

Small Loads and Irregularity of Operation Favor Use of Purchased Power—Load Factor of Diversified Service Much Greater Than That of Any Single Mine

By J. Paul Clayton

Vice-President, Central Illinois Public Service Co.,
Springfield, Ill.

OUT of a total area of 56,000 square miles in the State of Illinois somewhat over 35,000 square miles are underlaid with bituminous coal. With an average yearly production of about 70,000,000 tons this state ranks third in the Union, being exceeded only by Pennsylvania and West Virginia. The beds of coal now worked vary from 3 to 14 ft. in thickness and lie at a depth ranging from nothing at certain outcrops to as much as 1,000 ft. below the surface. The average depth of the mines now working is approximately 400 ft. Little water is encountered in any of these operations.

Early development of the coal deposits of this state largely utilized hand labor, but as this became more and more expensive it has been gradually supplemented by mechanical energy until at the present time mechanical or electrical power is used for a great variety of operations. The early mines were supplied with mechanical or electrical energy from stations located near the shaft or other mine opening. These as a rule were small at the start and grew by accretion as power demands increased. As a result, many of these early mine power plants were woefully inefficient.

It was not until about 1912 that high-tension transmission lines furnishing power to the mines made their appearance in Illinois. At that time two large mines were built and completely electrified using purchased power for their operation. These two developments are still among the most efficient in the state from the standpoint of power consumption. They are likewise among the largest producers as regards annual tonnage. The extension of transmission lines steadily progressed

until, at present, purchased power is available in almost all the coal fields of the state. Most of the power furnished to these fields is generated in large modern steam-turbine stations where it can be produced at low cost.

Electric service to the coal mines has steadily progressed from its humble beginning back in 1912 up to the present. Today not less than 200 coal operations purchase all or a substantial portion of their total power requirements. There are now about 338 shipping mines within the state, so that approximately 60 per cent buy part or all of their power. A majority of the fully electrified operations are of large capacity so that probably at least 75 per cent of the coal mined within the state borders is produced in whole or in part by the aid of power purchased from central station companies. Great progress has been made in the electrification of the mining industry of Illinois during the last fifteen years.

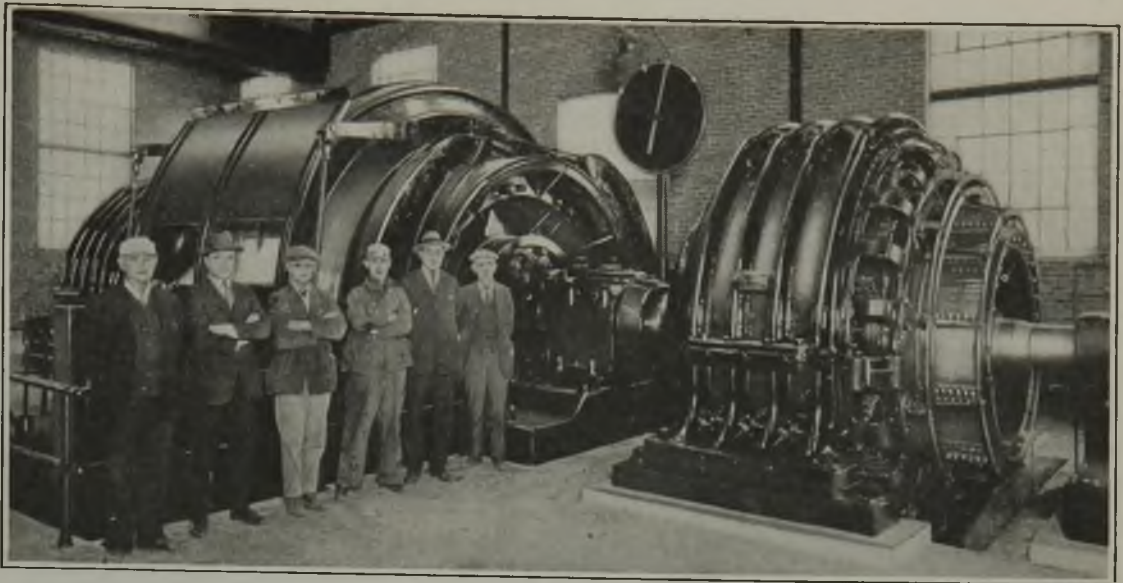
SERVICES POWER PERFORMS

The main purpose for which power is used at electrified mines are as follows: Hoisting, haulage, cutting, ventilating, pumping, preparation, shops, lighting and to a limited extent battery charging. In the larger fully electrified mines of Illinois practically all the hoisting is done by means of flywheel motor-generator sets which take energy from the alternating-current supply through an induction motor and generate direct-current power. A large flywheel is mounted on the same shaft with the motor and generator so that any sudden draft of power for hoisting is provided by both an increased input from the transmission line to

Abstract of a paper entitled "Purchased Power for Coal Mines in Illinois," presented before a meeting of the Mid-West Power Conference at Chicago, Jan. 26 to 28, 1926.

Double-Motored Hoist

At Orient, No. 2 Mine. In order to avoid the installation of a motor of excessive size two such machines are employed to operate a single hoist. Where large outputs must be attained speed and reliability are prime requisites in hoisting equipment. Such machinery must, therefore, be massive in design.



the motor and the stored energy of the flywheel. The hoist itself is driven by a motor drawing its current supply from the direct-current generator. An auxiliary alternating-current motor of relatively small capacity is provided for hoisting men and materials when the large motor-generator is not in operation.

This method of driving the hoist, variously known as the Ward-Leonard and Ilgner system of control, provides a fairly steady average load upon the alternating-current supply, simultaneously affording almost unlimited power for hoisting purposes. One of the advantages of this method of control is that in the event of an interruption to the power supply sufficient energy for hoisting is available for some time from the flywheel alone. This control also gives great refinement of manipulation in hoisting. It is undoubtedly the most satisfactory method yet devised for controlling mine hoists at operations of large capacity. In small mines or those that hoist only a short distance where the size of motor required does not exceed 300 to 500 hp. geared alternating-current motors are employed.

HAULAGE USES 250-VOLT CURRENT

Power haulage in Illinois mines is performed entirely by means of direct current at approximately 250 volts. To furnish this energy synchronous motor-generator sets are employed. An Illinois law forbids the carrying of potentials exceeding 275 volts on exposed wires.

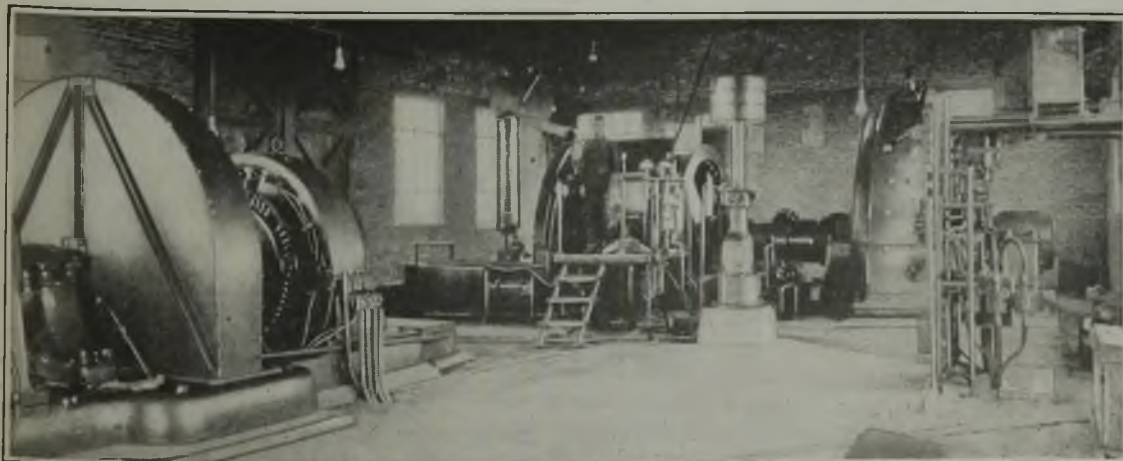
Cutting and mining machines are operated both by direct current from the haulage system at approximately 250 volts and by alternating current at about 220 volts. Alternating-current cutting machines were first intro-

duced in this state in 1913 following the introduction of purchased power. Their use encouraged the practice of taking power at 2,300 volts underground by means of three-phase, lead-covered, armored cables to banks of transformers located adjacent to the working faces. This arrangement greatly reduced the losses experienced in the direct-current transmission and materially lessened repairs to the cutting machines themselves as full voltage was always supplied to them. The majority of new mines developed within this state during the last ten years have installed alternating-current cutting machines.

PUMPS AND FANS USE ALTERNATING CURRENT

Pumps used for voiding water from the mines are usually driven by alternating-current motors, although some are operated from the direct-current haulage circuits. Ventilating fans are usually driven by induction motors taking either 220, 440 or 2,300 volts. Many machines of this kind are operated at constant speed but others are connected to variable-speed motors obtaining this variation of speed either by means of pole-changing devices or by some form of mechanical equipment for altering the speed. Tipple motors at the majority of mines are operated on alternating current of 220 to 440 volts.

During the last two or three years a number of large strip mines have been developed in Illinois. Some entirely satisfactory beds of coal lie within 25 or 30 ft. of the surface. By the use of large power shovels it has been found possible to strip the overburden from these measures and lay the coal bare. Smaller shovels



Hoisting Electrically

Hoist at Valier. Raising coal entails a big demand for power. A flywheel motor-generator is interposed between the hoist and the line. The inertia of the flywheel takes part of the load when coal is being raised, thus cutting down demand peaks.

load this coal into cars by which it is transported to the tippie where it is prepared for market. In such mines electric power may be utilized for operating the shovels employed in both stripping and loading as well as for actuating the tippie. In some cases also this power is used for pumping if natural drainage is not available.

Power consumption in individual mines varies according to the depth of the operation, average length of haulage, volume of air furnished, quantity of water pumped, thickness of bed and other conditions of lesser importance. The actual power consumption for a year of operation, in two completely electrified mines producing approximately 1,000,000 tons of coal each from a depth of 400 ft. was as in Table I.

Table I—Power Used for Various Purposes and Its Percentage of Use as Related to Total Consumption

Operation Performed	Power Consumption Kw.-Hr. per Ton of Coal Hoisted	Percentage of Total Consumption
Hoisting.....	0.6	25.0
Haulage, gathering, cutting, pumping	1.4	58.3
Fan, tippie, shops.....	0.4	16.7
Total.....	2.4	100.0

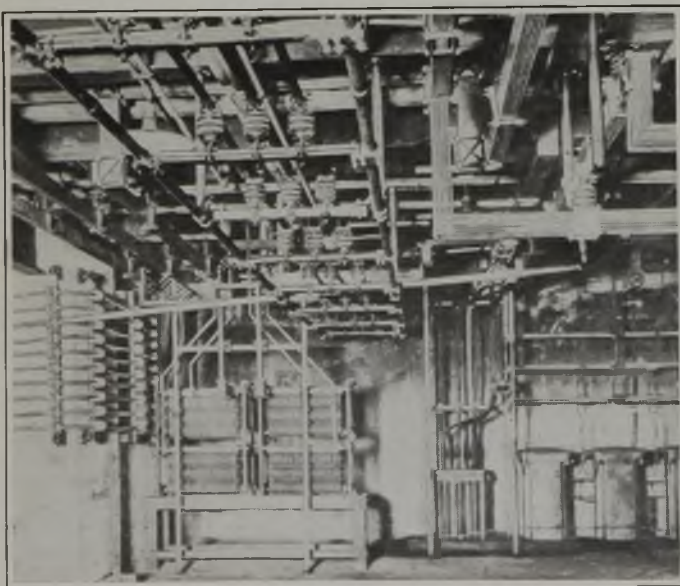
The total power consumption in completely electrified Illinois mines varies from a minimum of about 2.1 kw.-hr. per ton of coal produced under unusually favorable conditions of nearly continuous operation up to 4.5 kw.-hr. per ton of production under unfavorable conditions and operations considerably below normal. An average for the state would probably be about 3.5 kw.-hr. per ton under average prevailing conditions.

The total operating cost of power when purchased will vary between limits according to the conditions enumerated above. The actual cost of power from a year's operation of the two mines to which reference has been made was as in Table II.

Table II—Cost of Operating Mine Equipment

	Cost Cents per Ton of Coal Hoisted
Labor, including hoisting engineers, firemen, janitors, etc....	1.5
Purchased power, coal for heating water for wash house, lubricants, etc.....	5.8
Repairs, supplies and miscellaneous.....	1.0
Total.....	8.3

The total operating cost for current where all power



In the Basement of a Big Electric Hoisthouse

This view taken at the Orient No. 2 plant of the Chicago, Wilmington & Franklin Coal Co., shows some of the elaborate wiring that supplies current to the diverse electrical equipment installed on the floor above.

is purchased will vary from about 7c. per ton for highly favorable conditions such as large output and nearly continuous operation to about 10c. per ton for less favorable conditions and less constant operation. An average for the state would be about 8.5c. per ton under the conditions normally prevailing.

When compared with the other costs incurred in coal mining, particularly that of labor, it will be found that the item of purchased energy is the smallest of all the various components making up the total expense of producing a ton of coal.



Interior of Lamp-Charging Station

Charging storage batteries, regardless of whether they supply current to cap lamps, locomotives or other devices, is one of the few operations about the mines, aside from pumping and ventilation, that can be done at night.

The total operating cost of power generated in privately owned plants will vary because the same conditions affect it that affect the cost of purchased energy. Actual average costs for several mines having fairly efficient steam plants and operating about the average number of days that mines work in this state in normal times, are as in Table III.

Table III—Operating Cost of Privately Owned Plants

	Cost Cents per Ton of Coal Hoisted
Labor, including hoisting engineers, firemen, coal passers, oilers, janitors, etc.....	3.6
Coal, water supply, operating supplies, lubricants, etc.....	4.5
Repairs, repair labor, supplies and miscellaneous.....	2.2
Total.....	10.3

The total operating cost of power produced in privately owned steam generating plants varies from about 10c. per ton for efficient installations at mines of large output to approximately 15c., or even 20c. per ton in many mines operating under less favorable conditions. An average for the mines of the state where generated power is used for all purposes would be about 12c. per ton.

FIVE HOURS IN EVERY SIX IDLE

Under normal conditions the average coal mine in Illinois operates about 180 eight-hour days per year. In other words, a full power supply for the operation of the average mine in this state is required during slightly less than one-sixth of the total number of hours in the year. The power necessary for hoisting, haulage, cutting and preparation has an annual load factor of about 15 to 18 per cent. That required for ventilation has a load factor of from 50 to 100 per cent, depending upon whether the fan is operated at constant speed throughout the year or is run at reduced speed when coal is not being mined. As a result the total load

factor for all the power requirements of Illinois coal mines varies from a minimum of about 20 per cent up to a maximum of approximately 35 per cent in mines requiring large volumes of air and operating much more constantly than the average working time of the state. It is difficult to design a steam-power plant that will generate current efficiently under such conditions. The losses from banked fires are relatively large, and the labor cost incident to operating the boiler plants are high. Bearing in mind that the mines are working for only about one-sixth of the total time throughout the year, the unit costs of producing the small quantity of power required during their active periods are relatively extreme.

The reasons why it is best for coal mines to buy their power instead of generating it are as follows:

(1) Because the concentration of large production in big generating stations, serving a large lighting and industrial load as well as mines, affords a high load factor with resultant economy in current generation.

(2) Because the large diversity factor between the maximum loads of individual coal mines and the maximum load of a large transmission system serving many



Stripping Coal Electrically at Cuba, Ill.

Many coal beds lie close enough to the surface to be mined by the stripping method. For this purpose the electric shovel possesses many advantages over its steam-actuated predecessor. This illustration shows the United Electric Coal Co.'s stripping.

such mines, as well as other industries and large lighting loads reduces the peaks that would otherwise overload the equipment or make undue expenditures on equipment necessary.

(3) Because coal mining loads in Illinois, excepting only those for ventilation, pumping and lighting, occur between the hours of 7:30 a.m. and 4 p.m., whereas the lighting loads of central-station systems develop after 4 p.m.

(4) Because the grouping of many coal mines lowers the peaks, because the coal-mining loads occur only in the daytime, and because of the further consideration that the same central stations furnishing these requirements supply also large lighting demands, result in a system load factor at the generating stations of from 45 to 60 per cent as compared with those of individual mining plants of from 20 to 35 per cent. The generating equipment installed in central stations serving such diversified loads is, therefore, used for a variety of purposes, and the high load factors of such systems greatly aid in reducing the production costs.

Even if a generating station were established for a group of mines, it would not be possible to obtain the low cost of investment and production which occurs with



Loading Out Stripped Coal by Power

The advantages of electrical operation in the strip pit need not be confined to the earth-moving shovel. This shows a small power shovel loading out coal that has been uncovered by the big stripper.

a modern central-station transmission system, because the load factor of a group of mines, at least in Illinois, cannot well exceed 35 per cent as compared with load factors of from 45 to 60 per cent for central-station systems. In addition, all the capacity can be used only for mine operation so that the investment costs are relatively high. It is true that a power plant serving a group of mines secures some of the economies inherent to a central station, but full advantage cannot be taken of the diversity of demand and high load factors of these latter systems.

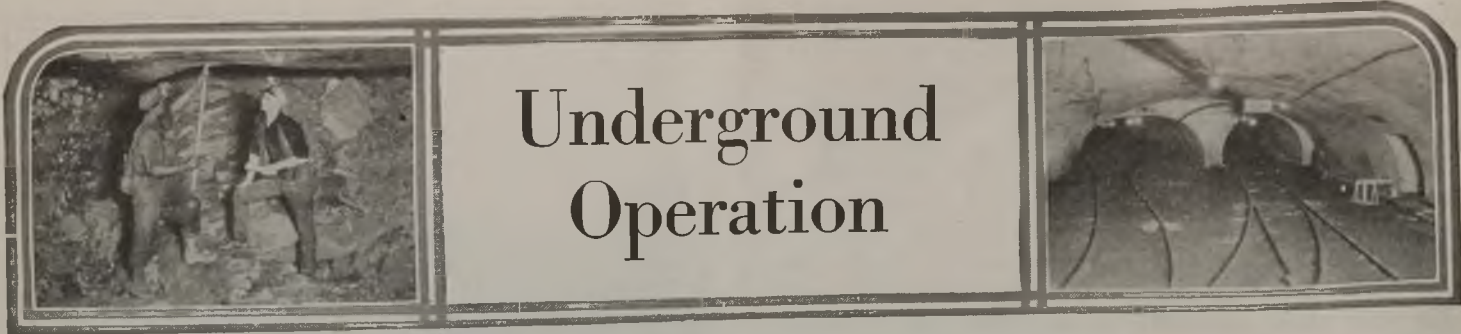
WHAT PURCHASED POWER AFFORDS

The chief advantages to mine operators accruing from the purchase of power are approximately as follows: (1) Elimination of power-plant investment. (2) Reduced cost of purchased power as compared with that generated. (3) Independence of the water supply which is necessary if a power plant is located at the mine. (4) Reliable power supply available during strikes and periods when the the mine is not being operated; this results in a saving in labor costs. (5) Great flexibility in the supply of power necessary for increasing the output of the mine from time to time upon short notice. (6) Ability to locate motor-generator sets near the working face.* (7) The purchase of energy enables all the men at the mine to devote their undivided attention to the production of coal without being distracted by the generation of power.

When it is considered that only about fifteen years ago there were no mines in Illinois purchasing their power and that at present purchased current is used wholly or in part for the production of at least 75 per cent of the state's output, it is immediately apparent that central-station energy is the most important factor entering into the production of coal within this state. Most of the new large mines sunk during the past few years have been constructed for complete electrification with purchased energy from the start.

In many coal fields throughout the United States as much as 90 per cent of all of the power required is purchased. Undoubtedly a similar result will be attained in Illinois within the comparatively near future now that it has adequate power systems everywhere.

*This advantage can be secured by any mine generating its own power. In Illinois, however, about 90 per cent of all the installations of this kind were made at the time purchased power was adopted and are now used in connection with this source of energy.



Underground Operation

When Mine Roof Breaks, Can It Fall?

If a Free Piece of Roof Resting on Ribs Breaks and Tries to Tilt Into the Mine Workings It Must Open a Wide Crevice and Slide Up on the Pillar

By R. D. Hall

Engineering Editor, *Coal Age*

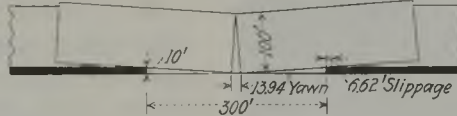
Last week appeared in this department of *Coal Age*, Edward O'Toole's interesting and illuminating remarks on roof control and incidentally on roof failure also. If more persons would study the roof as a girder or rather as a continuous beam, many strange fallacies, now widely current, would be exploded.

Mr. O'Toole puts all his confidence in the main resisting stratum. However, it must be remembered that the materials near the neutral axis are subject to but little compression or tension (according as they are above or below the axis respectively) and only the outer fibers of the girder experience the maximum stress—until the girder breaks and begins to fall. Then the neutral axis rises higher and higher, finally reaching the top of the girder, all the unbroken parts progressively becoming in tension.

Because the load, when within the sustaining limits of the girder, brings little stress on the material near the neutral axis, girders are made light at this point and heavy at the parts more distant therefrom. In the case of the roof if the material near the neutral axis is weak it may nevertheless be strong enough to meet the stress laid on it. This fact may explain why roofs give extraor-

dinary resistance, so long as one layer cannot slide on another.

Mr. O'Toole says that a girder will fail more readily than a mine roof because in failing it can be drawn into the opening, but the roof being held by the surrounding areas cannot be so drawn. That is a difficult saying. The roof probably breaks somewhat above the pillar when it fails for as Mr. O'Toole says there is stress in the roof over the



Note What Happens Over Rib

In order to open the crevice, the bottom of the slab must slide upward on the rib and that will push back the unbroken measures about 6 ft. But these will not go back, so there is something wrong in the assumption that the slab is free to fall as it pleases.

pillar, but it is interesting to note that the *bottom flange* of a girder which fails and drops does not slide *into* the opening but rather slides *out* of it during the early part of its fall.

YAWNS MORE THAN IT FALLS

Let us take Mr. O'Toole's example: Suppose the beam is 200 ft. deep and the span is 600 ft. The girder tears and ultimately opens up as if there were a hinge in the upper flange at midspan. The fracture yawns and that yawn if the fall is 10 ft. is 13.64 ft.

It is easy to calculate that the slant distance to the pier along the lower flange is no longer 300 ft. but 293.36 ft. so that motion of the point in the lower flange over the edge of the pier is backward toward the pier and the measure of it is 6.64 ft. It is because this movement in the case of the roof is prevented that the roof shows

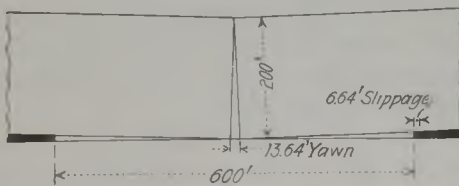
much strength. It is a thrust and not a pull that is being resisted by the adjacent strata.

Changing the thickness of the girder to 100 ft. and the span to 300 ft., using Mr. O'Toole's factor of three and assuming the roof to fall 10 ft., the yawn will be 13.94 ft. and the slide at the edge of the pier 6.62 ft. and in the same direction, backward toward the pier as in the previous case. The figures are naturally much the same as for the greater span.

WHY BREAK AT RIB?

But given that the roof falls what should make it fracture at the ribs? It is easy to say it does but why? The weak layers between the coal and the load-carrying band, as Mr. O'Toole significantly terms it, may fail. Being beams of no great strength they are nipped off. They are of the nature known as *encasté* or built-in beams, one end possibly on the floor and the other nipped in between the load-carrying band and the coal. Possibly these weaker layers, which are all that can be seen, do break on a line inclined 15 deg. to the vertical as Mr. O'Toole has noted, the ends projecting over the broken area, but it is difficult to see what should break off the load-carrying band unless it be the dynamic effect of the fall. The strain of the drop, most of which is almost instantaneous, must be enormous and perhaps Mr. O'Toole is correct in saying the rock breaks near the pillar, but it must be dynamic and not static strain that causes the break. More will be said about that later.

Now looking at the size of the



How the Roof Would Break If Free at Its Edges

A vertical crevice opening from the bottom up would divide the slab in two and with the dimensions of span, thickness and fall as shown, the opening or "yawn" of the crevice would be over 13 ft. wide.



What Really Happens to Slab

The solid roof splits horizontally into a series of drawrocks, that is, rocks that are free of each other and which no longer act as a single integral slab, or monolith. These fit themselves to the space afforded them, pressing back the side rocks a little, but not six feet as the other illustrations show.

yawns between the fractured rocks and at the movements at the edge of the pillar no one can deny that they are unbelievably large. They surely do not occur in any such measure or the rocks would be thrust several feet into the air. What really happens is that the roof fractures not only vertically but horizontally. Each stratum in the load-carrying band slips a little past its neighbor. The hinge effect is not achieved; the yawn is not nearly what the figures purport to show, the distortion by horizontal shear between layers making it possible for the rock to fail without the fracture opening in the manner of a hinge on a door. The rectangles lose their rectangular form and become rhomboids, or possibly, rather slightly distorted rectangles of relatively shallow depth.

WHEN ALL IS DRAWROCK

This horizontal movement that separates all the layers and makes of them separate small beams of no

great strength is doubtless the cause of the failure at the rib. This is aided by the dynamic effect of the roof fall. The load-carrying band is no longer a unit. It has become a series of drawrocks that have no strength and are easy prey to the stresses involved in roof motion.

These considerations, perhaps, show why sandstone is so strong. It does not have much greater tensile strength than a good slate. But tension only opens the way to failure. The roof fails mainly from a yielding to compression, within the elastic limits, of the fractured member and of the measures surrounding it and from the sliding of one stratum on another. Consequently the important elements of strength are the ability to resist compression and horizontal shear, two qualities that in general discussion have always been overlooked. Tension and vertical shear are usually held exclusively accountable for roof failure, but is that view tenable?

How to Make Machine Loader A Popular Innovation

In discussing with coal operators the application of mechanical shoveling to coal mining, few, to date, have put due emphasis on the human element which is so necessary to the success of the undertaking. The miner, naturally, by means of the "grape-vine telegraph" gets early advice that the staff at the mine is discussing an addition to the equipment.

He knows that the purchase of more mine cars or more locomotives or additional cutting machines means, generally, that he will get better service and that he will be able to load more coal or, perhaps, will be enabled to load what he feels like loading in a shorter time. He does not entertain for a moment the thought that he will have to take less per ton or per yard for his services. The new equipment seems likely to increase the tonnage he will be able to get out and to make jobs for a few more motormen and cutters. That's fine. He likes to see things on the jump. It adds to the excitement of camp life, and it indicates, to him, that the rumors of a shutdown, perhaps, are not true.

LOADERS, THAT'S DIFFERENT

Then comes the rumor that the company is considering the use of shoveling machines. That's different.

That means cheaper coal, and he argues that cheaper coal means lower rates or wages for him. Nobody corrects that erroneous impression, and a machine is brought to the mine and put to work.

The man on the machine and those working about it, laying track, drilling holes and shooting them and generally preparing the working places are getting as good wages as they formerly got at other work but no more. Why then "cut loose" to get more coal and cheaper coal when it means no increase in the loader's earnings. But suppose, and why not, the loaders are, in due time, appraised of an arrangement whereby they will have a chance to make more money by the use of the large capacity of the machine. That again is different!

INTERESTING LABOR

Suppose they are grouped about a shoveling machine in an ample, well-defined and compact territory, embracing rooms and narrow work, eleven men, including the group foreman. These men take care of the entire preparation, loading and haulage to the nearest lieaway, including all dead work. Give them the wages that are current for the various classes of work for an output that profitably warrants the purchase of the machine.

This is all right as far as it goes, but the worker's psychology has not

yet been taken into account. How are we to make a fair arrangement whereby the interested capital and the partially interested worker can both be interested to the fullest extent?

The plan that would at once suggest itself, is that of paying in specified amounts for each unit of increase in joint performance, above the base production. It is a system of more pay for more coal, and more coal is what cuts the mine overhead. Such an arrangement honestly undertaken and fairly administered will surely be productive of enthusiastic team work which is so vital to the largest output at the smallest cost.

EVERYONE A HANDYMAN

It is fair to say that under this group system of operation, no man is a specialist but that each man will do a fair day's work at whatever the foreman directs him to do. For example, if the cutting is completed and the drilling lags behind, the cutters will help in the drilling and so on. In a short season, under this plan the work would not suffer because one group failed to report.

It will be surprising and gratifying to note the increased *esprit de corps* that will permeate the whole organization. From a study of men in coal mines over a period of twenty-five years, it is my belief that mechanical shoveling is destined to show only mediocre results just so long as the men are not allowed to share, to a proper extent, in the benefits made possible by the shoveling machine.

FREE MINERS FROM PRECEDENT

The sooner, be it said, the mining of a ton of coal is regarded less as an established practice and more as a problem of excavation and delivery, the sooner will the benefits from mechanical shoveling accrue. Another advantage, which does not generally show itself as an item on the cost sheet is the greater safety of the men. Our casualty list is a serious blot on the history of American coal mining. With mechanical loading fewer men are necessary for a given tonnage and a complete supervision of such men as are employed is rendered comparatively simple. The introduction of machines is bound to result in a great saving of life and limb. Experience has proved this to be true where machines have been introduced.

C. H. THOMPSON.

Hollins, Va.



Practical Pointers For Electrical And Mechanical Men

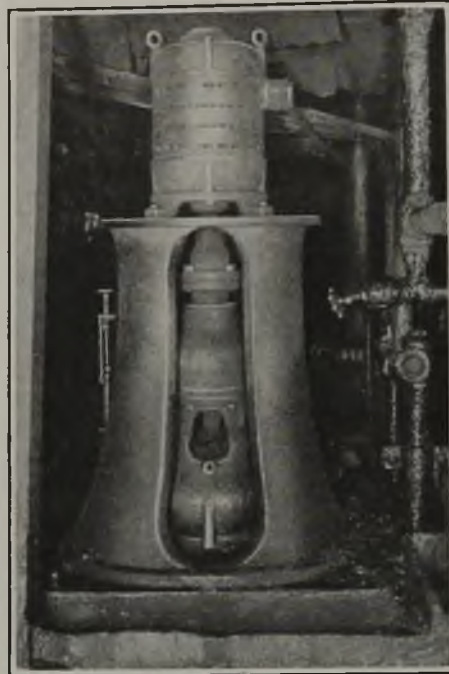


Vertical Pump Driven by Motor at Lower Landing Lifts Sludge from Sump

Removing the water and sludge from the sump at the bottom of a skip shaft in many cases is a somewhat annoying operation. It is annoying rather than difficult because the liquid is laden with an appreciable quantity of solid matter and the ordinary horizontal direct-connected centrifugal pump, if placed in the sump would be subjected to the action not only of drip but that of the skip spillage sifting down upon it as well. This probably represents the hardest kind of conditions under which an electric motor can be called upon to work.

At the Bartley mine of the Pond-Creek Pocahontas Coal Co., near English, W. Va., these various difficulties are surmounted by placing a vertical centrifugal pump near the bottom of the sump and driving it with a motor installed at the level of the coal. By this means the pump is placed down close to its work, whereas the motor is up in a really accessible position, one that frees it from the action of both water and fine coal.

As may be seen from the accompanying drawing, the pump intake



Pump Motor Works in the Dry

This motor is mounted on a substantial foundation approximately 65 ft. above the motor that it drives. It is thus well removed from the dirt and dampness of the skip pump.

or suction opening is approximately 65 ft. below the level of the coal bed. The suction pipe is turned upward at its extremity which is further protected by means of a coarse strainer. The pump itself is a three-stage machine, the diameter of the impellers being about 12 in. The discharge pipe is of 7-in. diameter, and delivery is made to the sump of the main mine drainage pump. The 10-hp. vertical driving motor operating at 440 volts, alternating current, is shown in the photographic illustration.

This pump, which is of Layne & Bowler type, was put into service, July 1, 1925, and so far has handled the sump sludge without difficulty and apparently without much wear. The chief advantage of this type of unit, however, as already pointed out is that the motor and working head are above the sump and consequently up out of both water and dirt. A further advantage is ease of access. Neglect usually follows where a piece of equipment cannot be reached readily or only with discomfort.

Grinding Valves Eliminate Pump Difficulties

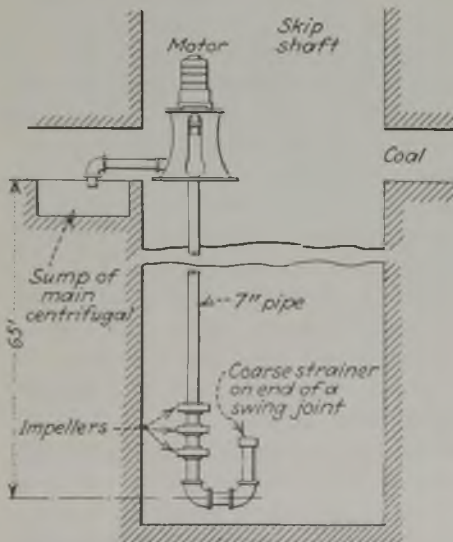
Much trouble and expense was experienced in the upkeep of the boiler-feed pump in our 1,000-kw. power plant. The main troubles were these: The pump ran too fast, water-valve seats were continually being knocked out, valve stems broke frequently, and there was much wear on the rocker arms and on the rods of the steam valves.

NEW VALVES NO BETTER

New brass water valves and seats, in the condition in which they came from the factory were installed, but this did not seem to help matters. The first step taken was to determine what speed the pump should run to supply the proper quantity of water for the boilers. This was determined easily from readings of a feed-water meter which is a part of the regular equipment of the water line. By calculating the displacement of the pump plungers it was found that the pump should be making five to six strokes per minute instead of twenty-four to twenty-five strokes, which it was actually making. The natural deduction was, "leaky water valves."

VALVE ILL-SEATED

A new seat and valve were closely examined. It was found that the valve touched the seat only in spots. To the eye it appeared to seat well, but by using a feeler gage as much as 0.005 and 0.006 in. opening was found in spots between the valve and its seat. A new set of valves and seats were made up by grinding the valve to the seat, with valve grinding compound, until there was a good seat over the entire bearing surface. After the new seats had been placed in the pump, the valves were given a final grinding to their seats. When the pump was again started, all troubles had disappeared. The pump carried the load by operating at a speed of six strokes per minute and ran that way without any further expense for over eighteen months.



How Sump Pump Is Installed

Making the pump vertical and driving it through a long shaft from a motor installed at the level of the coal bed removes the motor from the harmful action of both excessive dampness and dirt.

As a result of the above experience the same practice was followed with brass-valve mine pumps. These pumps would deliver a much greater quantity of water, after the valves were ground to their respective seats.

R. R. WEBSTER,
Chief Electrician.

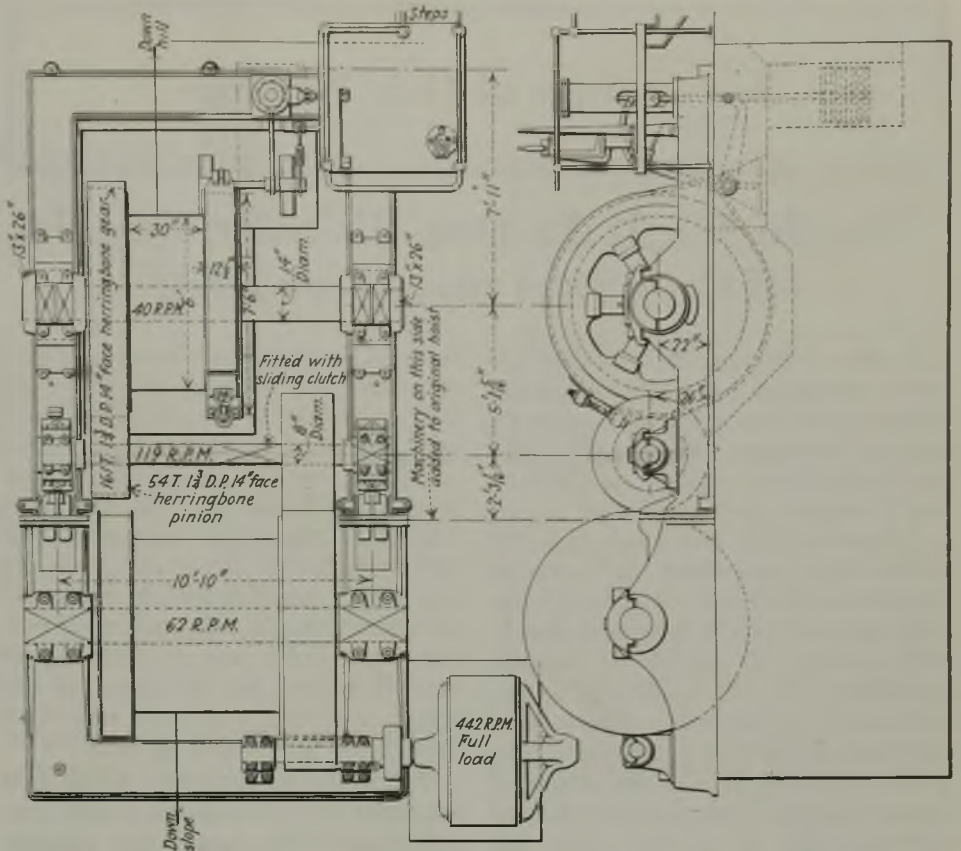
Elkhorn-Piney Coal Mining Co.,
Weeksbury, Ky.

Counterweight on Hillside Balances Slope Trips

Hoisting in balance is to be preferred to unbalanced hoisting. On slopes a counterweight within the slope itself can sometimes be used. This should equal the weight of the cars and half the weight of the coal in the trip to be hoisted. The machine thus consumes as much power in lowering a trip of empties into the mine as it does in bringing out a string of loads. Some mines are so located that a counterweight may be used on the surface.

At Sublet, Wyo., the bed in which the No. 5 mine of the Kemmerer Coal Co. is opened outcrops at practically the top of a hill, the hoist house in fact being located slightly over the crest, at an elevation of nearly 8,000 ft. above tide. The somewhat peculiar situation and local topography make it possible to use a counterweight moving up and down a track laid on the surface.

Originally an electrically driven hoist was installed at this point which served the slope but without the assistance of any counterbalance. The Vulcan Iron Works of Wilkes-Barre, Pa., however, furnished a drum for controlling the counterweight. The present machine is shown in the accompanying illustration. As one rope winds off the drum serving the slope the other winds onto the other drum thus lifting the counterweight and vice versa.



Counterbalance on Hoist Almost Halves Load on Motor

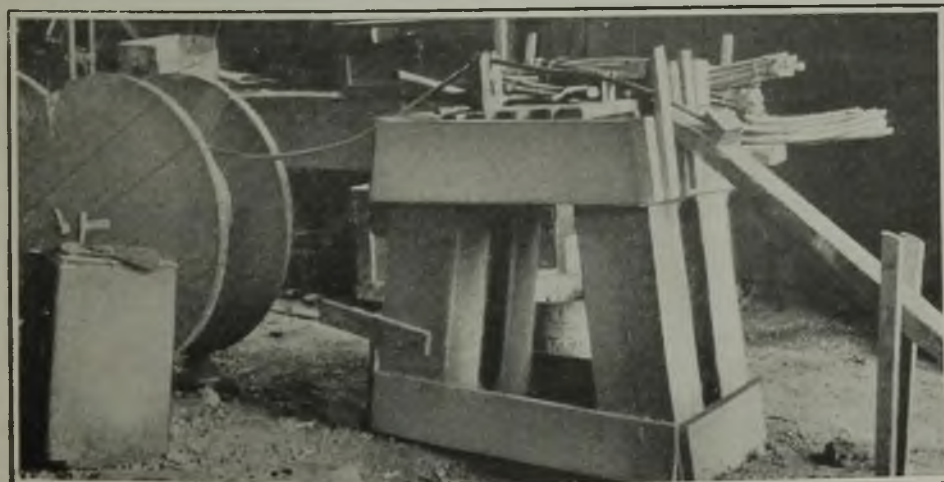
As originally installed this machine was intended merely to haul trips out of, and lower them into, the slope as dead weight. The addition of a counterweight on the hillside and a means of controlling it materially decreased the power consumption, or what is the same thing, permitted the machine to handle 10-car trips whereas before it could handle trips of only 5 to 6 cars.

The power consumed in hoisting is thus materially reduced.

A small railroad car filled with rock and weighing approximately 90 tons serves as a back balance or counterweight. This moves up and down on a track laid on the hillside on an inclination of 12½ per cent. The relative speed of the two drums is such that the counterweight moves 1,600 ft. while the trip in the slope travels 2,500 ft. The speed of the trip in the slope when coming up is 1,200 ft. per minute and when going down 1,320 ft. per minute. Ten-car trips are handled. The weight of the cars, empty, is 2,500 lb. and they

hold 5,000 lb. of coal each. The grade of the slope is 18 deg.

The present arrangement is quite flexible. It may be used for hoisting or lowering materials and supplies on the slope independent of the counterweight. The motor driving the hoist is a 500-hp. 2,300-volt induction machine operating at a no-load speed of 450 and a full-load speed of 442 r.p.m. Gomer Reese, the general superintendent of the company, states that this hoist now handles 10-car trips as easily and readily as it formerly handled 5- or 6-car trips before the counterweight and its drum equipment were added.



Electric Bonding "At Home"

The extensive bonding program of a large coal company prompted it to manufacture its own arc-weld bonds. Above is a close-up of die and tools used to apply copper-sheet terminals to the stranded wire. These bonds are for application by the copper-electrode method.

Viewpoints of Our Readers

Should We Make Our Mine-Car Wheels Of Cast Steel or of Cast Iron?

I have been much interested in your editorial entitled "Lighter Wheels and Heavier Loads," appearing in *Coal Age*, Feb. 18, 1926, and in the criticism signed by "Wheelman" in your April 15 issue.

I began using cast-steel mine-car wheels when operating coal mines in Canada in 1910, and continued to use them up until I left the Dominion in 1917. After my arrival at Ansted, I ordered 100 sets of English cast-steel mine-car wheels. These were delivered about two years ago. The wheels I used in Canada were of 18-in. diameter, bronze-bushed, and were installed on a 3-ton mine car. We used sprags made from 1½-in. pipe; consequently, the service was severe, taking into consideration the extremes we would have in weather and also the steep grades.

FIVE YEARS AND STILL WORKING

In order to illustrate the good service we got from these English cast-steel wheels, I can state that we purchased eighty-four trucks and put them into service in 1912. I can vouch for the fact that upon my leaving in 1917 every wheel was in service, having been used continuously from the time it was installed, which covered a period of over five years. The results were so extraordinarily good that when I came to West Virginia I immediately began to look around for American-made cast-steel wheels. I was successful in getting some excellent wheels, which I put into service in 1918. These are still in use and giving splendid service.

As stated earlier in my letter, I have also installed one hundred sets of English cast-steel wheels of 14-in. diameter, equipped with bronze bushings. We have had some difficulty with these, which was due to no fault of the wheels themselves, but to the fact that we used too heavy grease in lubrication, causing some of the bushings to wear. These had to be replaced. They are all in service at the present time.

We have also just recently ordered

from an American company fifty sets of cast-steel wheels, after having tried out ten of their wheels equipped with a special bearing. It is a fact—and we have experienced it—that when the thread of the cast-steel wheels is made too thin they will flatten between the spokes. I had one set of American-made cast-steel wheels which did this, and upon taking it up with the manufacturers they increased the thickness of the tread, and I am convinced now that the wheels will stand up well.

The writer of the letter printed in the issue of April 15 must have had experience with some very inferior cast-steel wheels, as he says that they wore out in one round trip. We have here extremely hard service, having an outside haul of over five miles—our cars being equipped with brakes—and in each trip the brakes are applied, causing slipping and sliding of the wheels. When cast-iron wheels slip on the rails the tread is often flattened and this action tends to increase on succeeding trips. When the brakes are applied to slip the cast-steel wheels little flattening is experienced—in fact upon close examination the cast-steel wheels do not flatten like a cast-iron wheel.

WEIGHT CUT IN TWO

The statement in your editorial in regard to the difference in weight is conservative, as my experience has been in weighing several cast-iron wheels and cast-steel wheels, including the pedestals, a set of same-dimension cast-steel wheels will weigh approximately one-half as much as the cast-iron wheels and pedestals. As you mention in your editorial, this is an important item.

Having used cast-steel wheels over a period of sixteen years, I am thoroughly convinced that for mine service this wheel is far more economical than the cast-iron wheel.

R. H. MORRIS,
General Manager.

The Gauley Mountain Coal Co.,
Ansted, W. Va.

West Virginia Won Doubtful Victory at Jacksonville

Many have been the declarations, appearing in *Coal Age*, of those whose business has been adversely affected by the Jacksonville agreement, but we in West Virginia can assure those in other states that we are not showing any signs of affluence as the outcome of that agreement. Nor were we helped by the anthracite strike which might have been expected to have aided all the bituminous operators whether working on the 1917 or any higher scale of wages.

The United Mine Workers perhaps intended that the anthracite strike should help the miners wherever production had been handicapped by the Jacksonville agreement. Whatever the union purposed, the Jacksonville signatories made little out of the strike and have been the first to feel the effect of the anthracite settlement and the slump that has followed. They are beginning to come to the 1917 scale, and when they do, competition with this state will be more intense. Thus the outlook in West Virginia is the darkest in many years.

SLOW PROGRESS IN MERGING

Consolidations might aid but any worth-while amalgamation seems unlikely. Some time ago an article on coal-company consolidations was published in the local papers and copied in New York and Chicago. The author made the statement that the main reasons why consolidations had not come to the relief of the industry were three:

First, that the promoters with the money worked under cover. Second, that the unfortunate mine owners with properties to consolidate were loath to advertise that they had "white elephants" on their hands which they desired to unload on someone else. Third, and perhaps the most important, that most of the coal men who were shaping the policies of the industry did not own the controlling stock and were drawing, relatively speaking, fairly good salaries to keep things going on as they were. They did not know where they would come out in a merger, so they sat still and said nothing.

For these reasons there was destined to be no more concerted action in the bituminous-coal business than in a government without a head. You can heap all the vitriol you please upon operators for not co-

operating, but it is pure communism to expect it. Ownership is the only sound basis for legitimate control of corporational activities.

When operating officials take this position, it is because they know that were their companies to go into a merger large enough to effect any improvement in the condition of the industry they would not be the presidents of them and would probably do well to get a superintendent's job. These are the facts, and everyone might just as well face the music.

Last year, if ever, should have been a profitable coal twelve months in West Virginia. The talk of profiteering among the operators certainly is disgusting, yet sufficient instances of coal companies trying to grab a little something out of the New England situation have occurred to lend it color. Egg went once to \$3.50 per ton, but it went off almost immediately to \$2.25.

WEST VIRGINIAN.

Back-Laid Fan Ill-Suited To Mine Ventilation

In the March 18 issue of *Coal Age* you published an article edited by Louis Huber setting forth many advantages of the fan with back-curved blades for mine ventilation. It is true that this fan has certain characteristics which are desirable in some special cases for the ventilation of mines, but it is my opinion that for such purposes the undesirable features of this fan overbalance its desirable qualities. Judging from inquiries received on this subject, the article has conveyed a wrong impression to the mine operator. Mr. Huber probably had in mind the use of fans for small volumes and high pressures, such as are adapted to forced draft, etc., for the data set forth do not state results obtained in the ventilating of mines.

WOULD FIGURE THUS

Let us investigate a 10 per cent drop in pressure as outlined on page 396. This means a 10 per cent drop in resistance for the volume passing. Suppose a fan is delivering 100,000 cu.ft. at 3 in. of water gage and a door is opened and the short circuit thus caused decreases the resistance 10 per cent for the above volume; the mine will then pass 100,000 cu.ft. at 2.7 in. of water gage. According to the premises in Mr. Huber's article, this fan is running at maximum efficiency and constant speed. Now the maximum volume which can

be produced is found by the proportion

$$100,000^2 : x^2 :: 2.7 : 3 = 105,400 \text{ cu.ft.}$$

This is an increase in volume of 5,400 cu.ft. or 5.4 per cent instead of the 26 per cent increase stated in the article. The horsepower curve will show just about 5.6 per cent increase instead of 28 per cent.

The next item to consider is the effect on volume for a 10 per cent increase in resistance and consequently a 10 per cent increase in pressure for 100,000 cu.ft. at 3 in. of water gage. As there is a 10 per cent increase in resistance caused by falls, etc., for 100,000 cu.ft. it means that the resistance has been increased to 3.3 in. for 100,000 cu.ft. According to Mr. Huber's article the fan is running at constant speed at maximum efficiency, hence the problem is stated as follows:

$$100,000^2 : x^2 :: 3.3 : 3 = 95,300 \text{ cu.ft.}$$

The above proportion shows that a 10 per cent increase in resistance reduced the volume 4,700 cu.ft. or a decrease in volume of only 4.7 as against 84 per cent as stated in the article. The horsepower decrease will be approximately 4.6 as against the 64 per cent decrease stated by Mr. Huber.

PROVED BY PRACTICE

This shows conclusively that a 10 per cent drop in resistance or a 10 per cent increase in resistance is taken care of efficiently and effectively by a forward-curved bladed wheel. These data are obtained in actual practice, and it is in this fact that the mine operator is primarily concerned.

Mechanical efficiency is also important. It is stated that the efficiency of a backward-curved bladed fan is 15 to 20 per cent greater than with other types. I have conducted a long series of tests on both types of fans and have found that the backward-curved bladed wheel is no more efficient than any of the other types. An investigation of published data from other manufacturers who build both types of fans does not bear out the statement that the backward-curved bladed wheel is more efficient than the forward-curved bladed wheel of the same proportions.

There are two redeeming features with a backward-curved bladed wheel. The first is where a small volume of air is required, and this volume is to be delivered against a high resistance. This duty would

permit direct connection to a motor of reasonable speed. The other is where a full backward-curved bladed wheel is used and a motor is provided at approximate maximum efficiency for the fan. Then no matter what conditions are encountered at this given fan speed, there is no danger of overloading the motor.

SLOWER, SAFER, CHEAPER

The forward-curved bladed wheel has distinct advantages. The normal ventilating resistance found in coal mines is equal to 3 in. of water gage. The necessary rim or peripheral speed of a forward-curved bladed fan for this pressure is approximately 5,300 ft. per minute, whereas the peripheral speed of a full backward-curved bladed wheel is approximately 8,000 ft. per minute. It must be evident to the operator that a fan wheel operating at 5,300 ft. per minute is a much safer installation than one operating at 8,000 ft. per minute. The assurance of reliability is a much greater asset than experimentation with high peripheral speeds for mine ventilation. A breakdown on the ventilating system puts the mine out of commission, and the direct loss through the shutdown is the main item to be considered, not the cost of repair to the ventilating equipment.

Another item which must be taken into consideration is the cost of the backward-curved-bladed wheel. Due to the unusually high peripheral speed, a much larger shaft must be provided, and great care must be exercised in the manufacture of the fan.

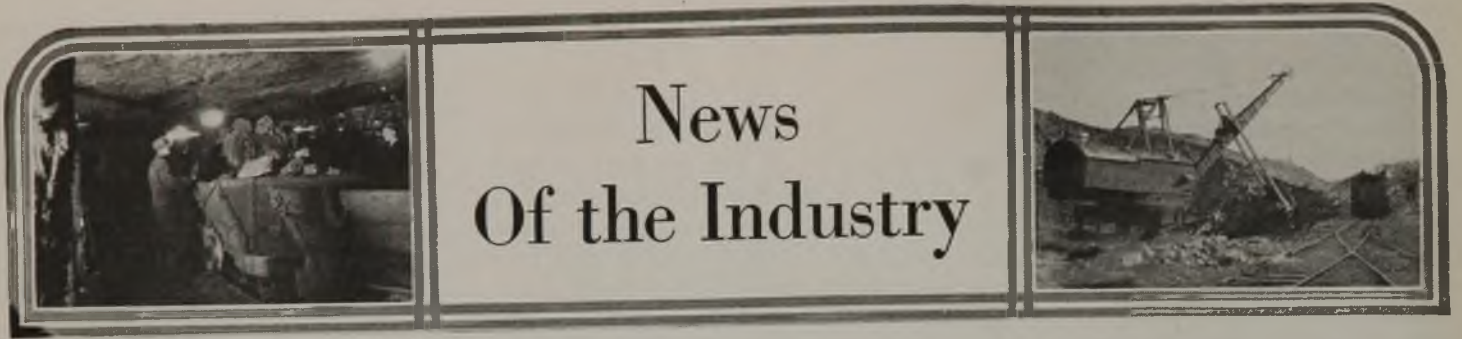
PERFECT BALANCE IMPERATIVE

No oil or foreign matter can be permitted to accumulate on blades which might jeopardize the balance of the wheel, and this calls for the highest class of bearings. It is found that the cost of this type of fan is from 50 to 75 per cent greater than that of a forward-curved-bladed fan of equal capacity.

Both types of fans are manufactured by the several fan builders and where conditions exist that call for a backward-curved-bladed fan, it will be specified. However, for the ventilation of the average mine, the forward-curved-bladed wheel will be found suitable for a wide range of pressures; efficient as to the volumes delivered and most reliable in operation.

W. J. MONTGOMERY.

The Jeffrey Manufacturing Co.,
Columbus, Ohio.



Emergency Coal Control Now Allowed By Statute; Continuous Fact-Finding Unconstitutional, Gandy Testifies

Washington, D. C., April 27.— Authority to exercise emergency control over the coal industry already has been written into the federal statutes, according to Harry L. Gandy, executive secretary of the National Coal Association. "Additional legislation, therefore, such as is possible under the Constitution," he told members of the House committee on interstate and foreign commerce at the hearings on coal regulation yesterday, "could have only the effect of duplication or of transferring the authority from places where it is now lodged to some other department or commission of the government." Any program for continuous, compulsory fact-finding, he contended, would be clearly unconstitutional.

Compulsory arbitration also is beyond the power of the government. The organic law of the Department of Labor, however, authorizes the Secretary of Labor to act as a mediator and to appoint conciliators in labor disputes "whenever in his judgment the interests of industrial peace may require it to be done." That law, Mr. Gandy pointed out, is still in force, and probably represents the limits to which the government may go in intervening in labor troubles.

New Legislation Not Needed

Control of distribution during times of emergency is to be found in sections 15, 16 and 17 of the Transportation Act of 1920. The validity of that control, exercised by the Interstate Commerce Commission, has been sustained by the Supreme Court of the United States in *Advent vs. United States*, 220 U. S. 127, and in *Koenig Coal Co. vs. United States*, decided this month. "The placing of additional authority concerning distribution in any other department of the government," remarked Mr. Gandy, "would provide for duplication unless the authority should be withdrawn from the Interstate Commerce Commission. I submit that inasmuch as the law has been in existence for more than six years, additional legislation thereon is in no wise needed."

The recommendations of the United States Coal Commission, said the witness, embrace a wide range from fact-finding to control of distribution and the licensing of dealers. They rest upon the proposition that coal is clothed with a public interest and that the pro-

duction and transportation of coal constitute a single service. But the Supreme Court has time and again contradicted that proposition, so that the recommendations "are at variance with the decisions of the highest tribunal of the land and hence outside the jurisdiction of Congress to legislate."

Mr. Gandy opened his presentation of the case for the bituminous operators with a review of the conflicting proposals and testimony given before the committee by proponents of further legislation. The only thing upon which there was agreement, he commented, was that there was no monopoly in bituminous coal. There was, he said, no danger of the exhaustion of our soft-coal resources for many generations yet unborn.

Compares Efficiency of Industries

Replying to the critics who have charged the industry with being inefficient and grossly overdeveloped, Mr. Gandy stated:

"If you will study the peaks and valleys of production in the manufacturing industries in the United States and compare them with the movement in the production of bituminous coal, you will find that the two lines approximately coincide. Until that person or that government arrives that can change the habits of the buying public and can underwrite continuous performance of manufacturing industry generally, there can be no complete stabilization of the load of production of bituminous coal."

Industry generally is developed to take care of peak loads. The so-called "overdevelopment" in soft coal has been a means of national security in times of strikes and abnormal demand. Moreover, the bituminous industry compares favorably with other business in the matter of excess capacity. During the twelve years ended Dec. 31, 1924, production of steel ingots and castings fluctuated between 33.70 and 85.76 per cent of capacity; refined copper, between 18.50 and 77.24 per cent, and bituminous coal, between 50.71 and 88.93 per cent of capacity. In the boot and shoe industry, 14.5 per cent of the existing plants could take care of 95 per cent of the demand; 2.8 per cent of the flour mills supply 62.1 per cent of the output and have reserve capacity to take care of the entire demand.

The American coal miner is better

paid and produces more tons per man than his foreign competitors. The United States leads in the use of mining machinery. If the American coal industry is so inefficient, why is there a steady stream of foreign operators coming over to study American methods? American coal is cheaper than foreign coal. The cost of fuel and power for all manufacturing industries is but 2.6 per cent of the value of the finished product and less than 11 per cent of the total railroad operating expenses.

Mr. Gandy thought it hardly fair to criticize the bituminous industry as "unorganized" when the Sherman anti-trust law effectively prevented any agreement on prices or production, although labor was protected under the Clayton act. He contrasted this situation with that prevailing in European coal-producing countries where the cartel, the syndicate and the comptoir are permitted and often directly encouraged. In the United States, on the other hand, the operator is caught between a combination of labor and a community of interests among large consumers. Nevertheless, wherever the operator may legally co-operate he is doing it through membership in local and national organizations, shippers' advisory boards and with government bureaus.

Proposals for compulsory fact-finding, argued Mr. Gandy, contravene the Fourth Amendment. "The inviolability of private business matters is a common law right, protected by constitutional guarantee. The Supreme Court has affirmed this with unswerving consistency. It rests not upon technical legal requirements but upon the broad, comprehensive, solid foundation of public policy, public comfort, liberty and the pursuit of happiness. The protection extends to corporations as well as to individuals: *Silverthorne Lumber Co. vs. United States*, 251 U. S. 385.

Cites Precedent Cases

Continuing his attack upon the constitutionality of fact-finding in his testimony this morning, Mr. Gandy read extracts from the decisions in *Gould vs. United States*, 255 U. S. 298; *Federal Trade Commission vs. Baltimore Grain Co.*, 284 Fed. 886, and *Federal Trade Commission vs. American Tobacco Co.*, 264 U. S. 298. He followed these up with citations from *Heisler vs. Thomas Colliery*, 260 U. S. 245; *Oliver Iron Co. vs. Lord*, 262 U. S. 172; *D., L. & W. vs. Yurkonis*, 238 U. S. 439; *Kidd vs. Pearson*, 128 U. S. 1; *Crescent Cotton Oil Co. vs. Mississippi*, 257 U. S. 125; *Coe vs. Errol*, 116 U. S. 517; *Arkadelphia Milling Co. vs. St. Louis Southwestern Ry. Co.*, 249

U. S. 134, and *McCluskey vs. Marysville & Northern Ry.*, 243 U. S. 36, to show that neither mining nor manufacture could be construed as interstate commerce.

Wolff Co. vs. Industrial Court, 262 U. S. 522, was drawn upon to prove that coal was not affected with a public interest. Mr. Gandy also gave his interpretation of the decisions in *United Mine Workers vs. Coronado Coal Co.*, 259 U. S. 344; 268 U. S. 963, which have been cited frequently as supporting the view that Congress has the power to enact regulatory legislation for the coal industry. "The court," he explained, "certainly did not mean to suggest, and the language used bears no such interpretation, that the mining of coal in all its phases would become subject to regulation even if there was some practice that might be likely to obstruct, restrain or burden interstate commerce. The federal power extends only to a removal of such obstructions or restraint and does not reach beyond a regulation of the production of coal in other respects.

"The bituminous coal industry," said Mr. Gandy in concluding his direct statement, "asks nothing more than the right to live, a free agent for good among a free people. The bituminous industry does not believe it would be wise to entrust the domination of the fuel supply of the United States to one or even to a few persons."

Mr. Gandy Questioned

Mr. Gandy, who was still on the stand when the committee recessed for the day, was questioned closely by Congressmen Hoch (Kansas), Huddleston (Alabama) and Newton (Minnesota) on the legal phases of coal control. If the government could not compel mediation and fact-finding, they wanted to know upon what basis it could act voluntarily in those matters. The witness was unable to give the legal basis for such voluntary activities. Mr. Huddleston thought the protection of the Fourth Amendment extended only against unreasonable search and seizure. Mr. Newton intimated that the right of Congress to gather facts as the basis for specific legislation might be broadened to continuous fact-finding by an agency of the government.

The power of the Interstate Commerce Commission, explained Mr. Gandy, is over distribution, not production. He did not think it necessary to re-enact a federal fuel distribution bill although the Interstate Commerce Commission had been doubtful of its authority in 1922, because the Supreme Court has since interpreted the emergency powers given the Commission under the Transportation Act. Whether the Commission could divert shipments as well as set up priorities was a question upon which the witness would express no opinion.

Mr. Newton asserted that neither the spokesmen for management nor for labor had offered any solution for the recurring interruptions to production and intermittent employment at high daily rates. Mr. Gandy replied that the Sherman Law barred action by the operators. Repeal or modification of that statute would be helpful when consumption more nearly approaches pro-



Harry L. Gandy

ductive capacity. "When the normal pre-war rate of increase in demand is restored," said Mr. Gandy, "some of the troubles will be lessened."

"Assuming there is a national strike in both anthracite and bituminous; under those circumstances there would be no interstate commerce because, as we conceive it, you can't have interstate commerce without coal. Do you still feel that the federal government would be powerless?" inquired Congressman Newton.

"In so far as compulsion is concerned, yes," replied Mr. Gandy.

Congressman W. R. Coyle, Pennsylvania, at the opening of the hearing, on Monday, filed without reading a statement condemning several of the bills referred to the committee and pled for a settlement of the industry's troubles within the industry.

After the bituminous operators have concluded the presentation of their case the committee will hear representatives of other branches of the industry. Daniel T. Pierce, vice-chairman, and Walter Gordon Merritt, general counsel, Anthracite Operators' Conference, probably will be the chief spokesmen for the hard-coal industry. Ira Cochran, commissioner, American Wholesale Coal Association, will appear for the wholesalers.

Morrow in Pittsburgh Coal Co.

John D. Morrow, nationally known in the coal industry, has been appointed vice-president in charge of sales of the Pittsburgh Coal Co., to succeed James H. Woods, resigned. Mr. Morrow was formerly executive secretary of the National Coal Association, which position he resigned to organize the Morrow-Callahan Coal Co., of which he was president. Later he joined the Joy Machine Co., and became its vice-president.

Sealed proposals will be opened by the Supt. of Lighthouses, Charleston, S. C., 12 o'clock noon, May 18, 1926, for approximately 4,000 tons of steam coal (bituminous) and 150 tons of stove coal (anthracite), delivered on board vessels at Contractor's Wharf, Charleston, S. C., in quantities of 10 to 100 tons as ordered during fiscal year 1927. Information upon application.

Baldwin Raises Hopes Of Breaking Deadlock In British Coal Industry

Hope was felt early this week that an agreement ending the three-weeks impasse in negotiations between the British coal miners and operators would be reached before May 1, when the term of the present subsidy expires. This optimism was based on the untiring efforts at mediation by the Premier, Stanley Baldwin, who held conferences on Monday with the industrial committee of the Trades Union Congress' General Council, which is acting in behalf of the miners' executives, and with the representatives of the mine owners.

Reopening of national negotiations on wages was the chief subject of discussion on Monday, according to a joint statement issued that evening by the industrial committee and the miners' federation executives. An attempt by the operators to force a district instead of a national settlement of wages has been the stumbling block to an agreement. After a conference with representatives of the operators Mr. Baldwin told the industrial committee that the colliery owners were studying his suggestions and stated that he proposed to resume the joint conferences the following day, when he expected a reply from the operators.

Although the present subsidy expires on May 1, it is believed in some quarters that continuance of financial assistance by the government may be necessary, perhaps under another name. The mines department of the government is engaged in drafting a scheme embodying the government's idea of a temporary loan to assist in the organization of the industry, the interest on which would be provided by the government, the operators and the miners each paying one-third. Definite reorganization would be made a condition of granting the loan.

Late last week a special delegate conference of the miners' federation was summoned for Wednesday to hear various reports and decide on the miners' policy. On Thursday a conference of executives of trade unions affiliated with the Trade Union Congress was to be held. Should the negotiations break down, it was expected that this conference would decide on the action to be taken to support the miners in their struggle.

Six Weeks' Summer Course At West Virginia University

The annual summer course in coal mining at West Virginia University, Morgantown, W. Va., will be held from June 14 to July 26. This course is intended to fit miners for fireboss and mine certificates and is always followed by a state examination for these certificates. The course will include a study of West Virginia mining laws, explosives, methods of mining, geology of coal, timbering, mine gas, electricity in mines, drainage, pumping, ventilation, hauling, hoisting, mine fires, first aid, mine rescue, safety lamps, pillar drawing, mine management, safety organizations and administration.

Tangible Evidence Lacking Of Government Influence In Jacksonville Agreement

By Paul Wooton

Washington Correspondent of *Coal Age*

Frequent and reiterated denials that the government had any part in the Jacksonville agreement, other than to suggest friendly mediation, apparently have not been accepted by the United Mine Workers. Despite the fact that no one has been able to cite any letter or utterance from a government source to contradict the administration's declaration that nothing ever was said to anyone as to terms, Philip Murray, vice-president of the United Mine Workers, in his testimony before the Interstate and Foreign Commerce Committee of the House last week, baldly stated that it was the desire of Mr. Hoover that the contract be continued three or four years. He also declared that Mr. Hoover had suggested, in a private conference with John L. Lewis, a continuation of the old rates. As to the latter statement the committee will need go no further than to Mr. Lewis to get a denial. Mr. Lewis never has charged that Secretary Hoover ever advocated terms or even discussed terms with him, so far as is known.

Government Connection Not Proved

By way of substantiation for his statement Mr. Murray also cites the position of Messrs. Donaldson and Armstrong, of the Pittsburgh Coal Co., in urging a five-year contract because "it was the desire of the government." He failed to bring out that whatever Messrs. Donaldson and Armstrong said at Jacksonville was an expression of their opinion of what the government wanted. Neither Mr. Donaldson nor Mr. Armstrong ever has made any claim of having anything tangible on which their opinion was based. The Pittsburgh Coal Co. never has claimed to have been influenced to go to Jacksonville by anything more than the open correspondence between C. J. Goodyear, of the Pittsburgh Coal Producers' Association, and Secretary Hoover in which Mr. Hoover said: "My advice is that your representatives should attend this conference and, together with the other representatives from the Central fields, should make every proper endeavor to continue an agreement with the United Mine Workers and thus avoid a suspension of coal production."

Mr. Murray, however, in his effort to establish that the government is a party to the Jacksonville agreement and ought to enforce it, brings in a new point. He tells of a letter which the President sent Mr. Lewis complimenting him on the arrangement effected at Jacksonville. This letter, it develops, was nothing more than the perfunctory, courteous acknowledgment of Mr. Lewis' telegram telling of the happy outcome of the negotiations. The operators also sent a similar message, and a courteous letter of acknowledgment also was sent to them by the President.

It is going to be difficult to establish that such letters commit the government to the Jacksonville agreement. Frequently a hundred letters of that

Socony to Burn Coal

The Standard Oil Co. of New York is converting the fireboxes at certain of its refineries to burn coal instead of fuel oil, according to a story in the *New York Times*, April 16. This is being done because the company finds it cheaper to burn coal than oil at present, as the price of the latter has advanced in the open market during recent months. This switching from oil to coal, it was explained, takes place often in the company's plants, as they are constructed in a manner to enable the company to burn either coal or oil, whichever is cheaper.

The latest switch from oil to coal, however, is especially significant because the company can obtain its supply of fuel oil at primary prices. The fuel-oil market along the Atlantic seaboard and at interior points has been strong for several months, due to the decline in crude-oil production in this country and in Mexico as well as to the larger amount of crude oil converted into gasoline. In former years, when the demand for gasoline was smaller, oil companies found it unprofitable to refine heavy crude oil for gasoline. Improved cracking processes, however, have now made the operation more profitable.

type leave the White House in a day. In this instance the President hardly could have replied to the enthusiastic telegrams he received from Jacksonville by asking why they entered into an agreement or by stating that his letter was not to be interpreted as an approval of the terms of an agreement of which obviously he knew no details. One friend might write another that he had succeeded in negotiating a loan with a bank. The friend might send a congratulatory reply, but it hardly could be regarded as a pledge to help pay back the money. Incidentally Mr. Lewis seems to have regarded this letter of courtesy as a government document entitling him to call on the federal authority to enforce this particular labor agreement.

Both Sides Welcome Peace

The government could produce from its files evidence that both the miners and the operators were very happy over the Jacksonville agreement for several months after it was put into effect. Some persons in the industry wrote extravagantly of their love for peace and how splendidly it had been consummated. Then came the slump in prices and with it a change of heart, but some expressions of opinion during the first six months of the agreement might prove embarrassing if produced today.

Bids will be opened May 5 for supplying the School Department of the City of Boston with 28,000 tons of bituminous coal and 6,000 tons of anthracite or coke.

Live Topics Scheduled for Discussion by Engineers

Plans for the sectional meeting of the Southern West Virginia and Eastern Kentucky Chapter of the American Institute of Mining and Metallurgical Engineers, at the Kanawha Hotel, Clarksburg, W. Va., on May 6 and 7, which were completed last week, reveal that the opening session at 10 a.m. will be devoted to safety. Robert M. Lambie, of Charleston, chief of the state Department of Mines of West Virginia, and Dr. T. T. Read, of New York City, assistant secretary of the American Institute of Mining Engineers and formerly safety director of the U. S. Bureau of Mines, will make the chief addresses.

At the afternoon session, from 2 to 5 o'clock, the following subjects will be discussed: "Construction and Development of Byproduct Ovens," L. D. Malleis, Pittsburgh, Pa., chief chemist of the Koppers Co., who will illustrate his address with lantern slides; "Marketing the Output of Byproduct Ovens with Particular Reference to Coke and Gas." A banquet will be held at 7 p.m. at the Kanawha Hotel, with J. G. Bradley, of Dundon, W. Va., president of the West Virginia Coal Association, as toastmaster. The principal speakers at the banquet will be Samuel A. Taylor, of Pittsburgh, Pa., president of the American Institute of Mining and Metallurgical Engineers; former Governor William A. MacCorkle, Charleston, and W. H. Cunningham, Huntington, W. Va., secretary of the West Virginia Coal Association.

At the morning session of May 7, Ralph Sweetser, Columbus, Ohio, will speak on the "Evaluation of Coal"; Howard N. Eavenson, of Pittsburgh, Pa., consulting engineer, on "The Mechanization of Mines"; representatives of the National Coal Association and the Society of Mechanical Engineers will speak on "The Effect of Mechanization on the Product of the Mine," and W. W. Freeman, of Cincinnati, president of the Union Gas & Electric Co., will speak on "The Relation of Artificial Gas Either from Coke Ovens or Producer Plants to Natural Gas and the Eventual Replacement of Natural Gas by Other Types of Gas and the Proper Location of Plants and Their Equipment."

C. & O. to Buy 13-Mile Line

The Interstate Commerce Commission has entered an order authorizing the Chesapeake & Ohio Ry. to acquire control of the Pond Fork & Bald Knob R.R. by purchase of its common stock for \$250,000. The road extends from West Junction to a point near Rock Lick, W. Va., a distance of approximately 13 miles. The C. & O. filed a petition with the Commerce Commission about two months ago asking authority to acquire the Pond Fork & Bald Knob, which is owned by the Cole & Crane interests. The latter road, which is in Boone County, has a junction with the Chesapeake & Ohio at West Fork, which is connected by a branch line to Madison.

Grant Honored for Settling Hard-Coal Strike

Outside interference by governmental and other agencies is the chief cause for the failure of capital and labor to adjust industrial disputes quickly and effectively, said Richard F. Grant, president of the Susquehanna Collieries Co., speaking at the fortieth annual dinner of the Ohio Society, at the Waldorf-Astoria, New York, on April 26. Mr. Grant, whose home is in Cleveland, was the guest of honor, and many tributes were paid to his work in bringing about a settlement of the recent anthracite strike.

"Labor knows its own needs," Mr. Grant said, "and so does capital. Neither wants a strike. Let us assume the time has come to negotiate a contract between them in a given industry. If they could only get together somewhere, away from reporters, away from well-intentioned politicians, interfering under the cloak of public interest, they could quickly make that contract."

"But that isn't what happens. It isn't what happened in the anthracite strike. Some one comes along; usually some one in public office who wants to walk the stage. He offers a plan. It is unsound from every economic standpoint, but it appeals to one side and is seized upon eagerly. That starts a battle and the first step is taken to impede rapid and sane adjustment of the trouble. From then on the difficulties increase. Along comes another well-meaning intervener, and the result is a long-fought contest."

"Labor and management," continued Mr. Grant, "can and must determine rules of their own game."

Mr. Grant dismissed the possibility of government operation of coal mines with the remark that experience with government railroad operation had answered that question with an emphatic negative.

National Retailers Map Out Live Convention Program

A program crammed with topics of practical interest discussed by leaders in the industry has been mapped out for the ninth annual convention of the National Retail Coal Merchants' Association, which meets at Washington, D. C., May 17-19.

Among the subjects listed are: The future of anthracite; importance of retail representation in local and national business and civic associations; trade-marked coals from the standpoint of the producer and the distributor; what part retailers should take in the distribution of coke; how to meet oil competition; the future of screened low-volatile coal; retail advertising; retail salesmanship; how salesmen should be compensated; efficient storage and handling; the future of bituminous coal in anthracite-consuming territory.

Among the men who have been asked to address the convention are Daniel T. Pierce, vice-chairman, Anthracite Operators' Conference; Martin L. Garvey, president, New River Coal Operators' Association; Ray D. Kelly, president, Mid-West Coal Association; Owen F.

Industrial Coal Stocks Ebb To 46,313,000 Tons

Coal stocks in the hands of industrial consumers on April 1 totaled 49,150,000 tons, according to the National Association of Purchasing Agents. Based on the average rate of consumption during March, this was sufficient for 33 days, comparing with stocks on March 1 of 60,014,000 tons, or a 35-day supply. Supplies at steel plants on April 1 were good for 26 days; electric utilities and coal-gas plants, 47 days; byproduct coke plants, 20 days; railroads, 23 days; other industries, 33 days.

Industrial coal consumption during March is estimated at 46,313,000 tons, compared with 43,747,367 tons in the short month of February. Although anthracite output increased to a marked extent during March the consumption of bituminous coal fell off to a greater degree than the use of hard coal gained.

Fox, executive vice-president, Chicago Coal Merchants' Association; Walter Barnum, president, Pacific Coast Co.; W. A. Clark, president, New England Coal Dealers' Association.

Other speakers include W. C. Atwater, president, Pocahontas Operators' Association; Hiram Blauvelt, vice-president, Comfort Coal & Lumber Co.; Marshall Keig, vice-president, Consumers Co.; T. F. Farrell, vice-president, Burns Bros.; M. E. Robinson, Jr., president, Milton E. Robinson Coal Co.; Roderick Stephens, vice-president, Stephens Fuel Co.; W. M. Bertolet, secretary, Pennsylvania Retail Coal Merchants' Association; C. Solon Kellogg; J. C. Tattersall, president, Tattersall Co.; G. W. Malcomson, president, Detroit Coal Exchange; W. R. Feuquay, secretary, St. Joseph Coal Service Bureau; C. Benson Ferebee, president, Nottingham & Wren Co., and Harold Almert, chief, Fuel Service Bureau.

Interesting Talks at Meeting Of Fayette Institute

R. M. Lambie, chief of the state Department of Mines of West Virginia, was the headliner at the Fayette County Mining Institute April meeting held in Mt. Hope, W. Va. Mr. Lambie, who helped organize the association more than six years ago, when he was serving as mine inspector in the local district, spoke on mine explosions and their prevention. After pointing out that coal dust along the passageways, on ribs, roof and floor, is an ever-present danger due to its liability of being thrown in suspension in the mine air, thus serving as an agent to propagate flame or an explosion throughout the mine, Chief Lambie emphasized the value of rock-dusting in limiting the effects of fires and explosions. He stated that the cost of rock-dusting was nominal and urged its use in mines considered dangerous from the standpoint of gas and dust explosions.

W. D. Givan, Charleston, W. Va., described the new match-head detonator. In this device the two wires leading to the detonating charge in the cap are provided with a lead shunt which by short-circuiting the electric current prevents ignition of the explosive charge by accidental cause. A shell of insulating material placed around the detonating charge guards against its discharge in case the copper casing accidentally comes in contact with an electric current.

R. J. Holmes, of Pittsburgh, Pa., gave an interesting talk on the self-rescuer, a device designed as a protection against carbon-monoxide poisoning. Another feature was a two-reel motion picture, "The Story of Sulphur," shown through the courtesy of the Pittsburgh Station of the U. S. Bureau of Mines.

Sealed proposals will be opened by the Supt. of Lighthouses, Custom House, Boston, Mass., at 2 p.m., May 3, 1926, for furnishing 3,500 tons of bituminous coal at New Bedford, Mass. Information upon application.



Alaska Breaker Passes Away in Clouds of Smoke

This breaker of the Philadelphia & Reading Coal & Iron Co., at Mt. Carmel, Pa., was destroyed by fire on April 17. Within two hours \$350,000 of damage was done and the breaker had been burned almost level with the ground.

169 Miners Meet Death By Accidents in March; Decline in Fatality Rate

Accidents at coal mines during March, 1926, caused the death of 169 employees, compared with 164 in the preceding month, according to reports furnished by state mine inspectors to the U. S. Bureau of Mines. The total production of coal for the month was 54,927,000 tons, of which 46,137,000 tons was bituminous and 8,790,000 anthracite. There were 132 fatalities in the bituminous mines and 37 in the anthracite mines. Fatality rates per million tons of coal produced were 2.86 and 4.21, respectively, with 3.08 for the industry as a whole, compared with 3.37 in February.

The accident record for the first three months of 1926 showed 658 fatalities while that for the corresponding period of 1925 showed 630. The production of coal for these months was 157,422,000 tons and 150,178,000 tons, respectively, indicating a rate for 1926 of 4.18 and for 1925 of 4.20. The three months' fatality rate in 1926 for bituminous mines alone was 4.17 based on a production of 146,376,000 tons and 4.35 for anthracite, based on an output of 11,046,000 tons. The corresponding rates for the first three months of 1925 were 3.77 for bituminous mines and 6.70 for anthracite mines.

Comparing the figures for all mines for the three-month period, January to March, with those for the same months last year, a reduction is noted in the per-million-ton fatality rates from all of the principal causes except gas and dust explosions, which mate-

Oil More Costly Than Coal As Domestic Fuel

The use of oil for domestic heating in the average New England home costs annually about \$200 more than the use of bituminous coal and about \$150 a year more than the use of anthracite, according to figures given to a representative of the National Coal Association by R. T. Haslam, professor in chemical engineering, Massachusetts Institute of Technology, and a recognized authority on the subject. In arriving at these figures Professor Haslam takes into consideration both the depreciation of an oil burner and interest charges. He also qualifies his statement to the effect that the margin between ultimate oil and coal costs will be slightly reduced if the coal is not consumed smokelessly. His convincing answer to the question as to the most economical fuel is a statement that he burns low-volatile bituminous coal in his home.

rially increased due to the major disasters. The comparative rates were as follows:

	Year 1925	Jan.- Mch. 1925	Jan.- Mch. 1926
All causes.....	3.811	4.195	4.179
Falls of roof and coal.....	1.842	1.851	1.734
Haulage.....	0.615	0.732	0.641
Gas or dust explosions.....	0.590	0.759	1.308
Explosives.....	0.174	0.246	0.101
Electricity.....	0.144	0.146	0.101

Pittsburgh Terminal Corp. Closes Avella Mine

The Avella mine of the Pittsburgh Terminal Coal Corporation has been closed, due to a falling off in business, the company announces. It was stated, however, that the closing is not permanent.

The closing down of this mine has attracted more than ordinary attention in the Pittsburgh market because the Pittsburgh Terminal Coal Corporation has been running its seven mines in this district on the Jacksonville scale almost full for nearly two years, while other mines working on the same scale were choking from the competition of the non-union operations.

According to officials of the company, it is planned to continue operations at the other six mines.


Railroad Coal Cost Higher

Average cost of coal used in March by Class 1 railroads of the United States in locomotives in transportation train service, according to a report by the Interstate Commerce Commission, was as follows, by districts: Eastern district, \$2.69; Southern district, \$2.21; Western district, \$2.91; United States, \$2.63. Compared with the preceding month this was an increase of 4c. in the Eastern district; 1c. increase in the Southern district; 1c. decrease in the Western district; 2c. increase in the country as a whole. Compared with February a year ago there was a decrease of 19c. in the Eastern district; 15c. in the Southern and Western districts, and 18c. for the United States.


Coal-Mine Fatalities During March, 1926, by Causes and States

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

State	Underground										Shaft				Surface						Total by States					
	Falls of roof (coal, rock, etc.).	Falls of face or pillar coal.	Mine cars and locomotives.	Gas explosions and burning gas.	Explosives.	Suffocation from mine gases.	Electricity.	Animals.	Mining machines.	Mine fires (burned, suffocated, etc.).	Other causes.	Total.	Falling down shafts or slopes.	Objects falling down shafts or slopes.	Cage, skip or bucket.	Other causes.	Total.	Mine cars and mine locomotives.	Electricity.	Machinery.	Boiler explosions or bursting steam pipes.	Railway cars and locomotives.	Other causes.	Total.	1926	1925
Alabama.....	2		1								4													4	6	
Arkansas.....		1									1														1	0
California, Idaho, and Nevada.....																									1	7
Colorado.....	2	1	1								4					2									6	7
Illinois.....	7		1	3							11														11	1
Indiana.....	4		1		1						6														6	11
Iowa.....																									0	1
Kansas.....	1										1														1	1
Kentucky.....	5		5								10														10	12
Maryland.....																									0	0
Michigan.....																									0	1
Missouri.....																									0	1
Montana.....	1										1														1	0
New Mexico.....	2										2														2	2
North Dakota.....																									0	0
Ohio.....	3		4								7														0	7
Oklahoma.....	1										1														1	7
Pennsylvania (bituminous).....	12	1	2	1	1						17							1				1	1		2	0
South Dakota.....																						3	4		21	28
Tennessee.....																									0	0
Texas.....																						1	1		0	1
Utah.....																									0	3
Virginia.....	3										3														0	4
Washington.....		1									2														3	3
West Virginia.....	17	2	10	19	1		1	1			51														2	1
Wyoming.....	1		1								2											1	1		51	61
Total (bituminous).....	61	6	26	23	3	2	1	1	1	1	123			2			2	1			1	5	7	132	158	
Pennsylvania (anthracite).....	18	5	6		3						32						2	1			1	3			37	41
Total, March, 1926.....	79	11	32	23	6	2	1	1	1	1	155		2	2			4	2	1		2	8	10	169		
Total, March, 1925.....	76	11	31	40	8	2	1	1	1	6	183		1	2			3	2	1		2	5	13	169	199	



News Items From Field and Trade



ILLINOIS

The Clarkson Coal & Mining Co., Nashville, installed a new shortwall cutting machine April 1.

The Cripple Creek mine, at Bryant, has closed down for the summer.

The Binzel Coal Co., Farmington, has filed a petition in bankruptcy, listing its liabilities at \$115,620, of which \$104,113 is in unsecured claims. A payroll of \$10,483 also is listed. The assets are stated to be \$124,410, including real estate valued at \$53,100 and tools and machinery at \$70,000.

The Kathleen mine of the Union Colliery Co., at Dowell, was closed down April 17 for repairs and improvements. It probably will reopen early in May.

INDIANA

The Paxton Coal Co., of Sullivan, has filed a certificate of dissolution with the Secretary of State.

Bids for providing coal for Indiana state institutions will be received by the state joint purchasing committee May 1 in Indianapolis. The committee received bids in March, but all bids were rejected because the board felt they were too high. The contracts terminate May 1, but the committee will not consider new bids until about May 19. Coal that will be needed in the interim is to be bought either under the old contract or in the open market.

The coal miners employed at the Carlisle mine completed the withdrawals of their liens recently, and as a consequence work preliminary to reopening the mine has been started. The mine is being operated by the Carlisle Fifth Vein Coal Co., composed of Carlisle men, who hold a one-year lease on the property. The new directors are W. L. Cooper, J. A. Bummere, R. A. Duffer, L. J. Kixmiller, C. M. Ott, S. A. Sproatt and D. O. Schilling. Mr. Duffer is president; Mr. Kixmiller, vice-president, and Mr. Schilling, secretary-treasurer.

The Western Indiana Mining Co., of Terre Haute, has filed a final certificate of dissolution with the Secretary of State.

KANSAS

The Reliance Coal Co. on April 17 sold its steam-shovel mine east of Pittsburgh and near Litchfield to J. J. Stephenson, Harry Miller and James Fennimore, all of Pittsburgh, who are the principal owners of the Litchfield Coal Co., The consideration was \$150,000. The plant includes a 225-Bucyrus

shovel, loading machinery, trackage and tipple. There is considerable acreage yet to be worked. With this sale the Reliance Coal Co. disposed of its last steam shovel operation but still operates a deep mine six miles northwest of Pittsburgh and has large coal land holdings in that vicinity.

The Kansas Supreme Court in a recent decision on a compensation case held that X-ray photographs are admissible as evidence toward proving injury to lungs in mine explosions. Previously such photographs had been admitted as evidence only on bone fractures or displacements.

KENTUCKY

The Kentucky-Knox Coal Co., of Barbourville, has leased a mine near Artemus, with an output at present of three cars per day, which will be increased.

The South Diamond mine, operated by the West Kentucky Coal Co. in Hopkins County, has been shut down after continuous production for forty years. The company's policy of cutting operation costs was given as the reason for the close-down. Four mines have been closed by the company recently.

Fire of undetermined origin April 17 destroyed the tipple and was burning in the Zion coal mine, six miles from Henderson, causing damage estimated at \$20,000 and throwing seventy-five persons out of employment. The flames were under control at 5 p.m. The mine is owned by John and Thomas Baskett, of Henderson, but is leased to C. A. Moss, Jr., and others of Zion. No one was in the mine when the fire started.

MINNESOTA

Two furnaces are being built at the University of Minnesota, Minneapolis, to test the smelting of low-grade iron ore without coke. Should the experiments prove successful it is probable that there will be a new market for vast quantities of fuel.

NEW YORK

The contract for furnishing 25,000 tons of high-volatile slack coal to the Buffalo schools during the coming school year has been awarded to the firm of E. L. Hedstrom on its bid of \$4.34 delivered. The contract for furnishing 20,000 tons of low-volatile mine-run (Diamond smokeless) coal to the schools was awarded to the Weaver Coal Co. on its bid of \$5.59 delivered.

OHIO

The Pennsylvania R.R. has entered into a contract for the delivery of ten carloads of smokeless coal a day at Cincinnati, which marks the end of a contest of years' standing with Gordon Rowe, head of the city Smoke Department. Having contended for a half dozen years that the railroads are the largest contributors to the "smoke nuisance" of Cincinnati, Mr. Rowe has urged not alone the installation of smoke-consuming devices but the use of low-volatile coal for engines and roundhouses. According to R. C. Barnard, superintendent of the local division of the Pennsylvania terminal, locomotives, roundhouses and all equipment will use smokeless coal.

OKLAHOMA

Petition for a receivership of the Eastern Coal & Mining Co., owner of the Degnan-McConnell Mine at Wilburton, where more than 90 miners lost their lives in January, was asked in federal court at Okmulgee last week.

PENNSYLVANIA

May Settle Tax Mix Up.—Mayor E. B. Jermyn and City Solicitor C. B. Little, of Scranton, have negotiations under way with coal companies operating in the city for the settlement of litigation resulting from an appeal by the companies from an increased assessment on coal lands. In 1924 the assessors boosted the valuation on coal lands from \$320 to \$800 per foot acre. The companies appealed and have since been paying taxes on a basis of a \$200 assessment, so that the city, whose 1925 and 1926 budgets were based on a \$320 figure, has about \$220,000 due from the companies on this valuation.

Annual Hard-Coal Output Low.—Output of anthracite in Pennsylvania last year was 61,351,543 net tons as compared with 87,277,440 in 1924. The effect of the strike was to reduce production by at least 25,925,897 tons, according to figures just made public by the State Department of Mines. The figures show that the production for 1925 was in excess of normal for the first eight months of the year. The strike, commencing Sept. 1, 1925, was still in existence at the end of the year, and its effects will be reflected in the figures for this year, as it did not end until Feb. 18.

The Youghiogheny & Ohio Coal Co., it is reported, plans to establish a mine on the 1917 scale in the Pittsburgh district within a short time, probably the first week in May. The mine said



Check Cabin of Standard Coal Co., Standardville, Utah

All the buildings at Standardville are well built. This one, though back in the hills, is not an exception. The country is by no means arid. Note the two trees behind the building.

to have been selected is the mine at Wyano, which heretofore has been working on the union scale. The same company has operations in the Pittsburgh district which are working on the Jacksonville scale.

While plans are not yet announced, it is believed that the next mine to be opened by the Pittsburgh Coal Co. will be a river mine. The company has a number of river mines, located principally on the Monongahela River, but of the 11 mines now in operation on the 1917 scale none is shipping by river. The company, it is believed, would find a steady market for its river coal if operations were resumed, but the chief difficulty to date is said to have been that the river mines have not been in auspicious labor territory.

The Union Trust Co. of Pittsburgh and S. A. Taylor, of Bolivar, have been appointed receivers of the Ridgeview Coal Co., of Bolivar, near Blairsville. John M. Raybourn, of Pittsburgh, and W. B. Hammond, of Bolivar, were appointed appraisers of the concern.

Madeira, Hill & Co. recently closed down its breaker at Marion Heights. Hereafter the coal formerly prepared at this plant will be sent through the Greenough breaker which is of concrete and steel construction. Not many years ago the Marion Heights breaker was considered one of the most modern in the lower anthracite field but now it doesn't compare with breakers in which the latest machinery has been installed. The Greenough breaker has a capacity of 3,000 tons of coal each day. The breaker was put to several hard tests several weeks before the old breaker was abandoned.

Will Rebuild Alaska Breaker.—The Philadelphia & Reading Coal & Iron Co. has decided to rebuild the Alaska breaker at Mount Carmel, recently destroyed by fire at a loss of \$350,000. The new structure will be of steel construction and modern in all respects. The origin of the fire has not been determined, but the general opinion is that sparks from a passing engine ignited the structure. The Alaska breaker was equipped with sprinklers,

but the flames gained such headway that employees could not reach the main valve which regulated the sprinklers. Several hundred men and boys have been thrown into temporary idleness as a result of the breaker's being destroyed.

In order to replace worked-out areas officials of the Lehigh Valley Coal Co., at Centralia, are contemplating sinking the Continental shaft another lift, or 125 ft. deeper than the present level. The work probably will be started within a few weeks. According to H. J. Heffner, superintendent of the coal company, the coal will be taken from this new level and sent underground to the Centralia breaker for preparation. The present shaft at the Continental is 275 ft. deep.

VIRGINIA

Virginia Iron, Coal & Coke Co. reports for the quarter ended March 31, 1926, net loss of \$10,017 after interest, etc. This compares with net income of \$9,752, or 39c. a share on \$2,500,000 preferred stock, in preceding quarter, and \$217,306, or \$1.75 a share, on common after allowing for preferred dividends in the first quarter of 1925.

WEST VIRGINIA

The Morgantown Coal Co., with general offices at Beckley and operating a mine at Morganette, Fayette County, has filed a voluntary bankruptcy petition at the office of the clerk of the U. S. District Court in Charleston. The inventory gives the company's indebtedness at \$94,862.09 and its assets as \$57,688.03, of which \$15,000 represents real estate, \$25,000 its leasehold and improvements and \$10,000 the value of the machinery and tools.

Organization Drive Deferred.—Although it had generally been expected that the United Mine Workers would soon launch another effort to organize the non-union workers in northern West Virginia, Van A. Bittner, chief international representative, states that

"It is impossible to say at this time when such a call will be issued. We were expecting it early in May, but circumstances may delay it and the present economic situation can hardly be considered a propitious time to issue a strike call. With practically all the union and non-union mines closed down, a strike call would not be productive of any substantial results. Frankly, we would want such a strike to have a certain effect. What could be expected from a strike now, with coal production almost at a standstill without a strike?"

A motion has been heard in the Circuit Court of Fayette County by Judge Early to discharge the receivers for the Tioga Coal Co., of Tioga, Nicholas County. The receivers are R. L. Porter, of Charleston, and a Mr. South, of Philadelphia. They were represented in court by Joseph Kenna and J. Raymond Gordon, of Charleston. T. W. Ayers, of Richwood, represents the creditors.

Formation of a safety club under the supervision of the West Virginia Department of Mines was started recently at the Booth mine of the River Seam Coal Co., at Almina. Three hundred and twenty-five miners were present. Thomas Jarrett, William B. Riggelman and Lazear McGee, of the mine safety department made addresses at the organization meeting.

"Eviction notices issued by the Cleveland-Morgantown Coal Co. at Pursglove, Monongalia County, are without effect, we believe, as this company has a signed agreement with the United Mine Workers, and every legal defense known will be made to protect the rights of the miners and their families," declared Van A. Bittner, head of the union forces in West Virginia, last week.

E. M. Posey, of Charleston, has been awarded the contract to erect a conveyor line 1,200 ft. long for the Webb Coal Mining Co. at Garrison, Boone County.

Stockholders of the Crab Orchard Coal & Land Co. met on April 16, in Charleston, and elected these directors: Isaac Prince, Beckley; W. O. Abeny and E. G. Smith, of Charleston; S. Dixon, Price Hill, and Richard Ellison, Cincinnati. These officers were chosen: President, Isaac Prince; secretary and treasurer, J. M. Clark. The company owns 8,000 acres of coal land in Raleigh County. The Stonega Coke & Coal Co. mines coal on the holding company's acreage.

Stockholders of the Cabin Creek Consolidated Coal Co. re-elected the following directors at the recent annual meeting: James McKay, Malcolm Jackson, B. B. Brown, E. W. Knight, G. H. Caperton, W. A. Ohley, Josiah Keeley, Azel Ford, Ockawaha, Fla., and C. R. Moriarity. Officers were re-elected as follows: President, Josiah Keeley; first vice-president, C. R. Moriarity; second vice-president, Azel Ford; third vice-president, W. A. Ohley; secretary and treasurer, E. B. Needham.

Coal loading along the Norfolk & Western Ry. in March aggregated 3,428,305 tons. Production in the various districts was as follows: Pocahontas, 31,019 cars; Tug River, 12,453 cars;

Thacker, 13,513 cars; Clinch Valley, 3,664 cars; Kenova, 4,922 cars. Privately owned cars loaded totaled 1,496. Coal produced by the largest concerns in that month was as follows: Pocahontas Fuel Co., 6,661 cars; United States Coal & Coke Co., 8,109 cars; Fordson Coal Co., 2,844 cars; Consolidation Coal Co., 2,541 cars.

A certificate was filed recently in the office of the secretary of state in Charleston showing that C. M. Moderwell & Co., coal wholesalers, with offices in the First National Bank Building, Huntington, had surrendered its authority to transact business in the state.

The Vester Coal Co., of Morgantown, has been dissolved by a deed of sale, according to papers filed in the office of the Secretary of State on April 13. W. R. Burr has acquired the property, which is located in Monongalia County, according to the deed.

John L. Lewis, president; Philip Murray, vice-president and Thomas Kennedy, secretary-treasurer of the United Mine Workers, filed a petition in the Kanawha Circuit Court, in Charleston, on April 15, asking for authority to sell the oil and gas in certain property at River Side, in the Cabin Creek district, to Godfrey L. Cabit, Inc. Objections must be filed to the sale or persons appear May 22.

The Birch Fork Coal Co., Charleston, has called in the remaining bonds of \$29,000 for payment. The company will retire these bonds, it is said by T. E. B. Siler, the president.

The Webb Coal Co., operating at Garrison, in Boone county, has awarded a contract for the installation of a conveyor line, which is to be completed within two months. The Webb company operates in the Winifrede seam on the line of Chesapeake & Ohio Ry.

CANADA

Output of coal in Canada in January was 1,223,648 tons, compared with 1,560,975 tons for December. Coal exports from Canada in January totaled 65,047 tons, against 116,585 in December and the preceding five-year average for January of 138,720 tons. Anthracite imports into Canada for January were 65,848 tons from Great Britain and 9,582 from the United States. Bituminous imports were 891,934 tons from the United States and 1,111 from Great Britain. December imports of bituminous were 1,284,918 tons from the United States, and 2,908 tons from Great Britain.

During March the production of by-product and gas-house coke in Canada was 152,480 tons, a decrease of 8 per cent from the February total but an increase of 13,697 tons, or 10 per cent, over the output for March of last year. Imports of coke into Canada showed an increase in March over February, the figures being 102,485 tons compared with 73,796 tons. The exports were 5,332 tons against 4,449 tons for March.

The Cape Breton strike in 1925 greatly curtailed coal purchases by the Canadian National Rys. in Nova Scotia. In answer to a question by I. D. Macdougall (Conservative, Inverness), Charles Dunning, Minister of Railways, stated that the quantity of coal pur-



Rains, Carbon County, Utah

A cheerful village in a pleasing country. Here the Castle Gate seam is mined, which shows at this point a thickness of 9 ft. Note the village triangle with its grass plot.

chased in Nova Scotia last year was 718,826 tons. In 1924 the purchases in Nova Scotia totaled 1,251,539 tons, and in 1923, 1,573,456 tons. The roads purchases of coal mined in the United States last year totaled 2,917,706 tons, compared with the previous year's total of 3,012,401 tons and of 5,292,556 tons in 1923. Purchases of coal produced in western Canada during 1925 totaled 1,146,667 tons against 818,358 tons in 1924, and 1,622,266 tons in 1923.

Every coal mine in Cape Breton is ready to open full blast, day and night, as soon as ice conditions in Cabot Strait and the Gulf make shipping up the river possible, it was learned at Dominion Coal Co. headquarters, Glace Bay. All the mines are now working, but not steadily, the general average being approximately half time.

Traffic News

Widens Differentials Favoring Birmingham District Mines

Readjustment of the relationship in the rates on coal from southern Illinois, western Kentucky and the Birmingham district of Alabama to destinations in Tennessee, Alabama, Mississippi, Louisiana, Arkansas and Texas has been ordered by the Interstate Commerce Commission in *Alabama Mining Institute vs. Illinois Central R.R. Co., et al.* The general effect of the decision will be to widen the differentials paid by southern Illinois and western Kentucky, although in some cases there will be a reduction.

The basis adopted by the Commission in prescribing the differential adjustment over the Birmingham base rate is an increase of 5c. per net ton for every

25 miles or major fraction thereof in which the average distance from Illinois Central mines in the southern Illinois-western Kentucky districts exceeds the average distance from Frisco group 2 and Southern Ry. groups 4, 11 and 12 in Alabama. From this adjustment, however, the Commission excepts destinations such as Memphis, Tenn., where no line serves the destination at the base rate from the Alabama field, on the one hand, and the western Kentucky and Illinois fields, on the other.

Ten years ago, in *Galloway Coal Co. vs. Alabama Great Southern R.R. Co.*, 40 I. C. C. 311, the Commission approved a differential approximating 30c. per ton to certain points east of the Mississippi River. In this case Alabama sought differentials ranging from 25c. @ \$1. How these compare with the adjustment authorized by this decision is shown in the following table. To the points covered by this table, complainant had asked a differential of 75c.

To Mississippi	Distance, Miles	Rate per Ton, Cts.	From Ill.-Ky.	Distance, Miles	Rate per Ton, Cts.	From Alabama	Present Differential in Favor of Alabama, Cts.	Differential Prescribed, Cts.
Clarksdale.....	333	247	270	245	2	15		
Greenville.....	407	236	256	211	25	30		
Greenwood.....	380	247	179	217	30	40		
Grenada.....	347	234	216	219	15	25		
Winona.....	370	234	173	202	32	40		
Durant.....	400	266	196	236	30	40		
Ackerman.....	453	266	143	209	57	60		
Newton.....	448	277	231	222	55	45		
Jackson.....	458	277	248	247	30	40		
Vicksburg.....	476	269	326	239	30	30		
Natchez.....	553	267	346	242	25	40		
Brookhaven.....	512	298	302	253	45	40		
McComb.....	536	299	326	259	40	40		
Columbia.....	543	300	333	285	15	40		
Laurel.....	498	277	296	242	35	40		
Hattiesburg.....	548	277	310	247	30	50		
Guilford.....	618	255	380	230	25	50		
Alabama								
Mobile.....	610	255	324	180	75	55		
Louisiana								
New Orleans.....	642	255	416	230	25	45		
Baton Rouge.....	622	267	415	242	25	40		
Hammond.....	589	310	379	270	40	40		
Bogalusa.....	572	310	362	305	5	40		

The complainant also attacked the divisions allowed certain short-line delivering carriers in the lower Mississippi River valley by the Illinois Central on Illinois and Kentucky coal on the theory that these divisions were so "liberal" that they unjustly discriminated against the Alabama operators when seeking railroad-fuel contracts from such short-lines. The Illinois Central justified these divisions on the return haul of higher grade traffic it received from those connections. Attention also was called to the fact that Alabama in 1924 captured the fuel business of one of the short lines. The Commission refused to sustain complainant's charge of undue prejudice and discrimination with respect to these divisions.

The question of the cost of the transportation of coal from the Maritime Provinces and Alberta to points in Ontario has been taken up by the Canadian Board of Railway Commissioners, which under orders from the Dominion Government began a comprehensive investigation into the matter on April 16. The hearings are being held in public and experts from the provinces concerned and from the railways will testify.

Among the Coal Men

E. L. Michie, who for the last year has been manager of operations of the Elkins division of the West Virginia Coal & Coke Co., has resigned to enter business for himself. Mr. Michie had been in charge of the Elkins division of the West Virginia Coal & Coke Co. since the company's reorganization about a year ago. Previous to that time he was in charge of mines owned by the Hutchinsons in the Kanawha field.

L. T. Putnam, for several years assistant to General Superintendent George Campbell, of the Old Ben Coal Corp., Chicago, Ill., has been transferred to the Eastern field and will look after the operation of Old Ben properties in the non-union field.

Frank D. Rash, former president of the St. Bernard Mining Co., later vice-president of the West Kentucky Coal Co., now president of the Kentucky Mine Owners Association and Inland Waterways Co., Louisville, Ky., was elected president of the Technology Club of Kentucky at the annual meeting, on March 26, of Massachusetts Tech graduates living in Kentucky and southern Indiana.

Stephen Arkwright, general manager of the Paisley coal operations in Monongalia County, West Virginia, has moved his residence from Fairmont to Morgantown, where he expects to make his permanent home.

Fred Raines, for a score or more years in charge of the Cincinnati office and Western distribution for Castner, Curran & Bullitt, resigned, effective April 1, and has taken charge of the Old Ben Coal Corporation's new offices in the Dixie Terminal Building, Cincinnati. This was to be expected with the acquisition of the Ed White and Glen Rogers properties by the company, but another angle was injected when a large number of Castner, Curran & Bullitt employees went with their old chief to his new post.

Charles Gates has been made superintendent of the Caples mine of the Central Pocahontas Coal Co., of Welch, W. Va. This was formerly known as the Shannon Branch mine.

E. M. Robinson, for four years Norfolk manager for the Eastern Coal & Export Co., has accepted a position as Richmond manager for the Sugar Creek Coal Sales Co., effective immediately. He will succeed W. B. Wooldridge, who has been the company's Richmond manager for a number of years and is now being transferred to New York. Mr. Robinson's successor has not been appointed, but W. R. Evans, from the Richmond office of the Eastern Coal & Export Co., has taken charge of the Norfolk office temporarily.

Georgie J. Mechau, widely-known in the Buffalo trade, has left his position with the Acme Coal Mining Co. to accept the management of the Toronto office of the F. P. Weaver Co., of Canada, with headquarters in Montreal.



Capt. T. V. Peake

Captain T. V. Peake, manager of the Cannock & Rugeley Colliery Co., Ltd., Staffordshire, England, who is making an observation tour of American coal fields. Accompanied by Norman Forrest, agent of the Holly Bank Coal Co., Ltd., in the same British field, he recently inspected a number of mines in southern West Virginia, followed by a trip to the Pittsburgh district.

Fred Carr has been made sales manager of the Lion Coal Co., of Ogden, Utah, succeeding James T. Hill, who resigned recently. The Lion company may consolidate with the Superior Rock Springs Coal Co., the Premier Coal Co. and another company, unnamed, according to Mariner A. Browning, president of the Lion company.

C. H. Mead has been elected secretary of the Winding Gulf Operators Association, succeeding George Wolfe, who resigned shortly after the first of the year. Mr. Mead has had wide experience in the coal business, being interested extensively in coal operations in the Winding Gulf field. He located in Raleigh, W. Va., about ten years ago and has been largely instrumental in the formation of a number of large companies. He is now the president and general manager of the C. H. Mead Coal Co., operating mines at East Gulf, the general offices of the company being in Beckley.

W. D. Givens, of Charleston, W. Va., local manager of the Atlas Powder Co., addressed the Fayette County Mining Institute at Mount Hope, W. Va., on April 1 on the match-head detonator. By displaying a "harmless" model he explained the piece of mechanism in detail.

Frank W. Newhall, of Uniontown, Pa., chief engineer of the Republic Iron & Steel Co.'s coal mines in Pennsylvania, has been re-elected president of the Uniontown Tennis Club, an office which he has filled for several years.

Obituary

John Kimberly Mumford, well known as a war correspondent and special writer for newspapers and magazines, died April 17 at Singapore, British East India, aged 62. At various times he had been connected with the *New York World*, *American* and *Herald Tribune*, *Harper's Weekly* and the *Red Cross Magazine*. He also was the author of books on industrial subjects, among them "Wire," "Bakelite" and "Anthracite." At the time of his death he was collecting material for a book on rubber.

James S. McAnulty, of Scranton, Pa., died April 15 from heart trouble. He was one of the organizers of the Connell Anthracite Mining Co., and served as secretary and treasurer from 1903 to 1923, when he was made president upon the death of W. L. Connell. He also was president of the East Point Coal Co., of White Haven, Pa., and the Scranton Life Insurance Co. He is survived by one daughter.

Frank P. Christian, of Scranton, Pa., former president of the Peoples Coal Co., died at Geneseo, near Clifton Springs, N. Y., on April 13. He is survived by his wife, one daughter and a son.

William G. Payne, prominent coal operator, died April 13 at his home in Kingston, Pa., following an attack of appendicitis. He was 82 years old. Born in Minersville, Pa., Mr. Payne moved to Wilkes-Barre early in life and became associated with his uncle in the coal business. At the time of his death he was president of the East Boston Coal Co., Consumers' Coal Co., Dolph Coal Co., and Pierce Coal Co.

Samuel Irwin Sawyer, owner and operator of the mine bearing his name at Punxsutawney, Pa., was killed by a Pennsylvania R.R. train a few days ago. He was standing on the station and as the train started up seemed to become dizzy and fell under the wheels. He was about 58 years old and is survived by a widow and two children.

W. W. Brunson, formerly a steam-shovel coal operator in the Pittsburgh (Kan.) district, an associate of Joseph F. Klaner, with whom he went to Pittsburgh from Colorado, died April 6 in Idaho Springs, Colo., after a long illness. He was 47 years old. While in the Pittsburgh district he was associated with the Ellsworth, Klaner Coal Co., B.R.&H. Coal Co., Liberty Coal Co. and North Cherokee Coal Co. He returned to Colorado three years ago on account of his health.

William Schanzenbacher, manager of one of the Louisville (Ky.) yards of the St. Bernard Mining Co., who was shot by two young bandits, in an attempted robbery, on April 3, as he was entering his home with company money taken home for safe keeping, died on April 9, as a result of the injury, having been shot through the stomach.

Col. Morgan Jones, 86 years old, operator of coal mines and reputed to be one of the wealthiest men in Texas, died at Abilene, April 11 after several months of ill-health.



Production And the Market



Soft Coal Market Has But Few Bright Spots; Anthracite Moving Slowly

Unevenness continues to characterize developments in the bituminous-coal trade, with depressing influences overshadowing those of an encouraging nature. Backwardness of spring temperatures in the Middle West has served to provide a number of small orders for domestic sizes for current needs, but little stocking for winter requirements is being done. Dejection has overspread the mining districts of Illinois and Indiana because of the numerous shutdowns and the knowledge that western Kentucky will take over much of the business.

Inability of the lake season to get under way as well as warm weather has caused an easing up in the movement of Kentucky coal, so that dependence must be placed in day-to-day business. As a result operation in western Kentucky is only about one-third of capacity and in eastern Kentucky even less, but comparison with previous years is encouraging. Movement at the Head of the Lakes also is ahead of last year. Typical spring quiet marks the trade in the West and Southwest

Lake Movement Under Permit Control

A firmer tendency pervades the Cincinnati market due to dealer inquiry and signs of interest in the West and Northwest. While the embargoes on lake coal to Toledo and Sandusky have not been lifted, the permit system being used to control such traffic, these influences have had a steadying effect. The central and eastern Ohio situation, however, is dull and featureless. The trade in western and central Pennsylvania continues to sink into the depths, and in Buffalo, too, no ray of hope pierces the gloom.

Quiet industrial conditions in New England hold out little encouragement against the keen competition for what little business is in sight. Spot trade at New York has improved slightly; distress tonnage has been cut

down considerably but prices are still low. At Philadelphia and Baltimore the recent dullness is unrelieved, though export possibilities are seen in the event of a British strike.

Contracting is slow, the railroads in most instances piecing out remaining stocks with open-market purchases at low prices. Most of the large industrial consumers also are following this practice.

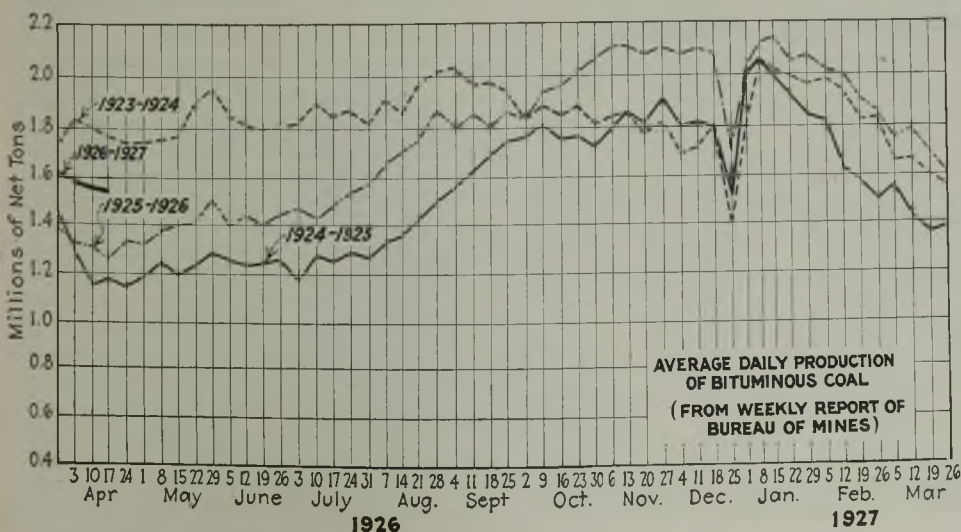
A slight further advance in prices has taken place since last week, *Coal Age* Index on April 26 standing at 159 and the corresponding price at \$1.93, compared with 158 and \$1.92, respectively, on April 19.

Output of bituminous coal during the week ended April 17 is estimated by the Bureau of Mines at 9,295,000 net tons, a decline of 125,000 tons from the preceding week.

Anthracite Demand Lacks Life

Hard-coal demand at both New York and Philadelphia is quiet. Warnings and recommendations that consumers lay in winter supplies early lack the pulling power of spring discount inducements in past years. Company producers are getting most of the business, independents being unable to obtain more than 25c. above company circulars, and not much of their product is moving at that. Pea is an exception, however, this size in some instances bringing as much as \$1.25 over company quotation. At Baltimore, on the other hand, domestic consumption has been heavy and many fill-up orders have been forthcoming. Trade in steam sizes is dull. Company output is not moving easily at circular prices and the independents are glad to get business at prices well below bottom company quotations.

The Connellsville coke market shows few signs of life and output continues to decline.



Estimates of Production

(Net Tons)

	BITUMINOUS	
	1925	1926
April 3.....	7,547,000	9,040,000
April 10 (a).....	7,843,000	9,420,000
April 17 (b).....	7,515,000	9,295,000
Daily average.....	1,253,000	1,549,000
Cal. yr. to date.....(c)	146,359,000	169,003,000
Daily av. to date.....	1,612,000	1,860,000
	ANTHRACITE	
April 3.....	1,438,000	1,549,000
April 10.....	1,672,000	1,793,000
April 17.....	1,522,000	2,086,000
Cal. yr. to date.....(c)	25,581,000	15,389,000
	BEEHIVE COKE	
April 10 (a).....	212,000	228,000
April 17 (b).....	201,000	233,000
Cal. yr. to date.....(c)	3,749,000	4,518,000

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

Hand-to-Mouth Policy Rules

A hand-to-mouth policy still controls railroad buying in the Middle West. Although bids have been in for some time, most carriers are meeting current requirements with open-market orders at low prices. A number of industrial contracts for 5,000 to 50,000-ton lots of screenings have been placed, but the largest consumers are following the lead of the railroads. On the whole, the spot market in steam coals is good.

Continued cold weather has served to maintain a steady flow of small orders for domestic sizes. Little is being done, however, in the way of stocking for the winter. The price situation for the coming months is an uncertain quantity. In the mining regions of Illinois and Indiana the wholesale closing down of operations and the knowledge that much of the business will go to western Kentucky this season have created an air of gloom. All producing districts have coal on track at the mines.

Shippers of high-volatile coal from the East still comb the Chicago market for business. Prices on prepared sizes range from \$1.85 up to \$2.75, with an occasional order at \$3. The smokeless interests are keeping consignment coal away from this territory. Competition between anthracite and coke at Chicago has been further intensified by reductions of 50c. @ \$1.75 in oven prices on domestic sizes. Aside from a weather demand, which helps the small-lot movement of the medium and cheaper grades, the local St. Louis market is devoid of notable change.

Spring Takes Toll of Kentucky

The advent of real spring temperatures has slowed up the movement of Kentucky coal. Lake business has not yet got under way, so that the state must depend upon day-to-day current demand for orders. Western Kentucky is running about 33 1/3 per cent of capacity, but the eastern part of the field is not equaling that percentage. Never-

theless, compared with previous years the present seasonal volume is encouraging.

Prices show little change. Some shippers in the Jellico and Straight Creek districts are asking \$2.50 for choice block, but the general range is \$1.75 @ \$2.25. Eastern Kentucky lump, egg and nut are \$1.75 @ \$2; mine-run, \$1.35 @ \$1.60, and slack, \$1 @ \$1.10. Western Kentucky 6-in. block is \$1.65 @ \$1.85; lump and egg, \$1.40 @ \$1.65; nut, \$1.35 @ \$1.60; mine-run, \$1 @ \$1.50, and screenings, \$1 @ \$1.10.

Despite a falling off in shipments from the docks at the Head of the Lakes during the past fortnight, the movement is well ahead of last year—possibly by as much as 2,000 cars. List prices on the better grades of coal are well maintained but concessions are frequent on slower-moving stock. Prepared sizes of smokeless, which threatened to be a drug, are fairly well cleaned up, and reserves of mine-run and screenings are not burdensome.

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

Low-Volatile, Eastern	Market Quoted	Apr. 27	Apr. 12	Apr. 19	Apr. 26	Midwest	Market Quoted	Apr. 27	Apr. 12	Apr. 19	Apr. 26
		1925	1926	1926	1926†			1925	1926	1926	1926†
Smokeless lump.....	Columbus....	\$2.60	\$2.85	\$2.85	\$2.60 @ \$2.75	Franklin, Ill. lump.....	Chicago.....	\$2.60	\$2.60	\$2.60	\$2.60
Smokeless mine run.....	Columbus....	1.85	1.90	1.90	1.85 @ 2.00	Franklin, Ill. mine run.....	Chicago.....	2.35	2.40	2.40	2.35 @ 2.50
Smokeless screenings.....	Columbus....	1.40	1.10	1.10	1.10 @ 1.30	Franklin, Ill. screenings.....	Chicago.....	2.10	1.85	1.85	1.85 @ 2.00
Smokeless lump.....	Chicago.....	2.85	2.60	2.60	2.50 @ 2.75	Central, Ill. lump.....	Chicago.....	2.35	2.30	2.30	2.25 @ 2.48
Smokeless mine run.....	Chicago.....	1.95	1.80	1.80	1.65 @ 2.00	Central, Ill. mine run.....	Chicago.....	2.10	2.05	2.05	2.00 @ 2.15
Smokeless screenings.....	Cincinnati.....	2.75	2.75	2.75	2.50 @ 3.00	Central, Ill. screenings.....	Chicago.....	1.90	1.30	1.30	1.40 @ 1.60
Smokeless lump.....	Cincinnati.....	2.00	1.90	1.85	1.75 @ 2.00	Ind. 4th Vein lump.....	Chicago.....	2.60	2.40	2.40	2.25 @ 2.60
Smokeless mine run.....	Cincinnati.....	1.50	1.35	1.35	1.25 @ 1.50	Ind. 4th Vein mine run.....	Chicago.....	2.35	2.15	2.15	2.10 @ 2.25
Smokeless screenings.....	Cincinnati.....	4.15	4.20	4.30	4.00 @ 4.25	Ind. 4th Vein screenings.....	Chicago.....	2.25	2.15	2.15	2.00 @ 2.35
Smokeless mine run.....	Boston.....	1.95	1.85	1.85	1.75 @ 2.00	Ind. 5th Vein lump.....	Chicago.....	1.95	1.95	1.95	1.85 @ 2.10
Clearfield mine run.....	Boston.....	2.15	2.10	2.10	2.00 @ 2.35	Ind. 5th Vein mine run.....	Chicago.....	1.55	1.30	1.30	1.30 @ 1.45
Cambridge mine run.....	Boston.....	2.05	1.95	1.95	1.85 @ 2.10	Ind. 5th Vein screenings.....	Chicago.....	2.50	2.50	2.50	2.50
Somerset mine run.....	Boston.....	2.55	2.65	2.65	2.50 @ 2.85	Mt. Olive lump.....	St. Louis.....	2.25	2.15	2.15	2.15
Pool 1 (Navy Standard).....	New York.....	2.60	2.80	2.80	2.65 @ 3.00	Mt. Olive mine run.....	St. Louis.....	1.75	1.40	1.40	1.40
Pool 1 (Navy Standard).....	Philadelphia.....	1.95	2.05	2.05	1.90 @ 2.00	Mt. Olive screenings.....	St. Louis.....	2.25	2.50	2.50	2.50
Pool 1 (Navy Standard).....	Baltimore.....	2.00	2.25	2.20	2.00 @ 2.25	Standard lump.....	St. Louis.....	1.80	1.80	1.80	1.75 @ 1.85
Pool 9 (Super. Low Vol.).....	New York.....	2.00	2.35	2.35	2.20 @ 2.50	Standard mine run.....	St. Louis.....	1.70	1.15	1.15	1.15 @ 1.20
Pool 9 (Super. Low Vol.).....	Philadelphia.....	1.85	1.90	1.90	1.70 @ 1.80	Standard screenings.....	St. Louis.....	1.85	1.75	1.75	1.65 @ 1.85
Pool 9 (Super. Low Vol.).....	Baltimore.....	1.85	1.85	1.85	1.70 @ 2.00	West Ky. block.....	Louisville.....	1.35	1.25	1.25	1.00 @ 1.50
Pool 10 (H.Gr.Low Vol.).....	New York.....	1.65	2.05	2.05	1.90 @ 2.25	West Ky. mine run.....	Louisville.....	1.20	1.00	1.00	1.00 @ 1.10
Pool 10 (H.Gr.Low Vol.).....	Philadelphia.....	1.70	1.75	1.75	1.55 @ 1.65	West Ky. screenings.....	Louisville.....	1.85	1.75	1.75	1.65 @ 1.85
Pool 10 (H.Gr.Low Vol.).....	Baltimore.....	1.50	1.65	1.70	1.50 @ 1.75	West Ky. block.....	Chicago.....	1.85	1.75	1.75	1.65 @ 1.85
Pool 11 (Low Vol.).....	New York.....	1.55	1.70	1.70	1.55 @ 1.85	West Ky. mine run.....	Chicago.....	1.30	1.15	1.15	.80 @ 1.50
Pool 11 (Low Vol.).....	Philadelphia.....	1.45	1.60	1.60	1.45 @ 1.60						
Pool 11 (Low Vol.).....	Baltimore.....										
High-Volatile, Eastern						South and Southwest					
Pool 54-64 (Gas and St.).....	New York.....	1.45	1.45	1.45	1.30 @ 1.60	Big Seam lump.....	Birmingham..	2.25	2.00	2.00	1.75 @ 2.25
Pool 54-64 (Gas and St.).....	Philadelphia.....	1.45	1.45	1.45	1.35 @ 1.55	Big Seam mine run.....	Birmingham..	1.75	2.00	2.00	1.75 @ 2.25
Pool 54-64 (Gas and St.).....	Baltimore.....	1.50	1.30	1.30	1.25 @ 1.30	Big Seam (washed).....	Birmingham..	1.85	2.00	2.00	1.75 @ 2.25
Pittsburgh so'd gas.....	Pittsburgh.....	2.40	2.40	2.40	2.25 @ 2.40	S. E. Ky. block.....	Chicago.....	2.10	2.25	2.25	2.00 @ 2.50
Pittsburgh gas mine run.....	Pittsburgh.....	2.00	2.05	2.05	2.00 @ 2.15	S. E. Ky. mine run.....	Chicago.....	1.65	1.65	1.65	1.50 @ 1.85
Pittsburgh mine run (St.).....	Pittsburgh.....	1.80	1.95	1.95	1.90 @ 2.00	S. E. Ky. block.....	Louisville.....	2.10	2.05	2.05	1.75 @ 2.25
Pittsburgh slack (Gas).....	Pittsburgh.....	1.65	1.55	1.55	1.50 @ 1.60	S. E. Ky. mine run.....	Louisville.....	1.30	1.55	1.45	1.35 @ 1.65
Kanawha lump.....	Columbus.....	2.10	2.05	2.05	1.85 @ 2.25	S. E. Ky. screenings.....	Louisville.....	1.10	1.05	1.05	1.00 @ 1.10
Kanawha mine run.....	Columbus.....	1.40	1.55	1.55	1.40 @ 1.70	Cincinnati.....	Cincinnati.....	2.10	2.10	2.10	2.00 @ 2.25
Kanawha screenings.....	Cincinnati.....	1.15	.85	.85	1.00 @ 1.10	S. E. Ky. mine run.....	Cincinnati.....	1.35	1.45	1.50	1.35 @ 1.75
W. Va. lump.....	Cincinnati.....	1.85	1.85	1.85	1.65 @ 2.00	S. E. Ky. screenings.....	Cincinnati.....	1.30	1.00	.85	.90 @ 1.25
W. Va. gas mine run.....	Cincinnati.....	1.40	1.45	1.50	1.40 @ 1.65	Kansas lump.....	Kansas City..	4.25	4.25	4.25	4.00 @ 4.50
W. Va. steam mine run.....	Cincinnati.....	1.30	1.30	1.30	1.35 @ 1.50	Kansas mine run.....	Kansas City..	3.00	2.85	2.85	2.75 @ 3.00
W. Va. screenings.....	Cincinnati.....	1.25	1.00	.85	.90 @ 1.10	Kansas screenings.....	Kansas City..	2.75	2.50	2.50	2.50
Hooking lump.....	Columbus.....	2.25	2.35	2.35	2.25 @ 2.50						
Hooking mine run.....	Columbus.....	1.40	1.55	1.55	1.40 @ 1.70						
Hooking screenings.....	Columbus.....	1.20	1.05	1.05	1.10 @ 1.20						
Pitta. No. 8 lump.....	Cleveland.....	2.15	2.20	2.25	1.80 @ 2.65						
Pitta. No. 8 mine run.....	Cleveland.....	1.80	1.80	1.80	1.80 @ 1.85						
Pitta. No. 8 screenings.....	Cleveland.....	1.50	1.60	1.40	1.35 @ 1.45						

* 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

Broken	Market Quoted	Freight Rates	April 27, 1925		April 19, 1926		April 26, 1926†	
			Independent	Company	Independent	Company	Independent	Company
Broken.....	New York.....	\$2.34		\$8.00 @ \$8.50		\$8.15 @ \$9.25		\$8.15 @ \$9.25
Broken.....	Philadelphia.....	2.39		9.15		9.00 @ 9.25		9.00 @ 9.25
Egg.....	New York.....	2.34	\$8.50 @ 8.75	8.25 @ 8.50	9.25 @ 9.75	8.75 @ 9.25	9.25 @ 9.50	8.75 @ 9.25
Egg.....	Philadelphia.....	2.39	8.50 @ 9.20	8.30 @ 8.50	9.25 @ 9.85	9.15 @ 9.25	9.25 @ 9.85	9.15 @ 9.25
Egg.....	Chicago*.....	5.06	7.76 @ 8.40	7.42 @ 8.08	8.75	8.13	8.48	8.13
Stove.....	New York.....	2.34	8.75 @ 9.00	8.50 @ 8.90	9.50 @ 10.00	9.25 @ 9.50	9.25 @ 9.75	9.25 @ 9.50
Stove.....	Philadelphia.....	2.39	9.10 @ 9.55	8.75 @ 8.90	9.60 @ 10.10	9.35 @ 9.50	9.60 @ 10.10	9.35 @ 9.50
Stove.....	Chicago*.....	5.06	8.12 @ 8.60	7.82 @ 8.00	8.88	8.58	8.84	8.58 @ 8.88
Chestnut.....	New York.....	2.34	8.50 @ 8.75	8.25 @ 8.50	9.25 @ 10.00	8.75 @ 9.15	9.25 @ 9.50	8.75 @ 9.15
Chestnut.....	Philadelphia.....	2.39	8.50 @ 9.35	8.40 @ 8.50	9.25 @ 9.75	9.00 @ 9.15	9.25 @ 9.75	8.75 @ 9.15
Chestnut.....	Chicago*.....	5.06	7.94 @ 8.25	7.59 @ 8.00	8.88	8.33 @ 8.53	8.71	8.38 @ 8.58
Pea.....	New York.....	2.22	4.50 @ 5.25	5.00 @ 5.50	6.50 @ 7.25	6.00 @ 6.35	6.50 @ 7.00	6.00 @ 6.35
Pea.....	Philadelphia.....	2.14	5.00 @ 5.75	5.25 @ 5.30	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	5.65	5.65 @ 5.80	6.03	5.65 @ 5.80
Buckwheat No. 1.....	New York.....	2.22	2.00 @ 2.50	2.50 @ 3.00	1.75 @ 2.25	3.00 @ 3.50	1.75 @ 2.25	3.00 @ 3.50
Buckwheat No. 1.....	Philadelphia.....	2.14	2.00 @ 2.75	2.50	2.25 @ 2.75	3.00	2.25 @ 2.75	3.00
Rice.....	New York.....	2.22	1.75 @ 2.10	2.00	1.50 @ 2.00	2.00 @ 2.25	1.50 @ 1.85	2.00 @ 2.25
Rice.....	Philadelphia.....	2.14	1.75 @ 2.00	2.00	2.00 @ 2.25	2.25	2.00 @ 2.25	2.25
Barley.....	New York.....	2.22	1.40 @ 1.50	1.50	1.25 @ 1.60	1.60 @ 1.75	1.10 @ 1.40	1.60 @ 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	1.25 @ 1.60	2.00	1.00 @ 1.50	2.00

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

Screenings of all grades, in fact, have been in active demand.

Future of Anthracite in Doubt

The future of hard-coal in the Northwest is much in doubt. Many householders, forced to use other fuels last winter, balk at paying the prices asked for anthracite. Moreover, the number of consumers who will use anthracite but who normally laid in supplies early has greatly diminished. Further expansion in the sale of coke for domestic purposes is expected.

No new features developed in the situation at Milwaukee during the last week. Industrial demand is fairly satisfactory, but the call for domestic fuel is fading. Prices are unchanged. Coal movement continues to slow down in the Twin Cities, the weather having turned warm. Contract business is backward and inquiries have been mostly only preliminary. Retail demand is weak, regardless of the inducement of a discount on hard coal.

The trade in Kansas has reverted to its normal spring somnolence after six weeks of activity. Operators report an accumulation of close to 150 cars of coal on Kansas tracks, but as many mines are idle and some working only two or three days a week, this is not causing much concern. Crushers are again in use to help fill the demand for screenings. As stocks in consumers' bins and retail yards are unusually low, the operators are hopeful that summer storage demand will be brisk.

Colorado Market Steady

The third week in April witnessed no material change in the Colorado market. The smaller domestic sizes are scarce, but there is a surplus of lump. Mines are averaging 65 per cent running time, but the surplus labor has migrated to other fields. There has been little demand for coal for storage in spite of the substantial reductions made on fuel for that purpose. Lump, grate and nut from the Kemmerer and Rock Springs districts of Wyoming are selling at \$3.50. Quotations on Wyoming steam coals are erratic.

Utah mines are not averaging over two days a week. "No bills" block the mine tracks. Little or no tonnage is moving to the domestic trade. The absence of demand for prepared sizes is keeping up the market in screenings. The principal industrial buyers at the present time are the metal interests, railroads, packing plants and brick producers.

Tone Improves at Cincinnati

At Cincinnati a better tone is in evidence as a result of dealer inquiry, high-volatile slack buying by utilities and industries and a display of interest from the West and Northwest. Embargoes against Toledo and Sandusky are still in force and the permit system is in use to move lake coal, but these have proved steadying influences.

Low-volatile lump has been hard to get at \$2.75, some asking \$3, which it is believed will be the May circular price. Egg is now \$2.50@ \$2.75; nut, \$2 @ \$2.25. Mine-run is unchanged, but screenings are firm at \$1.50, only off-grades being obtainable at \$1.25. High-volatile lump from West Virginia is

weak, but Hazard, Harlan and Elkhorn offerings are firm at \$2. Egg is hard to move. Mine-run and screenings have tightened up about 10c. a ton.

Retail business during the last fortnight has exceeded expectations. May prices will show no change from those now prevailing. River conditions are excellent and the movement is normal.

With lake traffic held back by embargoes at the lower ports and ice in the passages to the upper ports, the coal trade in central Ohio continues dull and featureless. Blocking the lake movement means sharper competition in the Ohio local markets from non-union coal. Steam consumers still play the open market. Domestic trade is quiet and retailers show no inclination to buy ahead for the winter months. As a result, domestic prices are somewhat easier.

Eastern Ohio Lags in Depths

The tendency to weakness in eastern Ohio is more marked, though spot prices are practically unchanged. It is a long time since both steam and domestic activity was at so low an ebb, "no bills" being more numerous than at any time for a year. Even distress coal which finds its way to market is hard

to move at figures under the market. During the week ended April 17 the eastern Ohio No. 8 district produced 212,000 tons, or about 30 per cent of capacity, an increase of 13,000 tons over the preceding week and 19,000 tons over the corresponding week of 1925.

Pittsburgh Trade Still Drooping

Three-quarters coal in the Pittsburgh district has yielded further to the selling pressure induced by moribund demand. Last week gas lump was down to \$2.25@ \$2.40 and three-quarter steam dropped to \$2.15@ \$2.25. Slack, however, holds at \$1.40@ \$1.50 for steam grades and 10c. higher for gas coal. The Pittsburgh Coal Co. started up another mine last week, but the general labor situation in western Pennsylvania is unchanged. In the Bessemer district open-shop operations find current coal prices a losing venture.

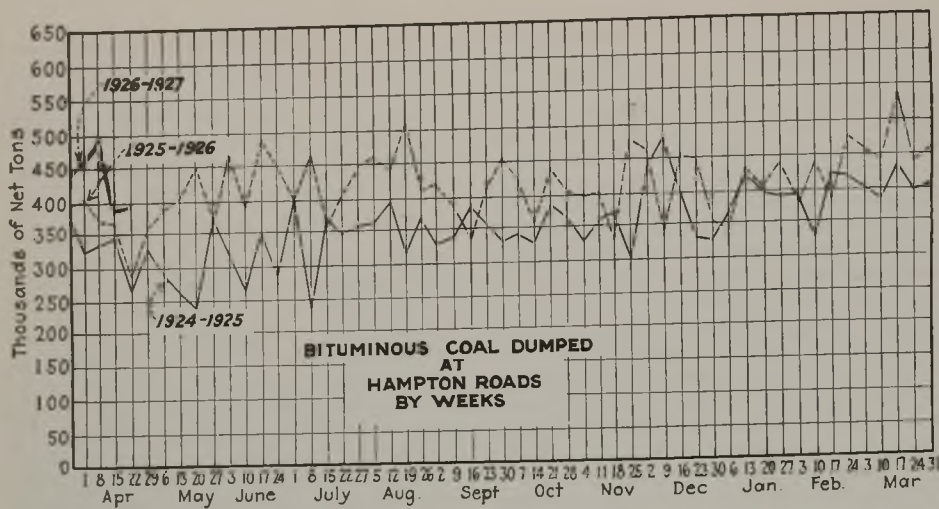
Central Pennsylvania production is still on the decline. Up to April 17 loadings had totaled 30,388 cars, as compared with 40,804 cars for the corresponding period in March. Most of the tonnage rolling is on spot orders. Pool 1 is quoted at \$2.35@ \$2.50; pool 9, \$2.20 @ \$2.35; pool 10, \$1.90@ \$2.20; pool 11, \$1.70@ \$1.85, and pool 18, \$1.60@ \$1.70.



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

	1926				1925		1924
	April 26	April 19	April 12	April 5	April 27	April 27	April 28
Index	159	158	158	160	162	171	
Weighted average price..	\$1.93	\$1.92	\$1.91	\$1.93	\$1.96	\$2.07	

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.



Pessimism Enthroned at Buffalo

If there is a ray of light in the Buffalo bituminous market, factors in that trade decline to admit its existence. Slack prices are slightly stronger, but only because there is no demand for screened sizes. Nominal list prices show Fairmont lump at \$1.60@1.75; mine-run, \$1.40@1.50; slack, \$1.25@1.40; Youghiogheny gas lump, \$2.15@2.35; No. 8 and Pittsburgh steam lump, \$1.65@1.85; gas and steam slack, \$1.40@1.55, and Allegheny Valley mine-run, \$1.60@1.85.

In the domestic trade, Buffalo is absorbing a fair amount of coke at \$10@10.50, curb. There is a slight demand for low-volatile coal for house-heating purposes, but sales difficulties are increasing. Retail business at Toronto has eased up with the appearance of milder weather. Stove now leads in anthracite demand and supplies are ample to take care of all orders. Canadian industrial buyers appear interested only in immediate requirements.

Gloom Shrouds New England

In New England there is every indication of continued close competition for contracts to be closed this season. Extremely low prices have been named both wholesale and retail, and even though output in the West Virginia districts is being curtailed by reasonably good co-operation the amount of distress coal at the Virginia terminals is a constant menace to quotations.

On board vessels at Norfolk and Newport News there is ample No. 1 Navy Standard Pocahontas and New River available at not over \$4.25, with 15c. less being freely quoted. In that respect the spot market is under more depression than a week ago.

Purchasers everywhere are taking note of current conditions, and there is no disposition to buy in April and May when most consumers have on hand comfortable reserves for the next 60 to 90 days.

Coals from central Pennsylvania are scarcely heard from in the open market. With lowering prices on cars at the tidewater distributing points the range of smokeless coals is spreading and the territory open to all-rail coals is an always narrowing ribbon along the Connecticut River.

The spot bituminous trade at New York registered another slight improvement last week. Considerable reduction

was effected in the distress tonnage on cars and in barges, but open-market quotations remain at low levels. Whatever contracting has been done has been done very quietly. For the most part buyers feel themselves well protected—barring a British strike. Should that take place, shippers look for increased export business and some orders already have been closed for South America.

At Philadelphia the psychological depression is as deep as ever. A substantial volume of coal is moving to industrial consumers, but the prices at which the coal is sold bring no joy to the shippers. The railroad attitude toward the situation continues a sore point with the producers. As long as surplus stocks accumulated last winter last and distress tonnage can be snapped up, it is not likely that the railroads will be willing to pay higher figures.

Factors in the Baltimore trade find it more pleasant to contemplate the possibilities of a strong export demand if the British miners go out than to consider the low state of the domestic market. So far, however, there has been little in the way of export inquiry. Spot prices for American consumption are weaker and purchasing agents are stronger in their determination to avoid contracts, except upon their own terms.

Spot steam coals are moving moderately well in the Birmingham market, and with output holding close to trade needs, prices are quatably unchanged. Industrial and railroad consumption is heavy and bunker demand is unusually brisk. Few new contracts are reported,

but old ones are readily renewed as they expire. Production, which is close to 400,000 tons weekly, is well ahead of a year ago. Foundry coke is in good demand at \$5.50@6.50, spot or contract; egg and nut are in such light request that some is being stored by producers.

Hard-Coal Demand Soft

Domestic demand for anthracite is easy at both New York and Philadelphia. Campaigns to induce early buying by the householder are not meeting with overwhelming success. Most of the buying favors the low-circular shippers. Independents at New York are unable to obtain over 25c. above company prices and not much coal is changing hands on that basis. Philadelphia is no more kindly disposed to paying premiums. The one size which is the exception is pea. As high as \$1.25 over company circular has been obtained. On the other hand, some has been sold at circular in conjunction with orders for egg.

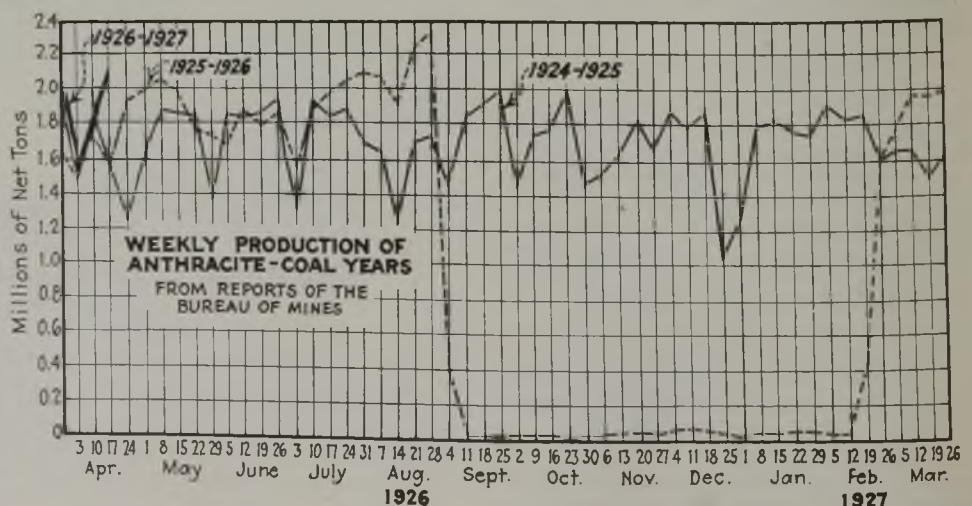
The steam coal market is dull. Company tonnage is not finding a ready market at circular prices and independents are frankly seeking orders at considerably less than the company minimum. The domestic trade, however, is welcoming the domestic buckwheat offered by the D. L. & W. at \$3.50 and the collieries shipping that coal are behind on their orders.

Domestic business at Baltimore is on a firmer basis than farther north. April consumption has been heavy and many householders have been giving their orders for spring and summer fill-ups.

Connellsville Coke Market Sinking

The Connellsville coke market is making new records—in stagnation. Spot demand is dead and interest in new contracts moribund. Production of furnace coke, however, is so closely regulated that there is no surplus tonnage to further depress the spot range of \$3@3.15. A slight overproduction of foundry grades, on the other hand, has sent the level for that coke down to \$4@4.50—a net decline of 50c. since February. The odd lots of miscellaneous coke offered as anthracite substitutes are begging in vain for buyers at any price.

Output during the week ended April 17, according to the Connellsville



Car Loadings and Supply

	Cars Loaded—		Car Shortages
	All Cars	Coal Cars	
Week ended April 10, 1926	929,506	163,897	
Preceding week	928,092	156,909	
Week ended April 11, 1925	917,284	138,065	

	Surplus Cars—		Car Shortages
	All Cars	Coal Cars	
April 8, 1926	274,219	127,084	
March 31, 1926	247,549	104,280	
April 7, 1925	344,258	184,461	

Courier, totaled 175,500 tons. Furnace oven production was 102,400 tons, a decrease of 3,900 tons when compared with the preceding week. Merchant oven output dropped to 73,100 tons, a decrease of 330 tons.

The district is shipping very little steam or gas coal and not a great deal of byproduct coal to the commercial market.

March Exports Increase

Exports of coal and coke from the United States during March showed increases in all divisions over February figures. Bituminous exports were 1,143,060 gross tons, as compared with 1,013,158 tons in February; anthracite exports jumped from 37,157 tons to 297,316 tons; coke shipments increased from 67,697 tons to 86,857 tons.

March exports by countries were as follows:

To	Anthracite, Gross Tons	Bituminous, Gross Tons	Coke, Gross Tons
France		7,028	1,004
Germany			560
Italy		115,219	
Netherlands			3
Portugal		2,711	
United Kingdom			100
Canada	287,351	740,207	82,133
British Honduras		166	
Costa Rica			15
Guatemala			2
Honduras	15	5	
Nicaragua		662	2
Panama		20,009	
Salvador	3	3	10
Mexico	138	16,498	174
Miquelon and St. Pierre		1,942	
Newfoundland and Labrador	125	2,003	
Bermuda		2,995	
Barbados		6,844	
Jamaica		5,863	
Trinidad and Tobago		1,376	
Other Br. West Indies		3,226	
Cuba	9,632	62,984	1,748
Dominican Republic		3	
Dutch West Indies	27	5,622	
French West Indies		3,641	
Haitian Republic		7,222	25
Virgin Islands		6,073	
Argentina		27,240	
Brazil		83,157	
Colombia	5	41	24
British Guiana		2,117	
Dutch Guiana		200	
Peru		9,625	
Venezuela	20	208	1,057
Japan (including Chosen)		173	
Egypt		1,007	
Algeria and Tunis		6,985	
Total	297,316	1,143,060	86,857

Argentine Imports Decline

Total imports of coal into Argentina during 1925 are reported at 2,973,852 tons, compared with 3,299,392 tons in 1924 and 2,579,466 in 1923, so reports Assistant Trade Commissioner Sherwood H. Avery, Buenos Aires. Of the 1925 imports, 2,610,045 tons, or about 89 per cent, came from Great Britain, 186,933 tons from Germany, 124,950 tons from United States; 47,922 tons from the Netherlands and the remainder from Chile and Brazil.

Daily Average Coke Output Declines in March

Byproduct coke output in March increased over that of the short month of February by 277,000 tons, or 7 per cent, although the daily rate was less, according to the Bureau of Mines. Compared with January, both monthly and daily output decreased, the coke plants operating at about 91 per cent of capacity. In March, the total production was 3,777,000 net tons and the daily, 121,825; in February, 3,500,000 and 125,006 tons, respectively, and in January, 3,804,000 and 122,718 tons. Of the 80 byproduct plants in existence, 74 were active this month.

Beehive coke production, however, continued to decline in March when the output was estimated at 1,158,000 net tons; 244,000 tons, or 17 per cent, lower than in February.

The production of all coke totaled 4,935,000 tons, byproduct plants contributing 77 per cent and beehive plants 23 per cent.

Output of Byproduct and Beehive Coke in the United States by Months*

(In Thousands of Net Tons)

	Byproduct Coke	Beehive Coke	Total
1923, monthly average	3,133	1,615	4,748
1924, monthly average	2,833	806	3,639
1925, monthly average	3,332	893	4,225
December, 1925	3,760	1,307	5,067
January, 1926	3,804	1,381	5,185
February, 1926	3,500	1,402	4,902
March, 1926	3,777	1,158	4,935

* Excludes screenings and breeze.

Coal consumed in beehive and byproduct coke plants in March amounted to 7,252,000 tons, 5,426,000 tons at byproduct plants and 1,826,000 tons at beehive plants. This is 11,000 tons more than was used in February for this purpose at all plants.

Estimated Monthly Consumption of Coal in Manufacture of Coke

(In Thousands of Net Tons)

	Consumed in Byproduct Ovens	Consumed in Beehive Ovens	Total Coal Consumed
1923, monthly average	4,523	2,507	7,030
1924, monthly average	4,060	1,272	5,332
1925, monthly average	4,787	1,371	6,158
December, 1925	5,403	2,062	7,465
January, 1926	5,466	2,178	7,644
February, 1926	5,029	2,212	7,241
March, 1926	5,426	1,826	7,252

Of the total output of byproduct coke during March, 3,120,000 tons, or 82.6 per cent, was made in plants associated with iron furnaces, and 656,000 tons, or 17.4 per cent, was made at merchant or other plants.

Uruguayan Coal Imports Gain

Following an increase of 65 per cent in Uruguay's coal imports during February as compared with the preceding month, a further expansion took place in March, reports Consul G. O. Marsh, Montevideo, in a cable to the Department of Commerce. Shipments received during the first 27 days of the month totaled 33,000 tons as compared with 20,000 for the entire month of February, an increase of about 67 per cent. Of the 33,000 tons received 7,000 came from the United States and the remainder from Great Britain.

Coal Leases in Montana and Utah to Be Sold

Sale by public auction of coal leases on three tracts of public land in Montana and Utah has been authorized at the Interior Department.

One of the tracts in Montana comprises 160 acres in Richland County. Under the terms of the lease, the successful bidder must make an initial investment of \$5,000 during the first three years of the lease and must produce 5,000 tons of coal annually commencing with the fourth year of the lease. A royalty of 10c. per ton, mine-run, must be paid the government on all coal produced.

The other tract in Montana authorized to be leased includes 40 acres in Roosevelt County. An initial investment of \$500 must be made on this tract and a minimum production of 410 tons of coal annually after the third year. Both of these coal leases will be offered for sale at the local land office at Great Falls, Mont., the exact date of the sale to be announced later from that office.

The third tract is situated in Sevier County, Utah, and comprises 80 acres. The successful bidder for the tract must make an initial investment of \$1,000 during the first three years of the lease with a minimum production of 550 tons per year after the third year, at the same time paying the government 15c. per ton, mine-run, on all coal produced. The date of the sale covering this lease will be announced later from the local land office at Salt Lake City, where it will be held.

Coal-Loading Record Shifts To Sewalls Point

The Virginian Ry. coal pier No. 2, at Sewalls Point, Va., the new \$3,000,000 electrically operated terminal, set up a new world's record for coal dumpings April 20, when it loaded 11,875 gross tons of coal on the steamer "Lemuel Burrows" in 2 hours and 55 minutes. The pier trims automatically. This achievement surpasses the performance at the Curtis Bay pier of the Baltimore & Ohio Ry., at Baltimore, on April 13, when 11,353 tons was dumped in the "Lemuel Burrows" in 3 hours and 1 minute, which did not include time for trimming. On March 7 the Sewalls Point pier dumped 11,953 tons of coal in an ocean-going vessel in 3 hours flat. Only two conveyor cars were used in each operation.

New South Wales Coal Output High in 1925

New South Wales, Australia, produced 11,396,199 gross tons of coal, valued at the pitmouth at \$9,302,515, in 1925. Production in other parts of Australia approximated 2,000,000 tons. The highest output of New South Wales was in 1924, when 11,612,216 tons, valued at \$9,589,547, was raised.

Sealed proposals will be opened by the Supt. of Lighthouses, Portland, Me., at 2 p.m., May 17, 1926, for furnishing anthracite chestnut, f.o.b. mines or tidewater Portland, Me. Information upon application.

Foreign Market And Export News

Rising Demand for Coal Reopens Many Welsh Pits; Buyers Increase Reserves

London, England, April 13.—The Welsh steam-coal market is in a very strong position, though business has not yet quite settled down after the Easter holidays. The better arrival of shipping has served to clear off accumulations at the collieries, and ships are now waiting for cargoes. Many of the pits that had been closed down for some months have reopened and in many cases additional men have been taken on at the collieries. Notwithstanding these facts, the collieries are well booked for the early part of May, and very little coal is going at the ruling prices at present.

Many buyers are accumulating stocks, especially the public utilities, and many of the railroads are increasing their normal three-months' supply of coal. The pressure on the collieries resulting from the tendency of domestic and foreign buyers to stock coal will, of course, be compensated for later when the collieries must slow up on deliveries. In addition to this, some business has been lost owing to heavy contracts placed for American and German coal for delivery over the next six months.

The Newcastle market reflects the Welsh improvement, though to a lesser degree. Most of the collieries have sufficient business on hand for the present, but the outlook for the future is uncertain. The best business is in gas coals, many of the European gas plants still coming to Durham for their fuel, in spite of German competition.

Output by British collieries during the week ended April 10, according to a special cable to *Coal Age*, totaled 3,696,300 gross tons, compared with 4,633,400 tons the preceding week.

Coal exports during March totaled 4,702,536 gross tons, as compared with 4,340,006 tons in February and 4,148,042 in January. The volume of exports for the first three months exceeds that of last year, but the value is nearly £2,000,000 less. The per ton value of exports during the first quarter of last year was 21s. 1d., against 18s. 3d. this year.

Belgian Market Unsettled

Easter holidays and fluctuating exchange rates have further upset the Belgian coal market, reports Brussels under date of April 15. In the domestic trade anthracite alone holds firm. Stocks of other domestic fuels are increasing and prices are wavering. In many cases official quotations have been cut 10 fr. per ton.

Industrial coals maintain their position. Semi-bituminous raw smalls are ordinarily quoted at 75 fr.; semi-washed smalls, 87 fr.; lean smalls, 66 fr.; washed duffs, 76 fr.; lean washed duffs, 55 fr.; lean raw duffs, 38 fr.; semi-bituminous peas, 105 fr.; lean peas, 95 fr.; coking smalls, 85 fr.; briquets, 112.50 fr. Except in the case of briquets, which show an advance of 7.50 fr., these prices are the same as those prevailing on March 1. Special grades of briquets are up as much as 20 fr.

Agreement finally has been reached on prices for fuel supplied to the Belgian State Rys. For the first quarter of 1926 and for April the prices on smalls with an ash content of 12 per cent have been fixed at 84@88 fr., according to classes. Briquets have been fixed at 100 fr. for the first quarter and 110 fr. for April.

Taxes Boost Quotations on French Coal Offerings

Paris, France, April 15.—The end of the Easter holidays finds the French coal market showing no material change. Industrial demand continues on a satisfactory basis. Domestic business reveals a normal seasonal inactivity. Rail transportation from the Nord and Pas-de-Calais fields is more regular and a good tonnage is moving via the canal routes.

To offset increased taxes, French producers have raised prices 0.70 fr. Imported coals are subject to the same advance. In addition, import duties recently were increased 30 per cent. On coal this is equivalent to 0.36 fr. per ton. On top of all this, the French railways have asked permission to increase their rates from 330 to 355 per cent of the prewar basis. If this is granted, rates to Paris from the Pas-de-Calais field and from the Belgian frontier will go up 2.25 fr.

During March the O. H. S. received 509,400 metric tons of coal, 298,900 tons of coke and 32,700 tons of lignite briquets from the Ruhr. Receipts of reparation coke by the O. R. C. A. for the first twelve days of April totaled 98,029 tons.

In February the French mines produced 4,088,172 metric tons of coal and lignite. The country imported 1,064,764 tons and exported 418,776 tons. Consumption for the month, excluding Saar imports and stocks as of Jan. 31, approximated 5,274,160 tons. The French mines also coked enough coal to make 277,967 tons of coke. Imports were 448,251 tons, and exports, 52,905 tons. These coke figures are exclusive of coke produced by the steel industry and merchant ovens not affiliated with the collieries. Patent fuel output by the mines totaled 330,568 tons; imports, 140,102 tons; exports, 29,231 tons.

Export Clearances, Week Ended April 22

FROM HAMPTON ROADS		Tons
For Cuba:		
Amer. Str. Glendora, for Guantanamo		2,986
Nor. Str. Bratland, for Havana		2,910
For Canada:		
Amer. Str. Aetna, for Montreal		2,411
Amer. Str. Oscar J. Lingeman, for Montreal		2,113
Nor. Str. William Blumer, for Quebec		5,735
Br. Str. Lairg, for Quebec		3,492
Br. Str. Warkworth, for Montreal		7,214
For Brazil:		
Ger. Str. Newark, for Rio de Janeiro		5,429
Br. Str. Haggarsgate, for Rio de Janeiro		7,803
Br. Str. Mistley Hall, for Pernambuco		6,117
For Miquelon:		
Nor. Str. Laly, for St. Pierre		1,594
For Jamaica:		
Dan. Str. Niels R. Finsen, for Kingston		2,662
Br. Str. Sheaf Field, for Kingston		3,595

Hampton Roads Coal Dumpings* (In Gross Tons)

	Apr. 15	Apr. 22
N. & W. Piers, Lamberts Pt.	128,020	124,837
Virginian Piers, Sewalls Pt.		
Tons dumped for week	86,978	89,821
C. & O. Piers, Newport News:		
Tons dumped for week	124,063	139,041

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

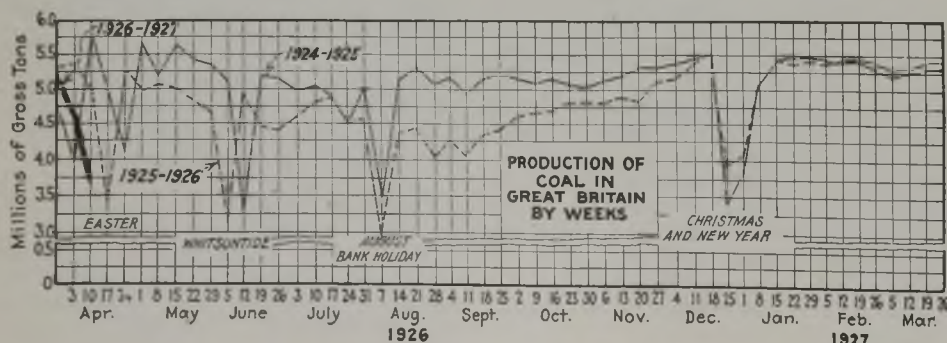
Pier and Bunker Prices, Gross Tons PIERS

	April 17		April 24†	
Pool 1, New York	\$5.50@	\$5.75	\$5.50@	\$5.75
Pool 9, New York	5.10@	5.25	6.05@	6.25
Pool 10, New York	4.75@	5.00	4.75@	5.00
Pool 11, New York	4.50@	4.75	4.50@	4.75
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	4.35@	4.40	4.25	
Pool 2, Hamp. Roads	4.10@	4.15	4.05	
Pool 3, Hamp. Roads	3.90@	4.15	3.90@	4.00
Pools 5-6-7, Hamp. Rds.	3.90@	4.00	3.90	
* BUNKERS				
Pool 1, New York	\$5.75@	\$6.00	\$5.75@	\$6.00
Pool 9, New York	5.35@	5.50	6.30@	6.50
Pool 10, New York	5.00@	5.25	5.00@	5.25
Pool 11, New York	4.75@	5.00	4.75@	5.00
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@	5.75	4.50@	5.75
Pool 1, Hamp. Roads	4.40		4.35	
Pool 2, Hamp. Roads	4.15		4.15	
Pools 5-6-7, Hamp. Rds.	4.00		4.00	

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

Quotations by Cable to <i>Coal Age</i>		
Card ff:	Apr 17	Apr 17†
Adm ratly, large	25s. 6d.	26s. 6d.
Steam smalls	16s. 6d.	17s. @18s.
Newcastle:		
Best steams	17s.	16s. 6d.
Best gas	20s. 6d. @ 22s.	20s.
Best bunkers	17s. 6d.	17s. 6d.

† Advances over previous week shown in heavy *italics*.



Coming Meetings

Chamber of Commerce of the United States. United States Chamber of Commerce Bldg., Washington, D. C., May 10-13.

Chemical Equipment and Process Engineering Exposition, under the auspices of the Association of Chemical Equipment Manufacturers, Inc., at the Public Hall, Cleveland, Ohio, May 10-15. Secretary, Roberts Everett, 1328 Broadway, New York City.

Mine Inspectors' Institute of America. Annual meeting, Seventh Avenue Hotel, Pittsburgh, Pa., May 11-13. Secretary, G. B. Butterfield, Hartford, Conn.

International Railway Fuel Association. Hotel Sherman, Chicago, Ill., May 11-14. Secretary, J. B. Hutchinson, Omaha, Neb.

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.

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. (tentative). 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.

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

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

This Pipe Joint Will Tighten As Pressure Rises

A flexible joint for use in connection with steel, wrought-iron, or cast-iron pipe is being manufactured by the Victaulic Co. of America, 26 Broadway, New York, N. Y. The joint is adaptable to plain-end piping that has a small groove near the ends. The groove is about the depth of the ordinary screw thread.

The joint consists of a sectional housing clamped around the intersection of the pipe. Inside of the housing is a hollow inner ring. This ring seals the joint without pressure from the housing. The housing holds the inner ring in place, engaging in grooves in the pipe. An increase in pressure from the inside is said to add to the tightness and to the sealing qualities of the ring. An angle of 5 deg. on either side of the horizontal can be obtained by means of the joint.

It can be used on a vacuum or on a pressure up to 1,000 lb. It is claimed that lines equipped with the joints have been used over a period of five years for carrying oil, gas and water. The joints can be used on pipe lines where the temperature is not greater than 175 deg. F. Piping adapted for the joints is said to be now stocked in pipe mills.

Saws Six Times as Fast as A Man Can Saw by Hand

An electrically-driven, hand-guided wood-cutting device known as the Skillsaw has been developed and is now being marketed by the Michel Electric Hand Saw Co., 3814 Ravenswood Ave., Chicago, Ill. This device is a combination in one machine of an 8-in. circular saw and a ½-hp. universal motor, each the product of a well-known manufacturer. The saw may be set to cut to any depth from nothing up to 2½ in. The tool complete weighs 19 lb. and consequently is readily portable.

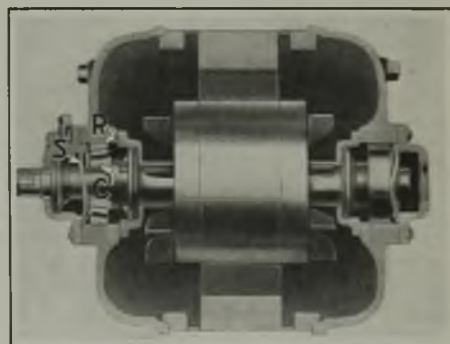
This machine is now being used in no less than forty-three different businesses. About the mines it will prove particularly useful in car building as well as in construction and repair work. It is approximately six times as rapid as fast hand cutting. Unlike a hand saw, however, it can be adjusted to

cut to an exact depth. Thus for instance, it can be so set as to just cut through a floor without touching the concrete beneath or nicking the joists.

Day by day we are finding more and more ways of relieving human muscles of the work that it was once thought they alone could perform. The power hand saw is one of the latest steps in this direction. It is doubtless destined to receive wide adoption in many arts and trades. The building and repair of mine cars as well as the performance of other construction and maintenance work about the mines will be among these applications.

These Motor Bearings Keep Themselves in Center

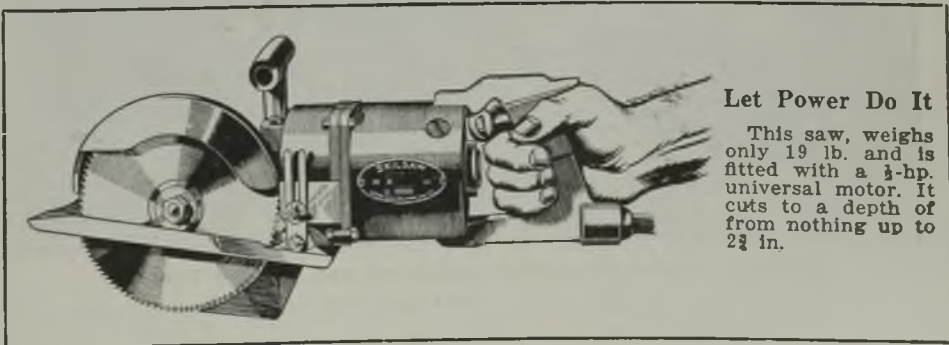
It is said that 95 per cent of all motor troubles may be traced to the bearings. Many of them are the result of the bearings wearing to such a degree as to allow the rotor to rub on the stator. In order to insure a continuous uniform air gap in motors, the Howell Electric Motors Co., Howell, Mich., has brought out a line of motors with anti-friction bearings, in which



Cross-Section of Motor Showing Bearings

Spring ring automatically takes up wear by its pressure on the tapered bearings. Consequently the rotor does not lose center nor rub against the stator.

any looseness in the bearing, caused by wear or otherwise, is automatically adjusted so as to keep the rotor centered and thus maintain a uniform air gap. This is accomplished, as shown in the figure, by the use of a Timken tapered roller bearing, shimmed with a fluted wire spring, which acts as a compression member.



Let Power Do It

This saw, weighs only 19 lb. and is fitted with a ½-hp. universal motor. It cuts to a depth of from nothing up to 2½ in.

The inner race or cone *C* of the bearing is fitted on the shaft with a light press fit. The outer race *R* is fitted into the bearing housing with a sucking fit that allows creeping of the outer race. The spring *S* is held tightly against this outer race by the grease cap pushing the race against the rollers and keeping the bearings tight at all times. This type of bearing is put in each end of the motor and keeps the rotor automatically centered, and the bearing does not need to be adjusted for wear or any other looseness. The spring allows for any lateral expansion of the shaft that might occur due to heat.

These bearings are arranged for grease lubrication, and effective seals are used to keep the grease in and to keep out foreign matter, such as dust, dirt or abrasives. The motors can be mounted in any position without changing the end bells. They will operate in any vertical position as well as horizontal, as these bearings have a thrust capacity equal to their radial capacity.

General-Purpose Shovel Of Medium Size

A 3-cu.yd. revolving shovel for general use has been developed by the Bucyrus Company, of South Milwaukee, Wis., recently. It is said to represent a new departure in that it is built along lines never before used in general-utility shovels. In design it follows the basic plan developed by the company in building the 120-B, a 4-cu.yd. mine-and-quarry full-revolving shovel announced last year. In principle it offers a machine that combines the advantages of a small revolving shovel with those of the railroad-type shovel, but has a working range considerably greater than either. The makers claim that it has the speed of action, big dipper capacity, ruggedness, and power of the railroad-type shovel, with the mobility, the full-revolving swing, and the maneuvering ability of the small revolving shovel. It is remarkably close-coupled, the boom length being only 29 ft. 6 in. and the rear-end radius 16 ft. Throughout, the clearances have been held within close limits.



Shovel Combines Features of Railroad and Smaller Types

The railroad shovel is speedy, has large capacity, is rugged and powerful. The small shovel is readily maneuvered. This equipment is of intermediate size and lays claim to the advantages of both.

Clamp Holds Both Trolley and Feeder Lines

Simplicity, safety and economy in the support of auxiliary feeder wire in the mines is afforded by the new Sure-Grip combination clamp, shown in the accompanying illustration and made by the Electric Railway Equipment Co., of Cincinnati, Ohio. This improved trolley-feeder clamp was designed in order that both trolley wire and feeder could be supported from one insulated support, thus eliminating the need for feeder taps or jumpers. The advantages of combining the trolley and feeder-wire support in one device are many.

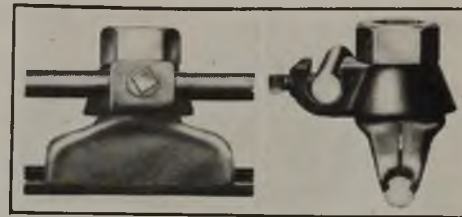
In most mines some of the haulage locomotives in use require more current than a 4/0 trolley wire will carry without an excessive drop in voltage. To overcome this difficulty it has been customary to run feeder wire along the "rib" of the main entry connecting it to the trolley at intervals by means of "jumpers." This arrangement entails the purchase of extra insulated supports, the expense of installing a separate feeder together with the necessary jumpers as well as the extra maintenance of a separate line.

The tendency always has been to use entirely too few taps between the feeder and the trolley wire, with a resulting increased voltage on the trolley line. This combination clamp eliminates all need for such taps.

BALANCED VOLTAGE ASSURED

In this new device the lug that supports the feeder wire is made a part of the compression ring of the well-known Sure-Grip trolley clamp. This entirely does away with all supports for the feeder as well as with the maintenance of two separate lines. In addition it insures balanced voltage in both feeder and trolley wires, as each supporting clamp gives a good electrical contact and dispenses with all tap connections. The greatest point of merit in this device, however, is the fact that the trolley wire and feeder are clamped independently of each other making it possible to draw up the "slack" in either without disturbing the other.

A break in the trolley wire does not cut off current beyond the point of rupture. If the current requirements of the mine are such that only the carrying capacity of the trolley wire is



Holds Both Trolley and Feeder

Any size or shape of trolley wire and any size of feeder up to 4/0 may be installed in this clamp. Slack in either conductor can be taken up without disturbing the other.

required during the first few months of operation, it is necessary only to install this wire in the combination clamp. The feeder wire may then be placed in position at any future date without in any way disturbing the original anchorages of the trolley line.

Another advantage lies in the fact that the feeder wire is not carried directly over the trolley but either to the right or left of it as conditions may require. Thus "slack" in the feeder wire does not interfere with the operation of the trolley wheel. The set screw in the new clamp provides the means of mechanically fastening the feeder wire in position and also insures good electrical contact between it and the trolley clamp.

Still another advantage is the fact that it is possible to place the feeder wire in position in the supporting lug through its open top. This makes it unnecessary to disturb the clamping arrangement of the original trolley support and also removes the necessity of "threading" the wire through the supporting member.

The design of this clamp is such that the jaws gripping the trolley wire will accommodate all sizes of either figure-eight or grooved trolley wire from 0 to 4/0. The feeder lug will accommodate all capacities of either stranded or solid wire up to the 4/0 size. The complete clamp is only slightly higher in price than the standard type without the feeder support and the compression ring. The feeder lug may be supplied in either malleable iron or bronze.

Installation of this type of clamp will in any mine go far toward reducing the cost of coal haulage. The fact that the line loss is reduced exactly one half, insures much better performance for the haulage locomotive with a consequent saving in armature and controller repairs.

New Companies

The Liddle & Jones Coal Co. has been incorporated in Grand Junction Colo., with a capital stock of \$50,000, by William Liddle, R. N. Jones and S. G. McMullin.

The Monroe Coal Co., Greenville, Ky., capital \$25,000, has been chartered by Henry B. Lee, George T. Collamore and O. S. Roberts.